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CONTENTS

- 1 PUBLISHER, EDITOR IN CHIEF, MANAGING EDITOR AND EDITORIAL BOARD**
- 2 ACCOUNTING INFORMATION QUALITY AND CORPORATE FINANCIAL PERFORMANCE:
THE ROLE OF STRUCTURAL BREAKS**
DAO NGUYEN THANH THU, NGUYEN THI LE HA
- 3 BEING WELL-INFORMED REGARDING JOB DUTIES AND RESPONSIBILITIES: VITAL IN
PROGRESSION OF PERSONAL AND PROFESSIONAL LIVES**
RADHIKA KAPUR
- 4 ACCOUNTING INFORMATION QUALITY, COST OF CAPITAL : THE MODERATING ROLE OF
FINANCIAL LEVERAGE**
THIEU QUYNH ANH, NGUYEN THI LE HA
- 5 ESG PERFORMANCE, FINANCIAL CONSTRAINTS, AND CORPORATE INVESTMENT
EFFICIENCY OF U.K. LISTED FIRMS**
NGA T. TRINH, THU A. LE
- 6 GENERATING INFORMATION REGARDING METHODOLOGIES AND PROCEDURES: VITAL IN
IMPLEMENTING JOB DUTIES AND RESPONSIBILITIES**
RADHIKA KAPUR
- 7 EMOTIONAL CONTINUITY AND STABILITY: EXAMINING BRAND LOVE AND RETENTION**
MARYAM KHAN, ATEEQA KHAN, KAMRAN AZAM, MAHNOOR FAROOQ
- 8 EARNINGS MANAGEMENT, CAPITAL STRUCTURE, AND FINANCIAL DISTRESS: THE
MODERATING ROLE OF FIRM LIFE CYCLE IN AN EMERGING MARKET**
DINH THI PHUONG THAO, NGUYEN THI LE HA
- 9 POSITIONLESS MARKETING THEORY, POSITIONLESS MARKETING STRATEGY AND
POSITIONLESS MARKETING PRINCIPLES**
SAURAV KUMAR
- 10 FROM CHATS TO CARTS: THE IMPACT OF WHATSAPP INFLUENCERS ON CONSUMER
WELL-BEING AND PURCHASE INTENTION**
ATEEQA KHAN, MARYAM KHAN, KAMRAN AZAM, MAHNOOR FAROOQ
- 11 PROMOTING CULTURAL DIFFUSION: ESSENTIAL IN LEADING TO PROGRESSION OF
INDIVIDUALS AND COMMUNITIES**
RADHIKA KAPUR
- 12 AI-DRIVEN INNOVATIONS IN THE LOGISTICS SECTOR: OPPORTUNITIES AND
CHALLENGES**
JIA CHI TSOU

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ACCOUNTING INFORMATION QUALITY AND CORPORATE FINANCIAL PERFORMANCE: THE ROLE OF STRUCTURAL BREAKS

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Abstract

This study aims to build a research model examining the impact of accounting information quality (AIQ) on the financial performance of Vietnamese manufacturing firms while accounting for potential structural regime changes. Using panel data from manufacturing firms listed on HOSE, HNX, and UPCoM during 2010–2025, the study investigates whether higher reporting quality is associated with improved firm performance. Firm performance is measured using Tobin's Q as the primary market-based indicator and Return on Assets (ROA) as a robustness measure. AIQ is proxied using three accrual-based measures: the performance-matched discretionary accrual model, the Modified Jones model and the accrual quality model. To capture potential parameter instability, structural break analysis is incorporated into the panel regression framework. The study is expected to contribute to the literature by providing new evidence from Vietnam's manufacturing sector and by introducing a regime-dependent perspective into the relationship between accounting information quality and firm performance in an emerging market context.

Key words: *Accounting Information Quality, Firm Performance, Structural Break, Panel Data, Vietnam*

1. Introduction

Over the past several decades, research in accounting and corporate finance has gradually shifted from focusing solely on firm performance outcomes toward examining the quality of the financial information underlying those outcomes. Early capital market studies primarily investigated how accounting earnings relate to stock returns and firm valuation (Ball & Brown, 1968; Beaver, 1968). As financial markets became more complex and corporate governance structures evolved, scholars increasingly recognized that the credibility of reported earnings plays a crucial role in shaping investment decisions, financing costs, and firm valuation (Bushman & Smith, 2001; Dechow, Ge, & Schrand, 2010; Leuz & Wysocki, 2016). Consequently, accounting information quality (AIQ) has become an important concept in both accounting and corporate finance research.

From a theoretical perspective, the economic importance of accounting information quality can be explained through several well-established frameworks. Agency theory suggests that the separation of ownership and managerial control creates incentives for managers to pursue private benefits rather than maximizing

shareholder value (Jensen & Meckling, 1976). In such environments, transparent and reliable financial reporting serves as an essential monitoring mechanism that constrains managerial opportunism and reduces agency costs (Healy & Wahlen, 1999; Bushman & Smith, 2001). Similarly, information asymmetry theory highlights that managers typically possess superior information about firm performance compared to external investors, creating uncertainty in financial markets (Akerlof, 1970). When accounting information lacks credibility, investors face higher uncertainty and demand higher expected returns, increasing firms' cost of capital (Lambert, Leuz, & Verrecchia, 2007). In contrast, high-quality accounting information improves transparency and reduces information asymmetry between managers and external stakeholders.

Empirical research generally supports the view that accounting information quality has significant economic consequences for firms. Prior studies document that higher reporting quality improves investment efficiency, lowers financing costs, and enhances corporate governance effectiveness (Francis et al., 2005; Biddle & Hilary, 2006; Bushman & Smith, 2001). For example, firms with higher accrual quality tend to experience lower cost of equity capital because investors perceive their financial reports as more reliable (Francis et al., 2005). Similarly, Biddle and Hilary (2006) show that improved financial reporting quality enhances investment efficiency by reducing information frictions between firms and capital providers. More recent literature further emphasizes the role of accounting information quality in improving capital market efficiency and corporate decision-making (Dechow et al., 2010; Chen, Hribar, & Melessa, 2018).

Despite these theoretical predictions, empirical findings regarding the relationship between accounting information quality and firm performance remain inconsistent. While several studies report a positive association between earnings quality and firm valuation or profitability, others find weaker or insignificant effects depending on institutional conditions and measurement approaches (Leuz, Nanda, & Wysocki, 2003; Leuz & Wysocki, 2016). Differences in legal enforcement, investor protection, and financial market development may influence how strongly accounting information quality affects firm outcomes (La Porta et al., 1998; Ball, Robin, & Wu, 2003). These mixed findings suggest that the economic consequences of accounting information quality may vary across institutional environments.

One important limitation in the existing literature is the common assumption that the relationship between accounting information quality and firm performance remains stable over time. Most empirical studies estimate regression models assuming that the effect of accounting information quality on firm performance is constant across different periods. However, firms operate within evolving macroeconomic and institutional environments. Changes in financial regulation, market development, and monetary policy may alter how investors interpret financial information and how strongly accounting quality affects firm outcomes (Perron, 1989; Bai & Perron, 2003). Ignoring such structural changes may lead to biased estimates and conceal time-varying relationships between financial reporting quality and firm performance.

This issue is particularly relevant in emerging markets, where institutional frameworks are still developing. Vietnam provides an especially suitable context for examining the dynamic relationship between accounting information quality and firm performance. Over the past two decades, Vietnam has experienced rapid

economic growth and increasing integration into global trade and financial markets. During this period, the Vietnamese capital market has undergone significant institutional reforms, including strengthened disclosure requirements, improvements in corporate governance regulations, and the ongoing roadmap toward the adoption of International Financial Reporting Standards (IFRS). These institutional changes have the potential to influence both the credibility of financial reporting and the economic relevance of accounting information.

Among different sectors of the Vietnamese economy, the manufacturing sector plays a particularly important role in economic development. Manufacturing firms contribute significantly to national output, exports, and employment, and they often rely heavily on external financing to support capital-intensive operations. In such environments, credible financial reporting becomes essential for attracting investment and reducing financing constraints. At the same time, Vietnam remains an emerging market characterized by evolving regulatory enforcement and heterogeneous governance practices across firms. Consequently, the extent to which improvements in accounting information quality translate into better firm performance may depend on broader institutional and macroeconomic conditions.

Another important dimension that has received limited attention in previous research is the possibility of structural regime changes. Structural break theory suggests that relationships between economic variables may shift when underlying institutional or macroeconomic conditions change (Perron, 1989; Bai & Perron, 2003). In the context of corporate finance, monetary policy changes may influence financing conditions, liquidity availability, and discount rates used in firm valuation. Changes in policy interest rates can affect borrowing costs, credit supply, and investor expectations, which in turn may influence corporate financial performance and the pricing relevance of accounting information (Lambert et al., 2007). If such regime shifts occur, the impact of accounting information quality on firm performance may vary across different monetary environments.

Despite the potential importance of these dynamics, relatively few studies explicitly incorporate structural break analysis when examining the relationship between accounting information quality and corporate performance. This gap is particularly evident in emerging markets such as Vietnam, where institutional and financial market structures have undergone rapid transformation in recent years. Moreover, existing research on Vietnamese firms has largely focused on determinants of earnings management rather than examining the broader economic consequences of accounting information quality.

Motivated by these gaps, this study attempts to investigate the impact of accounting information quality on the financial performance of Vietnamese manufacturing firms while explicitly accounting for potential structural regime changes. Using panel data from 410 non-financial manufacturing firms listed on HOSE, HNX, and UPCoM over the period 2010–2025, the study examines whether higher accounting information quality is associated with improved firm performance. Firm performance is measured using Tobin's Q as the primary market-based indicator and Return on Assets (ROA) as a robustness accounting-based measure.

To capture different dimensions of accounting information quality, the study employs multiple accrual-based

proxies widely used in the accounting literature, including the performance-matched discretionary accrual model (Kothari, Leone, & Wasley, 2005), the Modified Jones model (Dechow, Sloan, & Sweeney, 1995), and the accrual quality model proposed by Dechow and Dichev (2002). In addition, structural break analysis following Bai and Perron (2003) is applied to identify potential regime shifts based on Vietnam's policy interest rate. By allowing the relationship between accounting information quality and firm performance to vary across different monetary regimes, this study provides a more flexible empirical framework that captures potential parameter instability.

This study is expected to contribute to literature in several ways. First, it extends the literature on accounting information quality by providing new evidence from Vietnam's manufacturing sector, which plays a central role in the country's economic development but remains relatively underexplored in accounting research. Second, the study incorporates structural break analysis to examine whether the economic consequences of accounting information quality vary across different monetary regimes, thereby addressing the common assumption of parameter stability in prior research. Third, by employing multiple accounting information quality proxies and both market-based and accounting-based performance measures, the analysis enhances empirical robustness and provides a more comprehensive assessment of the relationship between financial reporting quality and corporate performance in an emerging market context.

2. Literature Review and Hypothesis Development

2.1 Accounting Information Quality

Accounting information quality (AIQ) is an important concept in accounting research because financial statements are a primary source of information for investors and other stakeholders. High-quality accounting information improves the reliability and relevance of financial reports and allows users to make more informed economic decisions (Dechow, Ge, & Schrand, 2010). In contrast, low-quality accounting information may distort the assessment of firm performance and reduce the credibility of financial reporting.

The literature generally defines accounting information quality as the extent to which reported earnings reflect a firm's underlying economic performance (Dechow et al., 2010). Similarly, Francis et al. (2004) argue that earnings quality reflects the precision with which accounting earnings capture firm performance and predict future cash flows. Higher-quality accounting information is therefore associated with more transparent financial reporting and lower levels of earnings manipulation.

Empirical studies often measure accounting information quality using accrual-based indicators. Discretionary accruals are widely used proxies for earnings management because accrual accounting allows managers some discretion in financial reporting (Healy & Wahlen, 1999). The Modified Jones model developed by Dechow, Sloan, and Sweeney (1995) is one of the most used approaches to estimate discretionary accruals. Later research improves this model by controlling firm performance. Kothari, Leone, and Wasley (2005) introduce the performance-matched discretionary accrual model, which adjusts discretionary accrual estimates based on firm performance.

Another important measure of accounting information quality is accrual quality proposed by Dechow and Dichev (2002), which evaluates how well accruals map into cash flows. Higher accrual quality indicates that accruals more accurately reflect underlying economic transactions. Overall, these measures aim to capture the reliability and transparency of financial reporting.

2.2 Firm Performance

Firm financial performance reflects the ability of a firm to generate economic value and achieve sustainable growth. In accounting and finance research, firm performance is typically measured using accounting-based or market-based indicators.

Accounting-based measures evaluate profitability based on financial statement data. One commonly used measure is return on assets (ROA), which reflects how efficiently a firm utilizes its assets to generate profits. ROA is frequently used in empirical studies because it captures operational efficiency and managerial performance.

Market-based measures, on the other hand, incorporate investor expectations regarding future firm performance. Tobin's Q is a widely used market-based indicator that measures the ratio between a firm's market value and the replacement cost of its assets (Tobin, 1969). Higher values of Tobin's Q indicate stronger growth opportunities and higher firm valuation.

Both measures provide complementary insights into firm performance. Accounting-based indicators capture realized financial performance, while market-based measures reflect investors' expectations about future performance (Fama & French, 1998). Therefore, many empirical studies use Tobin's Q as the primary measure of firm value and ROA as a robustness indicator.

2.3 Structural Breaks

Economic relationships may change over time due to shifts in macroeconomic conditions or policy frameworks. Structural break theory suggests that the parameters of econometric models may change when underlying economic conditions experience regime shifts (Perron, 1989). Ignoring such structural changes may lead to biased estimates.

Bai and Perron (2003) propose a widely used method for detecting multiple structural breaks in time-series data. This approach allows researchers to identify different parameter regimes across time periods.

In corporate finance, monetary policy plays an important role in shaping economic conditions that affect firm performance. Changes in policy interest rates influence borrowing costs, credit availability, and investment decisions. For example, higher interest rates may increase financing costs and reduce investment activity, whereas lower interest rates may stimulate investment and improve firm valuation.

These macroeconomic changes may also influence investors interpreting accounting information. During periods of tighter financial conditions, investors may rely more heavily on credible financial reporting to

assess firm performance. Therefore, the impact of accounting information quality on firm performance may vary across different monetary policy regimes.

2.4 Theoretical Framework

Agency theory suggests that conflicts arise between managers and shareholders due to the separation of ownership and control (Jensen & Meckling, 1976). Managers may have incentives to pursue personal benefits rather than maximizing shareholder value. High-quality financial reporting helps mitigate these agency problems by improving transparency and enabling better monitoring by investors.

Information asymmetry theory provides another explanation for the importance of accounting information quality. According to Akerlof (1970), markets may suffer from information asymmetry when one party has more information than the other. In financial markets, managers usually possess more information about firm performance than external investors. High-quality accounting information reduces this asymmetry and improves decision-making in capital markets.

Signaling theory suggests that firms may use transparent financial reporting to signal their credibility and prospects to investors (Spence, 1973). Finally, stakeholder theory emphasizes that firms are accountable to multiple stakeholders, including investors, creditors, and regulators (Freeman, 1984). High-quality financial reporting enhances transparency and supports stronger relationships with stakeholders.

2.5 Hypothesis Development

A large body of literature examines the economic consequences of accounting information quality. Prior studies show that higher reporting quality improves capital market outcomes and corporate decision-making.

Francis et al. (2005) find that firms with higher accrual quality experience lower cost of equity capital. Similarly, Biddle and Hilary (2006) show that improved financial reporting quality enhances investment efficiency by reducing information asymmetry. Bushman and Smith (2001) also argue that transparent financial reporting improves corporate governance and capital allocation.

However, empirical findings may differ across institutional environments. Leuz, Nanda, and Wysocki (2003) document that earnings management tends to be more prevalent in countries with weaker investor protection. In such contexts, improvements in accounting information quality may not immediately translate into better firm performance.

More recent studies emphasize the importance of institutional factors in shaping the economic consequences of financial reporting quality (Leuz & Wysocki, 2016). Emerging markets often exhibit different regulatory environments and governance structures compared with developed economies. Therefore, additional research is needed to examine how accounting information quality affects firm performance in emerging markets such as Vietnam.

Based on the theoretical perspectives and empirical evidence discussed above, accounting information quality

is expected to influence firm financial performance through several channels. High-quality financial reporting improves transparency, reduces information asymmetry, and enhances investor confidence. These factors facilitate more efficient capital allocation and lower financing costs, which ultimately improve firm performance.

Accordingly, the following hypothesis is proposed:

H1: Higher accounting information quality is associated with improved financial performance of Vietnamese manufacturing firms.

Furthermore, changes in macroeconomic conditions may influence how accounting information quality affects firm performance. Structural regime shifts associated with monetary policy changes may alter financing conditions and investor behavior. Therefore, the relationship between accounting information quality and firm performance may vary across different monetary policy regimes.

H2: The impact of accounting information quality on firm financial performance varies across structural regimes identified by changes in Vietnam's policy interest rate.

3. Methodology

3.1 Data and Sample

This study examines the impact of accounting information quality on the financial performance of Vietnamese manufacturing firms. The sample consists of non-financial manufacturing companies listed on the Ho Chi Minh Stock Exchange (HOSE), Hanoi Stock Exchange (HNX), and UPCoM.

The study period covers 2010–2025, which reflects an important stage in the development of Vietnam's capital market and captures potential macroeconomic changes affecting corporate performance. Financial data is collected from firms' publicly available financial statements.

Financial institutions are excluded due to their specific regulatory environment and financial structure. Firms with missing or incomplete financial information are also removed to ensure data consistency. The manufacturing sector is selected because it plays a central role in Vietnam's economy, contributing significantly to industrial production, exports, and employment.

3.2 Variable Measurement

3.2.1 Independent Variable

The principal independent variable of the study is Accounting Information Quality (AIQ). AIQ is operationalized using accrual-based measures that capture the extent of discretionary reporting behavior. The primary proxy follows Kothari, Leone, and Wasley (2005). To ensure robustness, the Modified Jones model by Dechow et al. (1995) is also estimated. In addition, the accrual quality measure proposed by Dechow

and Dichev (2002) is employed to capture accrual estimation precision.

3.2.2 Dependent Variables

Firm financial performance is the dependent variable of the study. It is measured using both market-based and accounting-based indicators to capture different dimensions of performance. The baseline measure is Tobin's Q. It reflects market valuation and forward-looking investor expectations. It reduces mechanical overlap with accrual-based AIQ proxies and captures the pricing relevance of accounting quality.

For robustness, Return on Assets (ROA) is used. ROA reflects the efficiency with which a firm utilizes its assets to generate profits and is widely used as an accounting-based indicator of firm profitability.

Using both Tobin's Q and ROA allows the analysis to capture market valuation as well as operational performance, ensuring the robustness of the empirical results.

3.2.3 Structural Break Variables

To account for potential parameter instability, structural break analysis is conducted using the Bai–Perron (2003) multiple structural break test applied to Vietnam's policy rate.

3.2.4 Control Variables

Several firm-specific characteristics that may influence financial performance are included as control variables. Firm size is measured as the natural logarithm of total assets. Financial leverage is calculated as the ratio of total liabilities to total assets. Growth opportunities are proxied to annual sales growth.

Including these variables helps control firm-level heterogeneity and reduces potential omitted variable bias in the regression analysis.

3.3. Methodology

3.3.1 Model Specification

This study applies panel regression techniques to examine the relationship between accounting information quality and firm financial performance. Three estimators are considered: Pooled OLS, Fixed Effects, and Random Effects.

The pooled OLS model treats the dataset as a combined cross-sectional–time series sample without controlling for firm heterogeneity. The fixed effects model controls for time-invariant firm characteristics, while the random effects model assumes that firm-specific effects are uncorrelated with explanatory variables.

To capture regime-dependent effects, the panel regression framework incorporates structural break analysis following Bai and Perron (2003).

3.3.2 Regression Equation

Baseline Model

$$\text{Performance}_{it} = \alpha + \beta_1 \text{AIQ}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{GROWTH}_{it} + \beta_5 \text{TANG}_{it} + \beta_6 \text{LIQ}_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where:

Performance_{it} is measured by Tobin's Q and ROA.

AIQ_{it} is accounting information quality.

Control variables include SIZE, LEV, GROWTH, TANG, and LIQ.

μ_i captures firm fixed effects.

λ_t captures year fixed effects.

The coefficient β_1 measures the average effect of accounting information quality under the assumption of parameter stability.

Structural Break Interaction Model

$$\text{Performance}_{it} = \alpha + \beta_1 \text{AIQ}_{it} + \beta_2 D_t + \beta_3 (\text{AIQ}_{it} \times D_t) + \beta_k \text{Controls}_{it}$$

Where:

D_t is a structural break dummy equal to 1 for observations after the identified break date and 0 otherwise. The pre-break period ($D_t = 0$) serves as the baseline regime.

β_3 captures the change in the AIQ effect across regimes.

Post-break effect of AIQ = $\beta_1 + \beta_3$.

Testing $H_0: \beta_3 = 0$ evaluates parameter stability.

3.3.3 Model Selection and Diagnosis Test

Model selection is based on standard specification tests. The F-test compares pooled OLS and fixed effects models, while the Breusch–Pagan LM test evaluates the presence of random effects. The Hausman test is then used to determine whether the random effects estimator is consistent.

Diagnostic checks are conducted to ensure reliable inference. Multicollinearity is assessed using the Variance Inflation Factor (VIF), and robust standard errors clustered at the firm level are used where necessary to address heteroskedasticity and serial correlation.

3.4 Estimation Process

The empirical analysis begins with descriptive statistics and correlation analysis to summarize variable distributions. Baseline panel regressions are then estimated using pooled OLS, fixed effects, and random effects models.

Structural break detection is implemented using the Bai–Perron multiple break procedure. Once the break year is identified, a regime dummy and its interaction with accounting information quality are introduced into the regression model to examine whether the AIQ–performance relationship differs across regimes.

Robustness checks are conducted using alternative AIQ proxies, alternative performance measures, and subsample estimations. Stata will be used to process and analyze the data.

Conclusion

The present study's main purpose is to develop a research framework investigating whether higher accounting information quality improves firm financial performance and whether this relationship varies across different monetary regimes. By employing accrual-based measures of accounting information quality, panel regression models, and structural break analysis, the study seeks to provide a more comprehensive understanding of how financial reporting quality interacts with macroeconomic conditions in shaping firm outcomes. The expected findings may contribute to the literature by extending evidence on the economic consequences of accounting information quality to the Vietnamese manufacturing sector and by introducing a regime-dependent perspective into the AIQ–performance relationship. In addition, the study may provide useful insights for policymakers, investors, and corporate managers regarding the importance of high-quality financial reporting in emerging markets, particularly in the context of Vietnam's ongoing financial reporting reforms and capital market development.

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BEING WELL-INFORMED REGARDING JOB DUTIES AND RESPONSIBILITIES: VITAL IN PROGRESSION OF PERSONAL AND PROFESSIONAL LIVES

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Abstract

The individuals are required to put into operation various types of job duties and responsibilities in personal lives, pursuance of educational programs in educational institutions of all levels and in all types of employment settings. In putting these into operation in a well-ordered and regimented manner, individuals need to augment information in terms of different types of methodologies and procedures. These are to be understood and put into operation in a well-ordered and regimented manner. Furthermore, inculcation of traits of morality, ethics, diligence, resourcefulness and conscientiousness is regarded as meaningful in generating desired outcomes. The individuals need to ensure, various types of dilemmas and challenging situations are prevented from giving rise to impediments within the course of putting into operation various types of job duties and responsibilities. As a consequence, individuals will be successful in their personal and professional lives. They will render an important contribution in meeting the expectations of family members, educators and employers. Hence, individuals need to work hard in augmenting information in terms of their job duties and responsibilities in personal and professional lives. Therefore, it is well-understood; being well-informed regarding job duties and responsibilities is vital in progression of personal and professional lives. The main concepts that are taken into account in this research paper are, understanding the meaning and significance of job duties and responsibilities, measures to be put into operation in implementing job duties and responsibilities in a well-organized manner and advantages of being well-informed regarding job duties and responsibilities.

Keywords: *Implementing, Individuals, Job Duties, Personal, Professional, Responsibilities, Skills, Well-informed*

Introduction

The individuals are different from each other in terms of number of factors, i.e. castes, creeds, races, religions, ethnicities, genders, age groups, educational qualifications, occupations, personality traits, cultures, communities and socio-economic backgrounds. In spite of these differences, individuals have one of the major goals of bringing about improvements in their overall quality of lives. As a consequence of being committed towards achievement of this goal, individuals need to augment information in terms of various types of job duties and responsibilities (Hanly, 2020). These are put into operation in personal lives,

educational institutions of all levels and in all types of employment settings. These are manageable and complicated, these are implemented in less amount of time or can be more time-consuming and these are implemented on an individual basis or through working in co-ordination with family and community members. Furthermore, individuals need to augment information in terms of techniques of putting these into operation in a well-ordered and satisfactory manner. Therefore, throughout the lives of individuals, they need to be well-informed regarding job duties and responsibilities.

In putting into operation various types of job duties and responsibilities in a well-ordered manner, individuals need to augment information in terms of different types of methodologies and procedures (Gupta, 2013). These are referred to the techniques, which are facilitating in carrying out different types of job duties and responsibilities in a satisfactory manner and generating desired outcomes. The individuals need to acquire an efficient understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting knowledge and understanding in terms of various types of methodologies and procedures. The individuals in this manner are able to clarify their doubts. As a consequence, individuals will lead to up-gradation of confidence levels and overcome the feelings of apprehensiveness and vulnerability. Furthermore, inculcation of traits of morality, ethics, diligence and conscientiousness is facilitating in putting these into operation in a well-ordered and regimented manner. Therefore, it is well-understood, possession of information in terms of various types of methodologies and procedures is facilitating in putting into operation different types of job duties and responsibilities in an efficacious manner.

Understanding the Meaning and Significance of Job Duties and Responsibilities

The individuals in their personal and professional lives are required to lead to up-gradation of analytical and critical-thinking skills. These are useful in putting into operation various types of job duties and responsibilities in a well-organized manner. The analytical skills are the ones, which are facilitating in conducting analysis of various types of methodologies, procedures, alternatives and options that are available. After the analysis is conducted, selection is made of the most useful and worthwhile ones. On the other hand, critical-thinking skills are the ones, which are facilitating in putting into operation rational, logical and methodological thinking. These are the skills, which are facilitating in making wise and productive decisions in terms of various subjects and factors. Furthermore, individuals will render an important contribution in providing solutions to different types of problems in an effective manner. As a consequence, individuals will be successful in putting into operation various types of job duties and responsibilities.

The individuals need to work hard in leading to up-gradation of these skills. They are required to augment information in terms of different types of methodologies, procedures, techniques, approaches, strategies, morality, ethics, efficiency, honesty, proficiency and adeptness in leading to up-gradation of these skills. The various factors, which are facilitating in honing these skills are, implementing effective communication processes with family members, educators and employers; being well-informed in terms of job duties and responsibilities; conducting research through utilizing various sources and experience. It is well-understood; these skills are facilitating in putting into operation various types of job duties and responsibilities in

personal lives, educational institutions of all levels and in all types of employment settings. Therefore, individuals are able to acquire an efficient understanding of the meaning and significance of job duties and responsibilities, when they are leading to up-gradation of analytical and critical-thinking skills.

The different types of job duties and responsibilities are put into operation in less amount of time or can be more time-consuming, hence, individuals need to be well-informed in terms of time-management skills. These are the skills, which are facilitating in taking out sufficient amount of time for all types of job duties and responsibilities. In the effective implementation of these skills, individuals assign priorities to the job duties and responsibilities. The ones, which are more important are carried out first, whereas, the ones, which are less important are implemented after the completion of more important ones. Procrastination is avoided. One of the major benefits of these skills is, individuals will be able to complete all types of job duties and responsibilities within the stipulated period of time. As a consequence, individuals will be able to meet the expectations of family members, educators and employers.

As growth and development of individuals takes place, when they understand their responsibilities, they understand that various types of job duties and responsibilities need to be completed on time. Within all types of professional settings, i.e. educational institutions of all levels and in all types of employment settings, leading to up-gradation of these skills is facilitating in leading to progression of individuals. Furthermore, they are able to meet the expectations of educators and employers and enhancement takes place of career prospects. The acknowledgement and implementation of time-management skills allows the individuals to be creative. Furthermore, they are able to carry out the job duties and responsibilities of planning, organizing, leading, prioritizing, controlling, goal-setting, communicating, delegating, and collaborating in an effective manner. In addition, individuals are able to manage the psychological problems of anxiety and stress in an efficacious manner. Furthermore, they will be able to render an important contribution in promoting normal mind-sets. Therefore, one is able to acquire an understanding of the meaning and significance of job duties and responsibilities, when individuals are leading to up-gradation of time-management skills.

The individuals, belonging to all occupations, communities and socio-economic backgrounds need to inculcate the traits of proficiency and adeptness. These are the traits, which are facilitating in acknowledging and implementing various factors, i.e. differentiating between various types of appropriate and inappropriate factors; reinforcing a constructive approach; forming positive viewpoints in terms of various factors and individuals; being well-informed in terms of various types of methodologies and procedures; utilizing different types of modern, scientific and innovative methods and materials; augmenting various types of skills and abilities; leading to up-gradation of motivation and concentration levels towards works; putting in efforts to one's best abilities; possessing the abilities to work under stress; providing solutions to various types of problems and forming cordial and amiable terms and relationships with family and community members. Within personal lives, pursuance of educational programs in educational institutions of all levels and in all types of employment settings, individuals need to put into operation these traits.

As a consequence, individuals will be able to do well in their job duties and responsibilities, achieve desired goals and objectives and meet the expectations of family members, educators and employers. One of the major benefits is, individuals are well-informed in terms of techniques, which are facilitating in overcoming

all types of setbacks in an effective manner. Furthermore, these are prevented from giving rise to impediments within the course of putting into operation different types of job duties and responsibilities. As a consequence, enhancement takes place of career prospects of individuals in all types of professional settings. In addition, individuals will contribute in pleasing family members and promoting enhancement of their overall personality traits and standards of living. Throughout the lives of individuals, they need to acknowledge and implement these traits. Therefore, an understanding of the meaning and significance of job duties and responsibilities is acquired, when individuals are inculcating the traits of proficiency and adeptness.

Measures to be put into operation in implementing Job Duties and Responsibilities in a Well-organized Manner

An aimless life is a meaningless life. Hence, individuals, belonging to all occupations, communities and socio-economic backgrounds have goals and objectives to achieve. The different factors in terms of which these are formulated are education, careers, employment opportunities, family, relationships, settlement, travelling, resources, assets, property, health, well-being, personality traits and overall standards of living. In achieving all types of goals and objectives, individuals need to augment information in terms of various types of job duties and responsibilities. These are required to be put into operation in a well-organized manner (Fenton, Roncancio, Sing, Sadhra, & Carmichael, 2014).

From the stage of early childhood, throughout the lives of individuals, they need to augment information in terms of measures which are facilitating in implementing job duties and responsibilities in a well-organized manner. All the measures need to be put into operation in an appropriate manner. Furthermore, positivity needs to be reinforced in all types of measures. One of the important aspects that needs to be taken into account is, all the measures need to be facilitating in promoting well-being and goodwill of individuals, professional settings and communities. The information in terms of measures is acquired through implementing effective communication processes with family members, educators and employers; being well-informed in terms of job duties, responsibilities and methodologies; conducting research through utilizing various sources and experience. Therefore, measures to be put into operation in implementing job duties and responsibilities in a well-organized manner are stated as follows:

Implementing Effective Communication Processes

Within personal lives, pursuance of educational programs in educational institutions of all levels and in all types of employment settings, there are some job duties and responsibilities, which are put into operation on an individual basis, whereas, there are others, which are implemented through working in co-ordination with other members, hence, individuals need to implement effective communication processes. These are facilitating in augmenting information and understanding in terms of different types of subjects and concepts; exchanging ideas and viewpoints in terms of various factors; obtaining answers to various types of questions and clarifying doubts in terms of various subjects and factors. Furthermore, individuals need to be well-informed in terms of communication ethics, i.e. making use of polite language and decent words; treating others with respect and courtesy; making provision of factual information; building trust and

understanding; reinforcing the traits of efficiency, honesty and truthfulness; depicting the traits of helpfulness and co-operation and possessing an approachable nature and an amiable attitude.

The communication processes takes place in a verbal and written form. Verbal communication takes place face to face, video-calling or phones, whereas, written communication takes place through exchanging messages and emails. Furthermore, information is conveyed through letters and notices. The individuals need to communicate with calm and composed mind-sets. Furthermore, they need to exercise control on the negative feelings of anger and frustration. As a consequence, individuals will form cordial and amiable terms and relationships with family and community members. Furthermore, they will obtain help and support in overcoming different types of setbacks and being successful in their job duties and responsibilities. Therefore, implementing effective communication processes is regarded as one of the indispensable measures to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Being well-informed in terms of Methodologies and Procedures

In putting into operation various types of job duties and responsibilities in a well-ordered manner, individuals need to augment information in terms of different types of methodologies and procedures. These are referred to the techniques, which are facilitating in carrying out different types of job duties and responsibilities in a satisfactory manner and achieving desired goals and objectives. The individuals need to acquire an efficient understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting knowledge and understanding in terms of various types of methodologies and procedures. The individuals in this manner are able to clarify their doubts. The individuals practice on an individual basis or through working in collaboration and integration with other members.

As a consequence, individuals will lead to up-gradation of confidence levels and overcome the feelings of apprehensiveness and vulnerability. Furthermore, inculcation of traits of meticulousness, righteousness and thoroughness is facilitating in putting these into operation in a well-organized manner. Within some of the organizations, getting enrolled in training and development programs are facilitating in augmenting information in terms of different types of methodologies and procedures. Hence, it is well-understood, possession of information in terms of various types of methodologies and procedures is facilitating in putting into operation different types of job duties and responsibilities in a satisfactory manner. Therefore, being well-informed in terms of methodologies and procedures is one of the significant measures to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Utilizing Pioneering Methods and Materials

With advancements taking place and with the advent of modernization and globalization, individuals, belonging to all occupations and fields are utilizing various types of pioneering methods and materials. These are utilization of different types of tools, devices, apparatus, machinery, equipment, technologies and gear. The individuals need to acquire an efficient understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting knowledge and understanding in terms of various types of these methods and materials. The individuals in this manner are able to clarify their doubts.

As a consequence, individuals will lead to up-gradation of confidence levels and overcome the feelings of apprehensiveness and vulnerability. Furthermore, inculcation of traits of efficiency and honesty is facilitating in putting these into operation in a well-organized manner. Hence, it is well-understood, possession of information in terms of various types of these methods and materials is facilitating in putting into operation different types of job duties and responsibilities in an adequate manner. As a consequence of utilizing these, different types of job duties and responsibilities are implemented in an efficient manner. Furthermore, these may be completed in less amount of time or can be more time-consuming. Within some of the organizations, getting enrolled in training and development programs are facilitating in augmenting information in terms of different types of these methods and materials. Therefore, utilizing pioneering methods and materials is an eminent measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Honing Analytical and Critical-Thinking Skills

The individuals in their personal and professional lives are required to lead to up-gradation of analytical and critical-thinking skills. These are useful in putting into operation various types of job duties and responsibilities in a well-organized manner. The analytical skills are the ones, which are facilitating in conducting analysis of various types of methodologies, procedures, alternatives and options that are available. After the analysis is conducted, selection is made of the most favourable ones. The critical-thinking skills are the ones, which are facilitating in putting into operation rational, logical and methodological thinking. These are the skills, which are facilitating in making wise and productive decisions in terms of various subjects and factors. Furthermore, individuals will render an important contribution in providing solutions to different types of problems in an appropriate manner. As a consequence, individuals will be successful in putting into operation various types of job duties and responsibilities.

The individuals need to work hard in leading to up-gradation of these skills. They are required to augment information in terms of different types of methodologies, procedures, techniques, morality, ethics, diligence, resourcefulness and conscientiousness in leading to up-gradation of these skills. The various factors, which are facilitating in honing these skills are, implementing effective communication processes with family members, educators and employers; being well-informed in terms of job duties and responsibilities; getting enrolled in training and development programs; conducting research through utilizing various sources and experience. It is well-understood; these skills are facilitating in putting into operation various types of job duties and responsibilities in personal lives, educational institutions of all levels and in all types of employment settings. Therefore, honing analytical and critical-thinking skills is an expedient measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Making Wise and Productive Decisions in terms of various Factors

The individuals in their personal and professional lives are required to make wise and productive decisions in terms of various factors, i.e. education, careers, employment opportunities, family, relationships, settlement, travelling, resources, assets, property, health, well-being, personality traits and overall standards of living. The individuals are required to lead to up-gradation of analytical and critical-thinking skills. These skills are favourable in making wise and productive decisions in terms of methodologies, procedures,

techniques and approaches as well. As a consequence, they will put into operation various types of job duties and responsibilities in a well-organized manner. The analytical skills are the ones, which are facilitating in conducting analysis of various types of methodologies, procedures, alternatives and options that are available. After the analysis is conducted, selection is made of the most favourable ones.

The critical-thinking skills are the ones, which are facilitating in putting into operation rational, logical and methodological thinking. These are the skills, which are facilitating in making wise and productive decisions in terms of various factors within homes, educational institutions of all levels and in all types of employment settings. Furthermore, individuals will render an important contribution in providing solutions to different types of dilemmas and challenging situations in an appropriate manner. As a consequence, individuals will be successful in putting into operation various types of job duties and responsibilities. Therefore, making wise and productive decisions in terms of various factors is a renowned measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Taking out Sufficient amount of Time for all Job Duties and Responsibilities

The different types of job duties and responsibilities are put into operation in less amount of time or can be more time-consuming, hence, individuals need to be well-informed in terms of the measure of taking out sufficient amount of time for all types of job duties and responsibilities. In the effective implementation of this measure, individuals assign priorities to the job duties and responsibilities. The ones, which are more important are carried out first, whereas, the ones, which are less important are implemented after the completion of more important ones. Procrastination is avoided. One of the major benefits of these skills is, individuals will be able to complete all types of job duties and responsibilities within the stipulated period of time. As a consequence, individuals will be able to meet the expectations of family members, educators and employers.

As growth and development of individuals takes place, when they acquire an understanding of their responsibilities, they understand that various types of job duties and responsibilities need to be completed on time. Within all types of professional settings, i.e. educational institutions of all levels and in all types of employment settings, implementing this measure is essential in leading to progression of individuals. Furthermore, they are able to meet the expectations of educators and employers and enhancement takes place of career prospects. Furthermore, they are able to carry out the job duties and responsibilities of planning, organizing, leading, prioritizing, controlling, goal-setting, communicating, delegating, and collaborating in a satisfactory manner. In addition, individuals are able to cope with psychological problems of anxiety and stress in an appropriate manner. Therefore, taking out sufficient amount of time for all job duties and responsibilities is a decisive measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Inculcating the Traits of Morality and Ethics

The individuals, belonging to all occupations, communities and socio-economic backgrounds need to inculcate the traits of morality and ethics. These are the traits, which are facilitating in acknowledging and implementing various factors, i.e. differentiating between various types of appropriate and inappropriate

factors; reinforcing a constructive approach; forming positive viewpoints in terms of various factors and individuals; augmenting various types of skills and abilities; leading to up-gradation of motivation and concentration levels towards works; putting in efforts to one's best abilities; possessing the abilities to work under stress; forming pleasant terms and relationships with family and community members; promoting normal mind-sets and coping with psychological problems of anger, stress, anxiety, frustration and depression in an appropriate manner. Within personal and professional lives, individuals need to put into operation these traits.

As a consequence, individuals will do well in their job duties and responsibilities, achieve desired goals and objectives and meet the expectations of family members, educators and employers. One of the major benefits is, individuals are well-informed in terms of techniques, which are facilitating in overcoming all types of setbacks in an effective manner. Furthermore, these are prevented from giving rise to impediments within the course of putting into operation different types of job duties and responsibilities. As a consequence, individuals will meet the expectations of family members and promote enhancement of their overall personality traits and living conditions. Throughout the lives of individuals, they need to acknowledge and implement these traits. Therefore, inculcating the traits of morality and ethics is an imperative measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Implementing the Traits of Diligence, Resourcefulness and Conscientiousness

Implementing the traits of diligence, resourcefulness and conscientiousness is essential for individuals, belonging to all occupations, communities and socio-economic backgrounds. These are the traits, which are facilitating in acknowledging and implementing various factors, i.e. honing analytical and critical-thinking skills; making wise and productive decisions in terms of various factors and subjects; being well-informed in terms of various types of methodologies and procedures; utilizing different types of pioneering methods and materials; augmenting various types of skills and abilities; leading to up-gradation of motivation and concentration levels towards works; putting in efforts to one's best abilities; possessing the abilities to work under stress; providing solutions to various types of problems and developing mutual understanding with family and community members. Within personal lives, educational institutions of all levels and in all types of employment settings, individuals need to implement these traits.

As a consequence, individuals will be able to do well in their job duties and responsibilities, achieve desired goals and objectives and meet the expectations of family members, educators and employers. Furthermore individuals will implement techniques, which are facilitating in overcoming all types of setbacks in an effective manner. Furthermore, these are prevented from giving rise to impediments within the course of putting into operation different types of job duties and responsibilities. As a consequence, desired goals and objectives will be achieved in an efficient manner. Throughout the lives of individuals, they need to acknowledge and implement these traits. Therefore, implementing the traits of diligence, resourcefulness and conscientiousness is a favourable measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Providing Solutions to various Problems

Within personal and professional lives, individuals experience problems in terms of various factors, i.e. job duties, responsibilities, methodologies, procedures, techniques, approaches, strategies, work pressure, lack of implementation of time-management skills, lack of analytical, critical-thinking and problem-solving skills, unawareness in terms of various factors and subjects, scarcity of financial, human, technical, material and information resources, lack of infrastructure, amenities and facilities, health problems and illnesses, psychological problems, peer issues, crime and violence and so forth. The influence of various types of problems is experienced in a major or minor form. These are considered to be impediments within the course of implementing job duties and responsibilities in a well-organized manner. The individuals need to provide solutions to these in an appropriate manner (Fischer, & Poza, 2007).

The individuals need to lead to up-gradation of problem-solving skills. These are the skills, which are facilitating in identifying the causes of problems. After the causes are identified, solutions are provided to these in an appropriate manner. Furthermore, these are prevented from assuming a major form. The solutions to various problems are provided on one's own or through obtaining help and support from family and community members hence, pleasant terms and relationships are to be formed with them. As a consequence, individuals will be successful in the implementation of their job duties and responsibilities. Therefore, providing solutions to various problems is an advantageous measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Augmenting Competencies and Abilities

Within personal lives, educational institutions of all levels and in all types of employment settings, individuals need to augment competencies and abilities. These are convincing, persuading, planning, organizing, directing, leading, negotiating, controlling, co-ordinating, emotional intelligence, systems thinking, leading to up-gradation of motivation and concentration levels towards works, putting in efforts to one's best abilities, possessing the abilities to work under stress and providing solutions to various types of problems. These competencies and abilities are required to be put into practice in a well-ordered and regimented manner. One of the important aspects that needs to be taken into account is, positivity needs to be reinforced in the implementation of all types of competencies and abilities.

As a consequence, individuals will be able to do well in their job duties and responsibilities, achieve desired goals and objectives and meet the expectations of family members, educators and employers. Furthermore individuals will implement techniques, which are facilitating in providing solutions to various types of dilemmas and challenging situations in a satisfactory manner. Furthermore, these are prevented from giving rise to impediments within the course of putting into operation different types of job duties and responsibilities. As a consequence, desired outcomes will be generated in an efficient manner. Throughout the lives of individuals, they need to acknowledge and implement competencies and abilities. Therefore, augmenting competencies and abilities is a useful measure to be put into operation in implementing job duties and responsibilities in a well-organized manner.

Advantages of being well-informed regarding Job Duties and Responsibilities

The individuals, belonging to all occupations, communities and socio-economic backgrounds have one of the major goals of leading to up-gradation of overall personality traits and promoting enhancement of overall standards of living. As a consequence of being committed towards achievement of this goal, individuals need to augment information in terms of various types of job duties and responsibilities. These are put into operation in personal lives, educational institutions of all levels and in all types of employment settings (Fogleman, & McCorkle, n.d.). The individuals need to put these into operation in a well-ordered and regimented manner. This is advantageous to individuals on a comprehensive basis. Therefore, advantages of being well-informed regarding job duties and responsibilities are, meeting the expectations of family and community members; promoting enhancement of career prospects; leading to up-gradation of overall personality traits and promoting enhancement of overall standards of living. These are stated as follows:

Meeting the Expectations of Family and Community Members

Within personal lives, within the course of pursuance of educational programs in educational institutions of all levels and in all types of employment settings, individuals need to augment their information in terms of their job duties and responsibilities. As a consequence of putting these into operation in a well-organized manner, individuals will contribute in achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Furthermore individuals will implement techniques, which are facilitating in providing solutions to various types of dilemmas and challenging situations in an effective manner. Furthermore, family and community members will be satisfied. Therefore, meeting the expectations of family and community members is regarded as one of the indispensable advantages of being well-informed regarding job duties and responsibilities.

Promoting enhancement of Career Prospects

Promoting enhancement of career prospects is regarded as one of the major goals of individuals, belonging to all occupations, communities and socio-economic backgrounds. In achieving this goal, the various factors that needs to be taken into account are methodologies, procedures, strategies, approaches, morality, ethics, diligence, resourcefulness, conscientiousness, meticulousness and determination levels. As a consequence of being well-informed in terms of job duties and responsibilities, individuals will contribute in reinforcing these factors. As a consequence, they will render an important contribution in enhancing their careers. Therefore, promoting enhancement of career prospects is one of the significant advantages of being well-informed regarding job duties and responsibilities.

Leading to up-gradation of overall Personality Traits

The individuals, belonging to all age groups, occupations, communities and socio-economic backgrounds have one of the major goals of leading to up-gradation of overall personality traits. As a consequence of being well-informed in terms of job duties and responsibilities, individuals will contribute in achievement of this goal. They will put emphasis on all the factors, i.e. diet and nutrition, health problems, illnesses, psychological problems, eliminating loneliness, forming an effective social circle, comprising of family and

community members, helpfulness, co-operation, approachability, amiability, and overall quality of lives. Therefore, leading to up-gradation of overall personality traits is an eminent advantage of being well-informed regarding job duties and responsibilities.

Promoting enhancement of overall Standards of Living

Promoting enhancement of overall standards of living regarded as one of the major goals of individuals, belonging to all occupations, communities and socio-economic backgrounds. In achieving this goal, the various factors that needs to be taken into account are education, careers, employment opportunities, family, relationships, settlement, travelling, resources, assets, infrastructure, amenities, facilities, property, health, well-being and overall personality traits. As a consequence of being well-informed in terms of job duties and responsibilities, individuals will contribute in reinforcing these factors. As a consequence, they will render an important contribution in achieving this goal in an effective manner. Therefore, promoting enhancement of overall standards of living is an expedient advantage of being well-informed regarding job duties and responsibilities.

Conclusion

The individuals, belonging to occupations, communities and socio-economic backgrounds are required to implement various types of job duties and responsibilities in their personal and professional lives. Furthermore, information needs to be generated in terms of measures to be put into operation in implementing job duties and responsibilities in a well-organized manner. In addition, individuals need to be well-informed in terms of advantages of being well-informed regarding job duties and responsibilities. Finally, it can be stated, doing well in job duties and responsibilities in personal and professional lives leads to progression of individuals.

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ACCOUNTING INFORMATION QUALITY, COST OF CAPITAL: THE MODERATING ROLE OF FINANCIAL LEVERAGE

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Abstract

This study attempts to design a research framework examining the relationship between the quality of accounting information and the cost of capital of real estate companies listed on the Vietnamese stock market. Simultaneously, the study analyzes the moderating role of financial leverage in this relationship. The analysis uses an unbalanced panel dataset of approximately 200 real estate companies listed on the HOSE, HNX, and UPCoM exchanges during the period 2010–2025. The cost of capital is measured using the weighted average cost of capital (WACC) from the Refinitiv Eikon database. The quality of accounting information is measured through discretionary accruals estimated using the Modified Jones Model. Additionally, an alternative measure of accounting information quality is used to examine the stability of the results. The study is expected to contribute to academic literature by providing empirical evidence from the real estate industry in the context of the emerging market. At the same time, the study clarifies how financial leverage can affect the economic impact of accounting information quality.

Keywords: *Accounting Information Quality; Cost of Capital; Emerging Markets; Financial Leverage; Real Estate Firms; Vietnam.*

1. Introduction

Accounting information is crucial in capital markets due to investors and creditors typically use financial statements to figure out how well a business is doing and how risky it is. When financial statements are clear and accurate, people in the market may get a clearer idea of how well a business is doing, how much money it is making, and how much it can grow. This helps to close the gap in information between enterprises and those who supply financing (Healy & Palepu, 2001).

The cost of capital in financial markets is the rate of return that investors and lenders need to make up for the risk of giving money to businesses. There are several things that affect the cost of capital, such as the state of the economy, the business's financial risk, and how clear the financial information is (Lambert, Leuz, & Verrecchia, 2007). When investors are very unsure about a company's finances, they usually want a greater expected return, which raises the cost of capital.

Financial theories say that the quality of accounting information can have a big impact on a company's cost of

capital. High-quality accounting information lowers the difference in information between managers and investors, which lowers the risk of making bad investment decisions (Akerlof, 1970; Jensen & Meckling, 1976). When financial information is clearer and more trustworthy, investors can better judge the company's risk and value, which lowers the return they need.

Numerous prior research has investigated the economic implications of the quality of accounting information. Several studies have found that good financial reporting can make investments more effective, ease financial restrictions, and make capital markets work better (Bushman & Smith, 2001; Healy & Palepu, 2001). However, there is still not a lot of real-world evidence about how the quality of accounting information affects the cost of capital, especially in emerging markets (Francis, LaFond, Olsson, & Schipper, 2004).

The link between financial openness and the cost of capital can be quite crucial in industries that need a lot of money, like real estate. Many real estate projects need a lot of money up front and take a long time to build before they start making steady cash flow (Titman & Warga, 2001). So, enterprises in this field depend a lot on outside sources of money, including bank loans, bond sales, or stock sales.

In Vietnam, the real estate market has changed a lot in the last few years. Companies in this field are dealing with a lot of problems, such as the COVID-19 epidemic, strict credit standards, and the corporate bond market's ups and downs (Dang & Nguyen, 2022). These things have made it harder for firms to get money and made investors and creditors more careful about giving it to them.

Many studies have looked at how the quality of accounting information affects how well organisations do economically, but there isn't much real-world evidence on how the quality of accounting information affects the cost of financing, especially in emerging economies (Lambert et al., 2007). Moreover, the majority of prior studies employed multi-sector data samples and seldom examined the moderating effect of financial leverage in this connection.

This study aims to discover the correlation between the quality of accounting information and the cost of capital for publicly traded real estate companies in Vietnam, while also investigating the regulatory function of financial leverage.

Specifically, the study's main purpose is to answer the following research questions.

- How does accounting information quality influence the cost of capital of Vietnamese listed real estate firms?
- How does financial leverage moderate the relationship between accounting information quality and the cost of capital?

2. Literature Review and Hypothesis Development

2.1 Theoretical Background

There are a few fundamental ideas in finance and accounting that can help us understand the link between the quality of accounting information and the cost of capital.

Agency Theory explains that when ownership and management are separate, managers and shareholders may have different interests (Jensen & Meckling, 1976). In this case, financial reporting is a way to keep an eye on

things that help lower agency costs. When the quality of accounting data gets better, the amount of openness goes up, and investors can better judge how well the business is doing.

According to Information Asymmetry Theory, differences in information between enterprises and investors raise the level of information risk in the capital market (Akerlof, 1970). Investors usually want a bigger expected return to make up for the risk when they don't have reliable information about a business's finances.

Signalling Theory says that companies can utilize financial signals to tell the market about the quality and future of their business (Spence, 1973). People think that clear and accurate financial reports are a good sign that makes investors think businesses are less hazardous.

Stakeholder Theory in capital structure also says that when organisations are trying to figure out the best amount of leverage, they need to weigh the pros and cons of debt and the risks of financial risk (Myers, 1984). The more financial leverage a company has, the more financial risk it has, which might influence how investors look at its financial data.

2.2 Accounting Information Quality

The quality of accounting information is how well financial statements show how a business is doing and give investors and other stakeholders meaningful information to help them make decisions (Dechow, Ge, & Schrand, 2010). Financial statements are more reliable when they have high-quality accounting information. This helps investors better understand how well the business is performing.

Researchers in empirical accounting commonly use different indicators to quantify the quality of accounting information. These include the quality of accruals, the sustainability of profits, and the openness of financial information (Francis, LaFond, Olsson, & Schipper, 2004). Discretionary accruals are typically used as a measure of how much earnings management is going on and how good financial reporting is (Dechow, Sloan, & Sweeney, 1995).

Previous research has demonstrated that accounting information is better when there are less discretionary accruals. This is because there is less management involvement in the financial reporting process (Dechow et al., 1995; Francis et al., 2004).

2.3 Cost of Capital

The cost of capital indicates the return required by investors and creditors to compensate for the risk associated with providing funds for a business. This is a crucial indicator in corporate finance since it directly influences investment decisions and the firm's capital structure (Brealey, Myers, & Allen, 2017).

The Weighted Average Cost of Capital (WACC) is extensively employed to determine the cost of capital in empirical research. This metric aggregates the cost of equity and the cost of debt according to the proportion of each capital type utilised by the enterprise (Modigliani & Miller, 1958).

When investors see more risks, they will demand a higher expected return, hence elevating the business's cost of capital. Conversely, when the perceived amount of risk diminishes, the cost of capital typically decreases (Lambert, Leuz, & Verrecchia, 2007).

2.4 Financial Leverage

Financial leverage is a measure of the extent to which a business uses debt to finance its operations and investments. Businesses can take advantage of tax incentives and expand operations using debt. However, financial risk also increases with high leverage (Myers, 1984).

In the case of unstable cash flow, businesses with high levels of debt may face increased payment pressure, which can increase the risk of insolvency. Therefore, financial leverage is often considered a crucial factor in assessing the risk level of a business by investors and creditors (Jensen & Meckling, 1976).

2.4 Hypothesis Development

The impact of accounting information quality on the economic performance of businesses has been the subject of numerous empirical studies. These studies demonstrate that investment efficiency, financial constraints, and capital market transparency can be enhanced through the implementation of high-quality financial reporting (Bushman & Smith, 2001).

Some studies show that businesses with high-quality financial reporting generally have lower costs of capital (Francis et al., 2004). This is because transparent financial information reduces information risk and helps investors assess the value of the business more accurately (Lambert et al., 2007).

However, the results of previous studies are not always consistent. According to several studies, the cost of capital can be influenced by the quality of accounting information, the development of financial markets, or the financial characteristics of the enterprise (Bhattacharya, Desai, & Venkataraman, 2013).

Furthermore, most previous studies have been conducted in developed markets and used multi-sector data samples. Empirical evidence in emerging markets, particularly in the real estate sector, remains relatively scarce.

This study investigates the correlation between the quality of accounting information and the cost of capital for businesses, building upon previous theoretical frameworks and empirical research. Information asymmetric theory and agency theory suggest that clear and reliable financial information can help bridge the gap between businesses and investors. The cost of capital decreases as investors gain a better understanding of the business's financial situation and risks. This is due to a reduction in the required rate of return.

However, the impact of accounting information accuracy on the cost of financing may depend on the level of financial risk of the business. The likelihood of bankruptcy increases when a company has a high level of debt. In this case, investors and creditors may prioritize financial risk over relying solely on the accuracy of accounting information.

Based on the preceding theoretical background and analysis, the study proposes the following hypotheses:

H1: The quality of accounting information is inversely correlated with the cost of capital.

Furthermore, when a company has a high level of debt, its financial risk increases, and investors may be more concerned about whether the company can repay its debts. This may make the accuracy of accounting information less important when considering the cost of capital.

H2: Financial leverage reduces the strength of the inverse relationship between the quality of accounting information and the cost of capital.

3. Methodology

3.1 Data

The study sample includes real estate companies listed on Vietnamese stock exchanges, including the Ho Chi Minh Stock Exchange (HOSE), the Hanoi Stock Exchange (HNX), and the UPCoM market. Companies are included in the sample if they have fully audited financial statements and the necessary information to generate the research variables. We exclude observations lacking sufficient data to ensure the consistency of the dataset. The study sample has approximately 200 real estate companies listed between 2010 and 2025, creating an unbalanced panel dataset. The use of panel data allows the study to consider both data changes over time and differences between companies. The Refinitiv Eikon database was the primary source of financial data for the companies. This data is then integrated with information from the financial reports of listed companies.

3.2 Variable Measurement

Dependent Variable

Cost of capital serves as the dependent variable in this study. Weighted Average Cost of Capital (WACC) is used to quantify the cost of capital in this research.

WACC is a measure of a firm's total cost of capital, encompassing both the cost of equity and the cost of debt, proportional to the proportion of each source of capital in the company's capital structure.

Independent Variable

The primary independent variable of this study is Accounting Information Quality (AIQ).

This study assesses accounting information quality by analyzing discretionary provisions calculated using a modified Jones Model. Many empirical accounting studies use this indicator to show how well a corporation is managing its earnings. The higher the accounting information quality, the lower the absolute value of discretionary accruals.

Moderating Variable

The moderating variable in this study is financial leverage (LEV).

Financial leverage is measured by the ratio of total debt to total assets of the business. This indicator reflects the extent to which the business uses debt in its capital structure and the level of financial risk it faces.

Control Variables

To limit bias in model estimation, the study uses several control variables commonly found in studies on the cost of capital, including firm size measured by the natural logarithm of total assets, firm growth measured by the revenue growth rate, profitability measured by the return on assets (ROA) and asset tangibility measured by the ratio of tangible fixed assets to total assets. These control variables help reflect the financial

characteristics of the business that may affect the cost of capital.

3.3 Research Model

To test the research hypotheses, the study uses a panel data regression model.

The basic model is established as follows:

$$COC_{it} = \beta_0 + \beta_1(AIQ_{it}) + \beta_2(LEV_{it}) + \sum \beta_k Controls_{it} + \epsilon_{it}$$

Where:

- $WACC_{it}$: Cost of capital of firm i in year t
- AIQ_{it} : Accounting information quality
- LEV_{it} : Financial leverage
- $Controls_{it}$: Control variables, including firm size, growth, profitability, asset structure, interest rate, and GDP growth
- ϵ_{it} : Error term

To examine the moderating role of financial leverage, the study uses a regression model with the following interaction variable:

$$COC_{it} = \beta_0 + \beta_1(AIQ_{it}) + \beta_2(LEV_{it}) + \beta_3(AIQ_{it} \times LEV_{it}) + \sum \beta_k Controls_{it} + \epsilon_{it}$$

Where:

- $AIQ_{it} \times LEV_{it}$: The interaction variable is used to examine the moderating effect of financial leverage.

The regression models is estimated using Pooled OLS, Fixed Effects Model (FEM), and Random Effects Model (REM) methods to determine the model that best fits the panel data.

4. Conclusion

This study aims to develop a research model investigating the correlation between accounting information quality and the cost of capital of real estate companies listed on the Vietnamese stock market from 2010 to 2025, while also exploring the moderating impact of financial leverage.

This study is expected to contribute to academic literature in three main ways. First, it will provide empirical evidence for the correlation between accounting information quality and the cost of capital in emerging markets, characterized by limited financial information transparency. Second, it will examine how financial leverage can alter how financial risk affects the economic impact of accounting information quality. Third, it will provide important insights into the function of financial transparency in improving corporate financial conditions by focusing on a capital-intensive industry in the context of an emerging market, Vietnam.

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ESG PERFORMANCE, FINANCIAL CONSTRAINTS, AND CORPORATE INVESTMENT EFFICIENCY OF U.K. LISTED FIRMS

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Abstract

The research examines the relationship between Environmental, Social, and Governance (ESG) performance and the efficiency of corporate investments in the UK-listed firms with specific interest in the effect of financial constraints. Data of non-financial firms listed on the London Stock Exchange during the 2010-2024 period are obtained from the LSEG database, including firm-level ESG scores. The analysis uses Pooled Ordinary Least Squares (OLS) regression with industry and year fixed effects and control for firm-specific variables, including firm size, firm age, leverage, operating cash flow, and profitability to ensure that the estimations are robust. Empirical evidence suggests that an increase in ESG performance leads to a significant improvement in corporate investment efficiency. Particularly, ESG performance has been documented to reduce both overinvestment and underinvestment with a more statistically significant impact recorded for underinvestment. Moreover, the findings show that the positive influence of ESG on the efficiency of investments is stronger in financially unconstrained firms. These results underscore the significant role of ESG practices in increasing effective resource allocations and minimizing inefficiencies in corporate investment decision-making. The efficiency benefits of ESG, however, depend on the financial flexibility of firms. The research offers useful insights for managers, investors, and policymakers by highlighting the necessity to encourage the integration of ESG, as well as to enhance access to financing, especially those facing financial constraints, to ensure sustainable and efficient corporate growth.

Keywords: *ESG, financial constraint, corporate investment efficiency, UK firm*

JEL Classifications: G31, G32, G34

1.Introduction

In the United Kingdom, corporate investment plays a crucial role in supporting the performance of individual firms in a mature and highly innovative capital market, as well as in macroeconomic indicators like GDP growth, employment creation, and competitive advantage in international market. Corporate investment in the UK has generally fluctuated around 15-20% of GDP, with notable booms, recessions, and a gradual structural shift toward intangible assets such as research and development (R&D) and software (The World Bank, 2024). The official estimates show that UK capital investment was about 17.9% of GDP in 2024, marginally higher than in 2023 at 17.2%, indicating that slow recovery in UK private investment after the pandemic (The Workbook, 2024). By 2025, corporate investment is shown to increase nearly 3.5% compared to 2024, albeit at a slower pace than in the immediate post-pandemic years (Trading Economics, 2026). However, such advantageous outcomes are dependent on the effectiveness of investments, meaning the absence of resource wastage. Inefficient investment appears as overinvestment when companies may invest in negative net present value (NPV) projects owing to agency issues or lax monitoring, or underinvestment when companies may be subjected to capital rationing and so they will forego opportunities that would yield good returns (Jensen, 1986; Stein, 2003).

The Environmental, Social, and Governance (ESG) aspects have become crucial in the current corporate strategy and include sustainable practices, stakeholder relationships, and ethical governance. In previous studies, high ESG performance has been associated with high firm performance, and in meta-analysis research, Friede et al. (2015) identified 90% of studies across over 2,000 studies where ESG performance had a positive correlation with financial performance. These advantages are reached due to lower risks and access to capital of the stakeholders (Eccles et al., 2014).

The efficiency of investment is affected by ESG performance as it reduces the frictions causing distortions in capital allocation. Strong ESG leads to better risk management and stakeholder confidence, which restrains excessive managerial investment by increasing monitoring and allows underinvested companies to get external financing at reduced costs (Gillan et al., 2021). On the other hand, inefficient ESG causes a worsening of inefficiencies through increased capital costs (Kruger, 2015).

Financial constraints, described as restrictions in accessing external capital because of high costs of capital or information asymmetry, may adversely affect corporate investment efficiency. The constrained firms do 10-15% underinvesting compared to unconstrained counterparts, discarding growth opportunities (Fazzari et al., 1988; Kaplan et al., 1997). After 2008, approximately 30% of listed companies in the UK had binding restrictions, which enhanced underinvestment in tight credit (Hadlock et al., 2010).

Despite the documented presence of ESG performance, investment efficiency, and financial constraints in the individual case, a noticeable gap can be noted in the area of the literature on the interaction of these variables in the UK context. Although the research on international and emerging-market has started to explore the role of ESG in investment decisions (e.g., Bilyay-Erdogan, 2024), none of the studies have explicitly focused on the impact of ESG performance on corporate investment efficiency among UK-listed

companies, as well as none of the studies has analyzed this relationship between financially constrained and unconstrained companies in a rigorous manner. This gap is particularly relevant in the context of the unique institutional environment of the UK, with close and mandatory ESG disclosure requirements, a complex but conservative financial market, and an endemic investment performance. Therefore, our study aims to fill this gap by empirically examining this nexus and determines the connection between ESG performance, financial constraints, and the efficiency of corporate investments in the UK-listed firms. Our findings are expected to provide new scholarly knowledge and practical implications to the corporate strategists, investors, and policymakers in a leading developed economy.

The main aim of the paper is to analyze the relationship between ESG performance and corporate investment efficiency of UK-listed companies, including both over and underinvestment tendencies. Moreover, the study investigates the existence of varying effects of ESG performance on investment efficiency between constrained and unconstrained firms in the UK market. The data covers non-financial UK companies listed on the London Stock Exchange during the 2010-2024 period. While UK-listed firms are operating in an environment of high financial volatility, the study highlights ESG as a tool of strategic decision-making on investment. These insights help firms focus more on ESG-integrated portfolios and reduce risks related to the ineffective allocation of capital. Overall, the study can contribute to informed decision-making to balance financial health with ethical requirements.

The structure of this paper proceeds as follows. Section 2 illustrates crucial findings of previous studies and develops hypotheses. Section 3 discusses data, research methods, as well as research models. Section 4 describes regression results and key findings of the study. Lastly, section 5 concludes and provides suggestions.

2. Literature review and hypothesis development

2.1. Agency theory and corporate investment efficiency

Efficiency in corporate investment simply implies investing in projects which help increase the value of the business. Biddle et al. (2009) indicates that companies need to take in any project whose net present value (NPV) is positive and leave out those whose NPV is negative. There are two kinds of inefficiency that appear when companies do not follow these rules.

Overinvestment is when a firm invests in NPV-negative projects, leading to decreasing the firm's value. The agency theory, which was first formulated by Jensen and Meckling (1976), is one of the core theories explaining the overinvestment behaviour in corporate decision-making. It states that managers may pursue increasing the size of the firm and their own rewards rather than improving firm value or interests of shareholders. It is reflected in the expense of additional monitoring by shareholders, bonding cost to assure alignment, and residual losses (Abdulaziz, 2024). Correspondingly, Richardson (2006) and Biddle et al. (2009) demonstrate that the poor quality of financial reporting contributes to overinvestment by increasing the information obscurity and encouraging managerial opportunism. In addition, information asymmetry between the corporate insider and the external provider of capital is another root cause of investment inefficiency, particularly underinvestment (Khan et al., 2024). Later studies reveal that such an information

issue gets worse once firms look for external capital to finance the projects and restricts the financial decisions (Morellec et al., 2011; Naeem et al., 2019).

2.2. The roles of ESG

ESG (Environmental, Social, and Governance) provides a broader framework for evaluating a firm's sustainability and ethical performance beyond traditional financial metrics. It encompasses environmental issues (e.g., climate risk and emissions), social factors (e.g., labor practices and community relations), and governance aspects (e.g., board structure and anti-corruption) (Friede et al., 2015).

The primary work to understand the importance of ESG performance is the stakeholder theory by Freeman (1984). The theory indicates that companies with unbalanced systems of interdependent relationships may provoke conflicts, reputational hits, and the loss of vital resources (Aydogmus et al., 2022). Strong ESG performance helps firms build trust, enhance reputation, and improve competitiveness, ultimately supporting sustainable growth (Li et al., 2024; Marei et al., 2025).

A key mechanism through ESG is transparency and disclosure. High-quality ESG reports can assist in attracting additional capital, securing better alliances, and reducing the cost of external financing (Li et al., 2024; Moussa et al., 2024). In addition, official channels bring positive feedback from investors, customers, and suppliers, which then eases access to resources, cuts transaction costs, and improves capital usages (Bilyay-Ergogan et al., 2024).

In the UK context, where stakeholder considerations are embedded in regulations and investor behaviours, ESG functions as a strategic asset that facilitates information flow and supports more efficient corporate investments.

2.3. ESG performance and corporate investment efficiency

High-quality ESG performance is linked to better corporate investment efficiency, which means that companies can better use their money on projects that will make them money and stay away from projects that will lose them money. A growing body of empirical research shows a generally positive link between ESG scores and investment efficiency through several key channels: reduced information asymmetry and lower cost of capital (Bilyay-Erdogan et al., 2024), mitigation of agency problems and better alignment with stakeholder interests (Benlemlih et al., 2018; Samet et al., 2017), enhanced reputation and lower perceived risk (Chasiotis et al., 2023), reduced financing constraints (Li et al., 2024), improved audit quality and market monitoring (Wang et al., 2022; Lian et al., 2024), and interaction with business strategy (Lin et al., 2021). A comprehensive review conducted by Gilan et al. (2021) predominantly corroborates these benefits for financial decision-making, though some heterogeneity exists.

Initial research substantiates this correlation. Samet et al. (2017) discovered substantial positive impacts of ESG on investment efficiency within European firms through both direct (stakeholder alignment) and indirect (facilitated resource access) mechanisms. Benlemlih et al. (2018) examined more than 21,000 firm-year observations (1998–2012) in the United States and demonstrated that superior ESG performance mitigates investment inefficiency, especially through stakeholder-related dimensions. Lin et al. (2020)

emphasized that business strategy influences the effect: high-ESG firms employing Defender strategies generally enhance efficiency, whereas Prospectors may encounter over-investment in certain instances.

There is a lot of similar empirical evidence from the Europe. Ben Khediri (2021) found a positive link between ESG and investment efficiency in Western Europe. This was because stakeholders trusted each other more and had better access to money. Bilyay-Erdogan et al. (2024), utilizing data from 1,094 firms across 21 European countries (2002–2019), discovered that ESG is particularly effective in mitigating overinvestment and assisting information-asymmetric firms in evading underinvestment.

Recent studies conducted in China corroborate these findings. Wang et al. (2022), Li et al. (2024), and Lian et al. (2024) demonstrate that robust ESG performance improves investment efficiency by alleviating financing constraints, enhancing audit quality, expanding analyst coverage, and decreasing performance volatility, with more pronounced effects in non-SOEs, firms with low accounting quality, and underdeveloped regions. Li Z. (2025) corroborates the decrease in investment inefficiency via diminished financing constraints and augmented analyst coverage. Sector-specific studies, such as Ma et al. (2025) on agribusiness and Zheng et al. (2025) on banks, along with Chasiotis et al. (2024) on ESG reputational risk, reinforce the notion that superior ESG profiles facilitate quicker and more effective investment adjustments, particularly in volatile markets.

Prior studies consistently demonstrate that superior ESG performance is associated with diminished investment inefficiency. This leads to the following hypothesis:

Hypothesis 1a: ESG performance positively affects corporate investment efficiency.

There are two elements of inefficiency in corporate investments: overinvestment and underinvestment (Richardson, 2006). ESG performance addresses both the agency problem and information asymmetry within the financing channel, likely enhancing overall investment efficiency and mitigating the severity of control deficiencies. Further analysis leads to two specific hypotheses as follows:

Hypothesis 1b: Good ESG performance reduces the overinvestment problem.

Hypothesis 1c: Good ESG performance reduces the underinvestment problem.

2.4. Financial constraints and the effect of ESG on corporate investment efficiency

The free cash flow theory suggests that companies with a lot of free cash flow and weak discipline might put excessive funds into negative-NPV projects (Jensen, 1986). In contrast, firms having shortage of cash might suffer more from underinvestment. Therefore, the overall effect of ESG performance on how well companies invest is different between these two company types. Guariglia (2008) affirms that both internal and external constraints substantially distort investment in the UK, particularly for smaller and younger publicly listed companies.

High-quality ESG performance interacts with financial constraints to affect how well investments work. For financially unconstrained firms, ESG (especially the governance pillar) mainly makes things more efficient by fixing agency problems, stopping overinvestment and empire-building, and encouraging better capital allocation by making things more transparent and aligning stakeholders (Li et al., 2024; Liu, 2025; Allman, 2021).

For financially constrained firms, ESG helps by lowering information asymmetry, building trust with

stakeholders, and making it easier to get outside financing. This lowers the cost of equity and debt (Cheng et al., 2014; Goss et al., 2011). It lessens underinvestment, especially by making it easier to get money (Zhao et al., 2026; Li et al., 2024). The advantages are typically diminished for firms that are highly constrained (small, young, heavily leveraged, or non-SOEs), due to structural frictions that impede ESG's efficacy (Xiaoyu, 2023; Bilyay-Erdogan et al., 2024).

Unconstrained firms can use the governance and monitoring benefits of ESG more effectively to reduce agency-related problems. On the other hand, constrained firms face residual financing frictions that limit their ESG benefits to efficient investment. Consequently, financially constrained firms are expected to encounter a diminished positive effect of ESG performance on investment efficiency relative to financially unconstrained firms. This argument leads to the second hypothesis:

Hypothesis 2: The positive effect of ESG performance on corporate investment efficiency is weaker for financially constrained firms compared to financially unconstrained firms.

3. Data and methodology

3.1. Data collection

The study draws on analysis of data from companies listed on the London Stock Exchange (LSE) in the period between 2010 and 2024. Accounting and financial data, including ESG scores, are obtained from the database of London Stock Exchange Group (LSEG). After deleting financial firms, missing observations, and errors, the final sample has 2,075 firm-year observations.

3.2. Research methodology

3.2.1. The measurement of corporate investment inefficiency

Investment efficiency can be the extent to which the exact allocation of capital is in line with maximizing value. Nonetheless, in empirical context, deviations from this optimal standard are often construed as signs of agency problems, information asymmetry, or financial limitations. To evaluate such deviations, the study uses the residual-based approach proposed by Richardson (2006). The residual, the portion of investment not accounted for by the model, is construed as an inefficiency metric. It is widely used in accounting and financial literature to investigate the distortions in investment using this econometric model (Biddle et al., 2009):

$$CAPX_{i,t} = \beta_0 + \beta_1 Q_{i,t-1} + \beta_2 LEV_{i,t-1} + \beta_3 LIQ_{i,t-1} + \beta_4 FSIZE_{i,t-1} + \beta_5 FAGE_{i,t-1} + \beta_6 RET_{i,t-1} + \beta_7 CAPX_{i,t-1} + \sum YEAR + \sum INDU + u_{i,t} \quad (1)$$

CAPX is the aggregate capital expenditure, with i refers to the firm and t to the fiscal year. Q is an indicator of growth opportunities by Tobin (Tobin et al., 1976). LEV captures financial leverage, calculated as the ratio of total debt to total assets. LIQ describes the liquidity position, measured as the proportion of cash relative to total assets. $FSIZE$ refers to firm size, represented by the natural logarithm of total assets. $FAGE$ represents the number of years since the IPO. RET measures profitability, modeled on earnings per share. There are year-by-year and industry-by-industry fixed effects. Lastly, $u_{i,t}$ is the stochastic disturbance. Having estimated the model of expected investment, the residual term indicates the difference between the

actual and anticipated investment. In line with previous research (Richardson, 2006; Biddle et al., 2009), inefficiency in aggregate investment is determined as:

$$INEF_{i,t} = |u_{i,t}|$$

Where INEF is the degree of non-optimal investment. This variable is multiplied by 100 to make it easier to read. To differentiate two types of inefficiency, the residuals are separated into two main types. When the residuals are positive ($u_{i,t} > 0$), it refers to overinvestment (OVERINV) in which firms invest more than the optimal level perceived by fundamentals. Conversely, there are negative residuals ($u_{i,t} < 0$) which indicate underinvestment (UNDINV) when companies invest less than the anticipated amount. This breakdown relates to the recent ESG-investment literature, including data in emerging markets (Li et al., 2024).

3.2.2. The measurement of financial constraints

Financial constraints become considerable when companies are faced with the challenges of accessing outside capital because of information asymmetry, deficient collateral facilities, or market imperfections. This level of financial limitations needs to be measured to determine the efficiency of investment (Fazzari et al., 1988). The Kaplan-Zingales (KZ) Index is particularly appropriate for the study because it reflects the sensitivity of a firm regarding its internal cash flow, leverage, dividend policy, and liquidity status. For this research, the KZ Index is measured as below:

$$KZ_{i,t} = -1.002 \frac{CF_{i,t}}{PPE_{i,t-1}} + 0.2826Q_{i,t} + 3.1392 \frac{TD_{i,t}}{TC_{i,t}} - 39.3678 \frac{DIV_{i,t}}{PPE_{i,t-1}} - 1.3148 \frac{CASH_{i,t}}{PPE_{i,t-1}} \quad (2)$$

KZ index, a financial metric, represents a company's level of financial constraint, with i refers to the firm and t to the year. CF refers to the operating cash flow which captures internally generated resources. PPE is the combination of property, plant, and equipment. Q is a measurement of potential growth. TD is described as total debt, a combination of long-term debt and short-term borrowing. TC represents total capital, a sum of the equity and debt financing of the firm. DIV captures cash dividend paid, which is a measure of financial wellbeings. CASH is the aggregate of cash and cash equivalents.

To make the role of financial constraints empirical testable, the continuous KZ index is converted into a binary classification variable in this study (Lamont et al., 2001). The dummy variable, FINCON, has the following definition:

FINCON = 1 when the value of the firm annual KZ index is above the sample median;

FINCON = 0 otherwise.

When FINCON equals 1, firms are termed as financially constrained, whereas those with FINCON equals 0 are financially unconstrained.

3.2.3. Research models

The study uses regression models that are regularly used in the research of corporate investment efficiency (Li et al., 2024; Lian et al., 2024). The initial stage involves estimating the expected (optimal) level of investment and determining inefficiency indicators, which are INEF, OVERINV, and UNDIV. These inefficiency measures are included in the second stage as the dependent variable in panel regressions

evaluating the impact of ESG performance on investment efficiency and controlling for firm-specific characteristics discussed in the existing literature. All the models are estimated by Pooled Ordinary Least Squares (Pooled OLS) using industry and year fixed effects.

Under Hypothesis 1a, where good ESG performance is expected to increase the overall corporate investment efficiency, the following baseline model is specified:

$$INEF_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 FAGE_{i,t} + \beta_3 FSIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 OCF_{i,t} + \beta_6 PROF_{i,t} + \text{Industry fixed effect} + \text{Year fixed effect} + \varepsilon_{i,t} \quad (3a)$$

To examine the hypothesis that high ESG performance restrains overinvestment (Hypothesis 1b), the model is:

$$OVERINV_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 FAGE_{i,t} + \beta_3 FSIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 OCF_{i,t} + \beta_6 PROF_{i,t} + \text{Industry fixed effect} + \text{Year fixed effect} + \varepsilon_{i,t} \quad (3b)$$

To test the effect of high ESG performance in reducing underinvestment (Hypothesis 1c), the model is specified as follows:

$$UNDINV_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 FAGE_{i,t} + \beta_3 FSIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 OCF_{i,t} + \beta_6 PROF_{i,t} + \text{Industry fixed effect} + \text{Year fixed effect} + \varepsilon_{i,t} \quad (3c)$$

INEF illustrates corporate investment inefficiency, which is separated into OVERINV (overinvestment) and UNDINV (underinvestment), with i refers to the firm and t to the year. ESG represents performance of ESG. FAGE is number of years since IPO. FSIZE describes the size of firm. LEV is financial leverage. OCF and PROF are operating cash flow and profitability, respectively.

Hypothesis 2 argues that the positive impact of ESG performance on corporate investment efficiency is less pronounced for financially constrained firms compared to financially unconstrained ones. The three regressions (3a, 3b, 3c) are re-estimated using two subsamples: financially constrained firms (FINCON = 1) and financially unconstrained firms (FINCON = 0). The moderating effect of financial constraints is explained through the comparative evaluation of the magnitude and statistical significance of the ESG coefficient between these two subsamples.

Table 1: Variable descriptions and measurements

Symbol	Variable	Description
INEF	Investment inefficiency	$INEF_{i,t} = u_{i,t} \times 100$ (Richardson, 2006; Biddle et al., 2009)
OVERINV	Overinvestment	$OVERINV = u_{i,t} \times 100$ (if $u_{i,t} > 0$) (Richardson, 2006; Li et al., 2024)
UNDINV	Underinvestment	$UNDINV = u_{i,t} \times 100$ (if $u_{i,t} < 0$)
ESG	ESG performance	ESG = LSEG overall ESG score (Biddle et al., 2009; Li et al., 2024)
FINCON	Financial constraints	FINCON = 1 if KZ index > sample-year median (financially constrained) FINCON = 0 otherwise (financially unconstrained)

		(Lamont et al., 2001; Fazzari et al., 1988)
FAGE	Firm age	FAGE = Ln (Number of listing years) (Richardson, 2006)
FSIZE	Firm size	FSIZE = Ln (Total assets) (Richardson, 2006)
LEV	Leverage	$LEV = \frac{\text{Total debt}}{\text{Total assets}}$ (Myers, 1977; Richardson, 2006)
OCF	Operating cash flow	$OCF = \frac{\text{Cash flows from operating activities}}{\text{Total assets}}$ (Jensen, 1986)
PROF	Profitability	$ROE = \frac{\text{Net income}}{\text{Average shareholders' equity}}$ (Lang et al., 1993)

4. Empirical results

4.1. Descriptive statistics

Descriptive analysis is conducted for three samples: (1) the sample of all UK-listed firms (Table 2), (2) the sample of financially unconstrained firms (Table 3), and (3) the sample of financially constrained firms (Table 4).

In Table 2, the median and mean of the investment inefficiency (INEF) are 1.352 and 1.851, respectively. Since the mean is greater than the median, the distribution is skewed to the right, meaning that a small few firms have extremely bad investment inefficiencies. The range of the variables is large (minimum = 0.030 and maximum = 10.853) with the standard deviation = 1.838, which proves high cross-sectional heterogeneity in corporate investment efficiency of UK-listed firms.

In the decomposition of inefficiency, the average of overinvestment (OVERINV) is 2.378, significantly greater than the figure for underinvestment (UNDINV) at 1.588. This can be further confirmed by the median values (1.470 for OVERINV and 1.268 for UNDINV). Moreover, OVERINV has a broader range (between 0 and 34.551) than UNDINV (from 0.003 to 11.543), which indicates that there are extreme values of overinvestment. This trend is in line with the UK corporate environment in which ability to access equity markets and relatively low interest rates throughout much of the sample period might have induced sporadic overinvestment in growth-oriented projects.

Table 2: Descriptive statistics for all firms

	N	Mean	Median	Min	Max	Std. Dev.
INEF	2,075	1.851	1.352	0.030	10.853	1.838
OVERINV	827	2.378	1.470	0.000	34.551	3.102
UNDINV	1,248	1.588	1.268	0.003	11.543	1.303
ESG	2,075	51.079	51.838	4.647	95.455	19.825

FINCON	2,075	0.474	0	0	1	0.499
FAGE	2,075	2.909	2.996	0.693	4.454	0.812
FSIZE	2,075	21.042	20.887	17.118	26.627	1.800
LEV	2,075	0.212	0.203	0	0.612	0.145
OCF	2,075	0.100	0.094	-0.096	0.385	0.073
PROF	2,075	0.095	0.109	-1.400	0.807	0.261

For the main independent variable, ESG performance has a mean of 51.079 and a median of 51.838, indicating a relatively symmetric distribution around the midpoint of the ESG scale (0–100). The scores differ significantly among firms (minimum = 4.647, maximum = 95.455) and the standard deviation is 19.825. This large cross-sectional difference emphasizes the lack of homogeneity in ESG practices of UK-listed companies, even though the country has the highest rank in terms of sustainability reporting and regulations, including the UK Corporate Governance Code and TCFD recommendations. Although the average score indicates an intermediate level of ESG integration, the great standard deviation highlights that there are firms which have adopted ambitious ESG strategies and those that are at early implementation stages.

Financial constraints variable (FINCON) has a mean of 0.474, which means that around 47.4 percent of the values fall under the financially constrained firms. The median value of 0 indicates that for this binary variable there is a comparatively even distribution of constrained and unconstrained firms, which is suitable in the analysis of subsamples.

Moving to firm characteristics, firm age (FAGE) in logarithmic form has a mean of 2.909, and a median of 2.996, with the lowest and highest values of 0.693 and 4.454 respectively. This shows that there is a difference in the maturity of firms in the sample with a slight left-skewed distribution. In the same way, firm size (FSIZE) in logarithmic terms has an average of 21.042 and a median of 20.887. The FSIZE distribution is in the range of 17.118 to 26.627 (standard deviation = 1.800), which is a testament to the fact that the sample is composed of few relatively small firms and some very large firms.

For financial variables (in percentage terms), the leverage (LEV) is averaged at 0.212 (21.2%) with a median of 0.203 (20.3%), which means that firms use a moderate amount of debt financing. The 0-0.612 range indicates that there are debt-free firms, and some have high leverage. The mean operating cash flow (OCF) is 0.100 (10.0%) and the median is 0.094 (9.4%), meaning that the firms tend to produce positive internal cash flows. Nevertheless, the lowest figure of -0.096 (-9.6%) indicates that there are firms that are having negative cash flows from operations, and this could limit their investment activities. The mean and median of profitability (PROF) are 0.095 (9.5%) and 0.109 (10.9%), respectively, which suggest that the overall profitability of firms is positive. However, the widerange between -1.400 (-140%) and 0.807 (80.7%) indicates great variability.

Table 3: Descriptive statistics for financially unconstrained firms

	N	Mean	Median
INEF	1,091	1.594	1.213
OVERINV	340	1.895	1.184

UNDINV	751	1.529	1.231
ESG	1,091	51.057	51.930
FAGE	1,091	2.915	2.996
FSIZE	1,091	20.944	20.853
LEV	1,091	0.185	0.182
OCF	1,091	0.108	0.100
PROF	1,091	0.166	0.143

Table 4: Descriptive statistics for financially constrained firms

	N	Mean	Median
INEF	984	2.136	1.518
OVERINV	487	2.716	1.731
UNDINV	497	1.677	1.351
ESG	984	51.105	51.814
FAGE	984	2.903	2.996
FSIZE	984	21.150	20.928
LEV	984	0.242	0.220
OCF	984	0.090	0.087
PROF	984	0.016	0.075

As can be seen in Tables 3 and 4, financially constrained firms are characterized by a higher average inefficiency (mean = 2.136; median = 1.518) than unconstrained firms (mean = 1.594; median = 1.213). It shows that the constrained firms are more inclined to deviate from the optimum levels of investment, which implies that financial frictions can further increase investment distortions.

In decomposing inefficiency, the overinvestment (OVERINV) is significantly greater among constrained firms, with a mean of 2.716 and a median of 1.731, compared to 1.895 and 1.184 among unconstrained firms. Likewise, underinvestment (UNDINV) is also a bit higher in constrained firms (mean = 1.677; median = 1.351) than in unconstrained firms (mean = 1.529; median = 1.231). These results indicate that both forms of inefficiency are related to financial constraints though the disparity seems more evident with overinvestment.

Conversely, there is a very close similarity in ESG performance between the two groups. The mean ESG scores are 51.057 for unconstrained firms and 51.105 for constrained firms, with nearly identical median values. This suggests that the variances in efficiency of investment between the two groups are not likely to be motivated by ESG level alone, which justifies additional regression analysis to investigate different effects

Generally, the comparison demonstrates that financially constrained companies are more likely to exhibit greater inefficiency in investments, higher leverage, and lower cash flow and profitability, but ESG performance is generally comparable across groups.

4.2. Correlation coefficients

Table 5: Correlation matrix

Variable s	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. INEF	1.000									
2. OVERIN	0.920*	1.000								
3. UNDIN	**		1.000							
4. ESG	-0.160***	-0.169***	-0.197***	1.000						
5. FINCORN	0.148**	0.130**	0.056*	0.001	1.000					
6. FAGE	-0.141***	-0.127***	-0.208***	0.244**	-0.008	1.000				
7. FSIZE	-0.123***	-0.153***	-0.117***	0.744**	0.057**	0.182**	1.000			
8. LEV	-0.138***	-0.145***	-0.191***	0.269**	0.198**	0.002	0.323**	1.000		
9. OCF	0.138**	0.152**	0.005	-0.001	-0.126***	-0.118***	-0.084***	-0.130***	1.000	
10. PROF	-0.046**	-0.049	-0.031	0.112**	-0.286***	0.046*	0.097**	-0.152***	0.444**	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5 shows the correlation matrix of all variables in the entire sample of 2,075 firm-year observations. The association between ESG performance and the total investment inefficiency (INEF) is -0.160 which is statistically significant at the 1% level. This is a negative and very significant relationship, showing that an increase in ESG scores correlates with a decrease in investment inefficiency. This finding is entirely consistent with the expectation, which forecasts that ESG improves corporate investment efficiency, based on the previous evidence of Li et al. (2024) and Lian et al. (2024).

The same trend occurs when investment inefficiency is broken into its over and underinvestment elements. ESG has a correlation with overinvestment (OVERINV) of -0.169 and with underinvestment (UNDINV) of -0.197. The two coefficients are negative and significant at the 1% level. Interestingly, the negative correlation is a little higher in the case of underinvestment than overinvestment, suggesting that ESG can be more relevant in mitigating financing-related inefficiencies. This makes economic sense, as high ESG performance may boost the transparency and credibility of firms, thus facilitating external financing.

In terms of financial constraints, ESG has an almost zero correlation with FINCON (0.001) and is statistically non-significant. This implies that there is no systematic difference in ESG performance between the financially constrained and unconstrained firms in the sample. The correlation between ESG and firm size is relatively high because larger firms tend to have more resources and more incentives to practice ESG. Nevertheless, the correlation coefficient (0.744) is lower than the traditional 0.75 threshold, indicating that multicollinearity is not a significant issue and both variables could be included in the regression models. In the case of other control variables, ESG has a positive relationship with firm age (0.244), leverage (0.269), and profitability (0.112), but no meaningful relationship with operating cash flow. These correlations are typically small in scale and do not cause any concerns on multicollinearity.

Financial constraints (FINCON) have a significant positive correlation with INEF (0.148), which confirms the anticipated positive correlation. This observation indicates that financially constrained companies have a higher probability of inefficient investment, which agrees with the previous research (Guariglia, 2008; Zhao et al., 2026).

The negative correlation between firm age (FAGE) and INEF (-0.141) shows that older firms are less likely to experience investment inefficiency. This correlates with the assertion that established companies are better governed and have more predictable cashflows (Richardson, 2006). Likewise, the firm size (FSIZE) has a negative relationship with INEF (-0.123), indicating that bigger firms use capital more effectively, which is in line with Biddle et al. (2009).

Leverage (LEV) is also negatively correlated with INEF (-0.138) and the correlation is statistically significant, which supports the disciplinary aspect of debt in reducing agency costs of free cash flows and thus lowering inefficient investment, as postulated by Jensen (1986). Operating cash flow (OCF) has a positive and statistically significant correlation with INEF (0.138), which agrees with the expected impact. This finding confirms the argument that increased internal cash flows can cause inefficient investment because of possible incentives of overinvestment, as suggested by the free cash flow hypothesis (Jensen, 1986). Lastly, profitability (PROF) is negatively correlated with INEF (-0.046); and the correlation is statistically significant at the 5% level although relatively low value. The result broadly upholds the anticipation that the more lucrative companies are inclined to invest more effectively (Richardson, 2006; Biddle et al., 2009).

4.3. Regression results

4.3.1. The effect of ESG performance on corporate investment efficiency

Table 6: Results of regression for all firms

Variables	Inefficiency	Overinvestment	Underinvestment
Constant	2.991*** (0.694)	3.933** (1.854)	3.682*** (0.586)
ESG	-0.010*** (0.003)	-0.015* (0.008)	-0.011*** (0.003)
FAGE	-0.166*** (0.049)	-0.185 (0.144)	-0.281*** (0.040)

FSIZE	-0.013 (0.035)	-0.084 (0.093)	0.005 (0.030)
LEV	-0.784*** (0.290)	-0.765 (0.805)	-1.173*** (0.243)
OCF	3.145*** (0.612)	6.292*** (1.711)	-2.336*** (0.523)
PROF	-0.579*** (0.173)	-1.082** (0.444)	0.187 (0.151)
Adjusted R-squared	0.131	0.114	0.305
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Number of obs.	2,075	827	1,248

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; standard errors in parentheses

As can be seen from Table 6, in the case of overall investment inefficiency, the coefficient on ESG is -0.010 and statistically significant at the 1% level. The negative coefficient signifies that a one-unit increase in the score of ESG leads to a reduction in the investment inefficiency of 0.010 units, other things remain unchanged. In other words, this result shows that higher ESG performance is associated with lower levels of investment inefficiency, supporting Hypothesis 1a. The result aligns with a wealth of previous research that has reported the positive role of ESG in enhancing investment efficiency. Indicatively, Benlemlih et al. (2018) and Samet et al. (2017) conclude that companies that have a more intense ESG engagement have more efficient investment behaviors. Recent research, e.g. Bilyay-Erdogan et al. (2024), Lian et al. (2024), and Li et al. (2025), also support the fact that ESG performance leads to a better investment efficiency by improving the corporate governance structures in place and minimizing the informational frictions. On the same note, Wang et al. (2022) and Lin et al. (2020) emphasize that ESG enhances surveillance and addresses managerial choices to shareholders perspectives.

Theoretically, this finding can be attributed to agency theory as well as information asymmetry theory. ESG practices make transparency and accountability more effective, thus lowering agency costs (Jensen and Meckling, 1976) and diminishing managerial opportunism. Meanwhile, better disclosure and stakeholder relations lessen information asymmetry (Lang et al., 1993), which allows allocating capital more efficiently. Within the context of Richardson (2006) and Biddle et al. (2009) investment efficiency framework, the results indicate that ESG is a significant governance tool that reduces suboptimal investment.

Moving on to the control variables, the age of a firm (FAGE) has a negative and significant correlation with inefficiency (-0.166***) which indicates that the older a firm is, the more efficiently it can allocate capital. This is in line with Richardson (2006) and Vincenzo et al. (2023), who claim that mature firms have better investment decisions thanks to experiences in operations and monitoring and less information asymmetry. The coefficient on firm size (FSIZE) is negative but not statistically significant (-0.013). Although the negative sign aligns with the scale benefits argument expected by Biddle et al. (2009), the statistical

insignificance suggests that the effect of firm size might be subsumed by other factors, such as ESG and firm age. The fact that leverage (LEV) has a negative coefficient (-0.784***) is consistent with the disciplinary role of debt in reducing free cash flows and/or debt providing an external financing source, thereby mitigating investment inefficiency. The finding is in line with Jensen (1986) and Aivazian (2005) but might contrast with the debt overhang problem of excessive leverage documented by Myers (1977). The coefficient on operating cash flow (OCF) is positive and significant (3.145***) indicating the classic free-cash-flow problem in which firms with large free cash flows suffer from overinvestment (Jensen, 1986). Lastly, profitability (PROF) has a negative and significant coefficient (-0.579***), which means that more profitable firms make investments more efficiently, consistent with the finding of Biddle et al. (2009).

In the case of overinvestment, ESG has a negative coefficient of -0.015 and is statistically significant at the 10% level. This indicates that companies that have greater ESG performance are less inclined to overinvest, supporting Hypothesis 1b although the statistical significance is lower than that of the overall inefficiency model. This result also aligns with the previous research that focuses on the importance of ESG in reducing the agency-induced overinvestment. Benlemlih et al. (2018), Bilyay-Erdogan et al. (2024), and Wang et al. (2022) report that ESG practices enhance corporate governance and minimize inefficient expansions. Equally, Lian et al. (2024) and Li et al. (2025) discover that ESG restricts discretion by managers, thus restraining the investment in negative-NPV projects.

Free cash flow and managerial incentives usually cause firms to overinvest (Jensen, 1986; Richardson, 2006). ESG performance enhances stakeholder monitoring and enforces more accountability, thus restricting managerial overconfidence and opportunistic actions (Jensen and Meckling, 1976; Stein, 2003). Consequently, companies that have a greater ESG performance have fewer chances of overinvestment. Nevertheless, the comparatively lower statistical significance indicates that ESG could be used to counter overinvestment partially. It is understandable, because overinvestment depends on a variety of factors, such as managerial bias, or excess liquidity, which cannot be completely eradicated by ESG mechanisms (He et al., 2016; Zhao et al., 2026).

As for underinvestment, the results show that ESG has a coefficient of -0.011 and is statistically significant at the 1% level, suggesting that higher ESG performance is associated with lower levels of underinvestment, supporting Hypothesis 1c. The evidence is in line with the findings from prior studies. Samet et al. (2017), Wang et al. (2022), Li et al. (2024), Liu (2025), and Ma et al. (2025) all report that ESG performance alleviates underinvestment. Cheng et al. (2014) demonstrate that the higher the ESG performance of the firms, the lower the cost of capital and the better access to external financing. On the same note, Goss et al. (2011) discover that socially responsible companies can get more favorable terms on loans and hence invest more efficiently in profitable projects.

This finding is very close to the information asymmetry and financial constraint theories. Underinvestment exists when companies cannot fund positive-NPV projects because of information asymmetry (Myers et al., 1984) and a lack of access to capital (Fazzari et al., 1988). ESG performance decreases these frictions, boosting transparency, credibility, and stakeholder trust (Eccles et al., 2014; Lang et al., 1993). Consequently, companies can more easily tap into external capital and make value-added investments. It is important to note that ESG is found to be more statistically significant in the underinvestment model, indicating that ESG

is more relevant in mitigating financing-related inefficiencies compared to the overinvestment problem caused by agency theory. This finding confirms that ESG is important in alleviating capital market frictions and enhancing the efficiency of investment by facilitating access to capital.

4.3.2. The effect of financial constraints on the relationship between ESG performance and corporate investment efficiency

Table 7: Results of regression for two subsamples: unconstraint and constraint

Variables	Inefficiency		Overinvestment		Underinvestment	
	Unconstraint	Constraint	Unconstraint	Constraint	Unconstraint	Constraint
Constant	1.779** (0.855)	4.974*** (1.113)	5.104 (3.363)	7.179*** (2.311)	1.420* (0.777)	5.616*** (0.941)
ESG	-0.014*** (0.003)	-0.003 (0.005)	-0.017 (0.014)	-0.001 (0.010)	-0.013*** (0.003)	-0.008* (0.004)
FAGE	-0.233*** (0.052)	-0.160* (0.089)	-0.151 (0.219)	-0.410** (0.193)	-0.347*** (0.047)	-0.160** (0.073)
FSIZE	0.061 (0.044)	-0.103* (0.055)	-0.188 (0.173)	-0.210* (0.113)	0.121*** (0.040)	-0.126*** (0.048)
LEV	-1.010*** (0.359)	-1.372*** (0.478)	0.574 (1.475)	-2.095** (1.022)	-1.406*** (0.326)	-0.831** (0.397)
OCF	0.750 (0.704)	7.014*** (1.064)	3.379 (2.705)	10.738*** (2.364)	-2.283*** (0.686)	-2.262 (0.911)
PROF	0.015 (0.265)	-0.577** (0.247)	-0.514 (0.937)	-0.810 (0.521)	0.224 (0.255)	-0.042 (0.205)
Adjusted R-squared	0.206	0.114	0.133	0.132	0.329	0.311
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	1,091	984	340	487	751	497

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; standard errors in parentheses

The regression results of inefficiency model in Table 7 support Hypothesis 2, as the emphasis is on the general inefficiency of investment. When firms are not financially constrained, the coefficient on ESG is -0.014, which is significant at the 1% level, showing that a higher ESG score is strongly related with less investment inefficiency. By a drastic contrast, the ESG coefficient in financially constrained firms only

equals -0.003 and is not statistically significant, suggesting that ESG performance has no significant impact on investment efficiency in firms subjected to binding financial constraints. These two subsamples have a stark contrast in both magnitude and statistical significance of ESG coefficient, which lends strong evidence to Hypothesis 2 which states that the effect of ESG on investment efficiency is weaker for financially constrained firms compared to financially unconstrained firms.

The finding is theoretically consistent with the capital market imperfections model of Hubbard (1998) and Fazzari et al. (1988), who postulate that financially constrained companies incur greater costs of external financing, preventing them from converting positive signals into optimal investment behaviours. Although good ESG performance might decrease information asymmetry and positively affect the perceived creditworthiness of a firm, as the studies by Cheng et al. (2014) and El et al. (2011) would suggest, financially constrained firms might not have the financial leeway to respond to better terms of access in a timely and efficient way. That is, ESG can open the capital markets, but these constraint firms still fail to walk into the markets because of the structural liquidity and leverage constraints.

This finding is consistent with Bilyay-Erdogan et al. (2024), who report that the ESG-investment efficiency nexus is the weakest in firms with stricter financing opportunities, as well as with Li et al. (2024), who observe that the role of ESG in reducing distortions in investment is the strongest when there is financial slack. In the same way, using data of Chinese firms, Hou(2023) reveals that ESG engagement alleviates financing constraints and thus makes investment efficient, suggesting that the ESG channel itself becomes fragile when the constraints are already high. Lian et al. (2024) also document that financial constraints are a binding moderating factor in which ESG governance and signaling benefits are significantly watered down. The finding is also aligned with Guariglia (2008), who reveals that investment in constrained firms is more responsive to the internal cash flows as compared to the enhancement in external conditions. Thus, ESG increases efficiency in unconstrained firms, but has less effect when firms are constrained by binding financial constraints.

Going to the overinvestment results, the coefficient on ESG of unconstraint is -0.017 and constraint is -0.001. Both are statistically insignificant, which indicates that ESG performance does not significantly reduces overinvestment regardless of a firm's financial constraint status. This is somewhat surprising considering previous evidence, such as Li et al. (2025) and Zheng et al. (2025) who report that ESG engagement suppresses managerial empire-building behaviours, which is normally in the form of overinvestment. The possible explanation for our finding is that in the U.K. setting, companies likely to overinvest might already be subject to robust corporate governance systems, including the U.K. Corporate Governance Code, that discipline overinvestment, and hence the marginal benefit of ESG on this aspect is limited (Moussa et al., 2024). The fact that the ESG-overinvestment relationship is uniformly weak in both subsamples suggests that the financial constraint is not a distinguishing factor in this channel.

In the case of underinvestment, ESG coefficient is negative and statistically significant among unconstrained firms (-0.013***) but only marginally significant among constrained firms (-0.008*); the coefficient on ESG of unconstrained firms is also higher in absolute value, supporting Hypothesis 2. Theoretically, information asymmetry and adverse selection in the capital market are the main factors that contribute to underinvestment (Hubbard, 1998; Kaplan and Zingales, 1997). These frictions can be alleviated by ESG

disclosure that enhances transparency and decreases uncertainty for investors, which loosens financing conditions and allows firms to finance positive-NPV projects (Cheng et al., 2014). Nonetheless, in the case of firms with financial constraints, the enhanced informational environment might not be sufficient to break the structural financing obstacles leading to underinvestment, as reported by Guariglia (2008) and Donghui et al. (2025). Therefore, ESG has a limited alleviating effect on the underinvestment problem of constrained firms.

5. Conclusion

This study examines the connection between ESG performance, financial constraints, and corporate investment efficiency of U.K. listed companies during the period from 2010 and 2024. The findings show that firms which have stronger ESG performance are less deviant from the optimal level of investment. By enhancing transparency and accountability, ESG practices reduce agency costs, bring the interests of managers and shareholders into harmony, and at the same time lower the cost of external capital and enhance its accessibility. It is worth noting that although ESG reduces both overinvestment and underinvestment, the more pronounced ESG effect is found in the underinvestment model, suggesting that ESG is a stronger mechanism as a channel of information and financing rather than a disciplinary mechanism of governance in the U.K. setting.

Further analysis on two subsamples of unconstrained and constrained firms reveals that the ESG effect on corporate investment efficiency depends on the financial status of firms, with the weaker and insignificant effect documented in the constraints subsample. The results verify that financial constraints are a binding condition that dictates the scope to which ESG performance can improve investment efficiency.

This study contributes to the literature in several ways. First, most of previous research analyzing ESG, financial limitations, and investment efficiency in developing economies. Our study provides empirical evidence on the United Kingdom, which is a developed economy with an advanced financial system, a globally acknowledged regulatory framework comprising of the UK Corporate Governance Code and TCFD recommendations, and a pioneering role in voluntary and compulsory ESG disclosure. The institutional environment of the UK presents a qualitatively different testing environment, and the trends found in this setting might be more applicable to other developed countries than those identified in emerging market environments. Second, although a few recent studies have investigated the impact of ESG on overall investment efficiency, relatively few have tested financial constraints as moderating boundary condition in a developed market context using the subsample partitioning methodology. This study directly fills that gap. By dividing the sample based on the financial constraint status, the analysis proves that even in a highly developed financial market, the ESG-efficiency nexus remains conditional on whether firms have sufficient financial flexibility. This finding presents the new aspect of the positive story about ESG performance: ESG is not a perfect remedy to investment distortions, and its benefits might be limited when firms facing financial constraints.

Findings of this paper give some implications to institutional investors and asset managers who might incorporate ESG scores into the fundamental analysis and portfolio structure, especially for long-term-capital and efficiency-oriented investors. In addition, the ESG effect difference between

constrained and unconstrained firms suggests that the ESG premium, in terms of investment quality, can be better reliably measured for financially flexible firms. These findings also have profound implications on the design of the ESG policy. The fact that the effectiveness of ESG is lower in financially constrained firms implies that regulatory measures to encourage ESG practice, including mandatory sustainability reporting guidelines, and green finance taxonomies, may disproportionately benefit firms. Complementary measures should be considered by the policymakers to alleviate financial pressures on smaller or more leveraged firms that wish to implement ESG strategies. An example of such would be green credit facilities, sustainability-linked loan guarantees, and preferential capital access program to constrained yet ESG-committed firms to help narrow the divide and make the efficiency benefits of ESG more widely shared among corporate sectors. The U.K. policymakers, in particular, might incorporate these considerations into policy designs in the post-Brexit financial regulation and the Sustainable Finance Disclosure Regime.

Despite its contributions, this research still has some limitations. First, the financial constraint indicator is a composite binary variable. Although this methodology relies on known approaches, such as the SA index (Hadlock et al., 2010), the KZ index (Kaplan et al., 1997), and the WW index (Whited et al., 2003), none of the measures are ideal in reflecting the multidimensionality of financial constraints. Second, the ESG score is obtained from the LSEG database. Although it is a reliable source, there is still a disagreement among ESG rating agencies, as noted in prior research, which casts some doubt on the construction validity (Berg et al., 2022). Third, the sample is limited to UK-listed companies that have ESG scores, which can lead to reporting or survivorship bias. Small and less visible companies are less likely to release ESG data, thus they are disproportionately underrepresented, which may result in a false belief in the average ESG scores and underrepresent the most heavily constrained companies.

Future research might first extend the analysis to other developed countries such as the European Union, the United States, and Australia, where the financial market structure and ESG regulatory settings vary. The cross-country comparative analysis would also help shed light on whether the boundary condition of financial constraints is a universal characteristic of the ESG-investment efficiency relationship or just the UK institutional setting feature. Second, future studies might break down the ESG score into three pillars and investigate whether the effect on investment efficiency as well as the financial constraints moderation is primarily caused by the quality of environmental reporting, social participation, or governance. Since governance practices are most strongly associated with the agency cost reduction, the G pillar can be especially relevant in the overinvestment context, whereas the E and S pillars might be more crucial in the context of information asymmetry reduction and underinvestment. Third, considering reported heterogeneity among ESG rating agencies (Berg et al., 2022), future research might develop robustness tests on several ESG data providers, including MSCI and Sustainalytics, using Bloomberg along with LSEG databases to determine whether results are robust to other methods of ESG measurement. It would also be an innovation to the literature to conduct research that explicitly models the impact of the disagreement in ESG ratings on investment efficiency.

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Generating Information regarding Methodologies and Procedures: Vital in Implementing Job Duties and Responsibilities

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Abstract

The main objective of this research paper is to understand that in putting into operation various types of job duties and responsibilities in personal lives, pursuance of educational programs in educational institutions of all levels and in all types of employment settings, the individuals need to generate information in terms of methodologies and procedures. These are required to be put into operation in a well-ordered manner. Within educational institutions and employment settings, there are certain laws and rules in terms of making use of these in a moral and ethical manner. Furthermore, wastage needs to be prevented. As a consequence of utilizing these in an appropriate manner, individuals will do well in their job duties and responsibilities, achieve desired goals and objectives and meet the expectations of family members, educators and employers. The factors, which are facilitating in augmenting information in terms of these are, implementing effective communication processes with family members, educators and employers; being well-informed in terms of various types of job duties and responsibilities; conducting research and experience. In order to be successful in job duties and responsibilities in personal and professional lives, these are to be utilized in a principled manner. Therefore, it is well-understood; generating information regarding methodologies and procedures is vital in implementing job duties and responsibilities. The main concepts that are taken into account in this research paper are, understanding the meaning and significance of methodologies and procedures, measures to be put into practice in implementing methodologies and procedures in a well-ordered manner and advantages of generating information regarding methodologies and procedures.

Keywords: *Generating, Individuals, Information, Job Duties, Methodologies, Procedures, Responsibilities, Well-ordered Manner*

Introduction

The individuals, belonging to all occupations, communities and socio-economic backgrounds are required to put into operation various types of job duties and responsibilities in personal lives, pursuance of educational programs in educational institutions of all levels and in all types of employment settings. In putting these into operation in a well-organized manner, individuals need to generate information regarding methodologies and procedures. These are the techniques, which are facilitating in doing well in various types of job duties and responsibilities. Furthermore, individuals will contribute in meeting the expectations of family members, educators and employers (Gusdorf, 2008). The individuals need to acquire an efficient

understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting information and understanding. The factors, which enable individuals to generate information in terms of methodologies and procedures are, implementing effective communication processes with family members, educators, supervisors and employers; getting enrolled in training and development programs; being well-informed in terms of job duties and responsibilities; conducting research and work experience. Therefore, it is well-understood; these need to be implemented in a well-organized manner to generate desired outcomes.

The individuals are required to implement some methodologies and procedures on an individual basis, whereas, there are others, which are implemented through working in co-ordination with others, including family and community members, hence, formation of cordial and amiable terms and relationships with them is essential. For this purpose, individuals need to be well-informed in terms of communication ethics, i.e. making use of polite language and decent words; treating others with respect and courtesy; making provision of factual information; depicting the traits of helpfulness and co-operation and possessing an approachable nature and an amiable attitude. Furthermore, communication processes needs to take place in a calm and composed manner. The individuals need to exercise control on the negative feelings of anger and frustration (Goldby, n.d.). As a consequence of reinforcing cordiality and amiability in terms and relationships, individuals will have support and assistance available from others in implementing various types of methodologies and procedures in a well-organized and disciplined manner. Therefore, in personal and professional lives, formation of cordial and amiable terms and relationships is crucial in achieving desired goals and objectives.

Understanding the Meaning and Significance of Methodologies and Procedures

The various types of methodologies and procedures are complicated and manageable, these are put into operation in less amount of time or can be more time-consuming and these are implemented on an individual basis or through working in co-ordination with other members, including family and community. In putting into operation all types of methodologies and procedures in a well-ordered manner, mind-sets of the individuals will have to be stimulated. Furthermore, they will lead to up-gradation of motivation and concentration levels towards putting these into operation in a well-organized and regimented manner. The up-gradation of motivation and concentration levels is regarded to be of utmost significance in putting into operation various types of methodologies and procedures in a satisfactory manner. As a consequence, individuals will augment information in terms of strategies, which are facilitating in overcoming all types of setbacks. Furthermore, these are prevented from giving rise to impediments within the course of achievement of personal and professional goals.

The possession of information in terms of various types of methodologies and procedures is vital in leading to up-gradation of motivation and concentration levels. The main reason being, they will be self-assured that they will put in their best efforts in generating desired outcomes. Furthermore, individuals will hone confidence levels and overcome the feelings of apprehensiveness and vulnerability. This is essential in carrying out different types of job duties and responsibilities in a well-ordered manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers.

Furthermore, different types of methodologies and procedures will be put into operation in a successful manner. Hence, the up-gradation of motivation and concentration levels is regarded to be of utmost significance for individuals in personal and professional lives. Therefore, individuals are able to acquire an efficient understanding of the meaning and significance of methodologies and procedures, when they are leading to up-gradation of motivation and concentration levels.

With advancements taking place and with the advent of modernization and globalization, individuals in educational institutions of all levels and in all organizations and fields are utilizing various types of modern, scientific and innovative methods and materials. These are different types of tools, devices, apparatus, machinery, equipment and gear. The individuals need to acquire an efficient understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting information and understanding regarding these methods and materials. The factors, which enable individuals to generate information in terms of these methods and materials are, implementing effective communication processes with family members, educators, supervisors and employers; getting enrolled in training and development programs; being well-informed in terms of job duties and responsibilities; conducting research and work experience. As a consequence of utilizing these, job duties and responsibilities are put into operation in an efficient manner.

The possession of information in terms of various types of these methods and materials is favourable in honing motivation and concentration levels. As a consequence, individuals will hone confidence levels and overcome the feelings of apprehensiveness and vulnerability. This is essential in putting into operation different types of job duties and responsibilities in a well-organized manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Furthermore, different types of these methods and materials will be put into operation in a successful manner. Hence, individuals need to put in their best efforts in augmenting information in terms of these methods and materials, so they are successful in their works in personal and professional lives. Therefore, one is able to acquire an understanding of the meaning and significance of methodologies and procedures, when individuals are generating information in terms of various types of modern, scientific and innovative methods and materials.

The individuals, belonging to all job positions in all occupations, fields and professions need to inculcate the traits of proficiency, reliability and modesty. These are the traits, which are facilitating in acknowledging and implementing various factors, i.e. differentiating between various types of appropriate and inappropriate factors; reinforcing a constructive approach; forming positive viewpoints in terms of various factors and individuals; being well-informed in terms of various types of job duties and responsibilities; generating information in terms of various types of modern, scientific and innovative methods and materials; augmenting different types of skills and abilities; leading to up-gradation of motivation and concentration levels towards works; putting in efforts to one's best abilities; possessing the abilities to work under stress; providing solutions to various types of problems and carrying out all types of job duties and responsibilities in a well-ordered manner. These factors need to be acknowledged and put into practice by individuals in personal and professional lives. Furthermore, doors will be open for individuals towards their progression. As a consequence, individuals will be able to augment their information and understanding in a

well-organized manner regarding different types of methodologies and procedures. This is essential in putting into operation different types of job duties and responsibilities in a satisfactory manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Furthermore, implementation of various types of methodologies and procedures will take place in an effectual manner. One of the major benefits is, different types of dilemmas and challenging situations are overcome in an appropriate manner. Furthermore, these are prevented from giving rise to impediments within the course of achievement of desired goals and objectives. Therefore, an understanding of the meaning and significance of methodologies and procedures is acquired, when individuals are generating information in terms of traits of proficiency, reliability and modesty.

Measures to be put into practice in implementing Methodologies and Procedures in a Well-ordered Manner

An aimless life is a meaningless life. The individuals, belonging to all occupations, communities and socio-economic backgrounds have goals and objectives to achieve. The various areas in terms of which these are formulated are education, careers, employment opportunities, family, relationships, settlement, travelling, assets, property, resources, health, well-being, personality traits and overall standards of living. In achieving desired goals and objectives, individuals need to be well-prepared. They need to lead to up-gradation of various types of skills and abilities. Furthermore, various types of job duties and responsibilities will be put into operation in a satisfactory manner, when individuals are well-aware in terms of different types of methodologies and procedures (Enhancing Employability Report prepared for the G20 Employment Working Group with inputs from the International Monetary Fund, 2016).

Throughout the lives of individuals, they need to augment information in terms of measures, which are facilitating in implementing methodologies and procedures in a well-ordered manner. All types of measures are required to be put into operation in a satisfactory manner. Furthermore, positivity needs to be reinforced in all types of measures. One of the important aspects that needs to be taken into account is, these need to be facilitating in promoting well-being and goodwill of individuals, professional settings and communities. Therefore, measures to be put into practice in implementing methodologies and procedures in a well-ordered manner are stated as follows:

Promoting Normal Mind-sets

In generating information and implementing different types of methodologies and procedures, individuals need to promote normal mind-sets. It is apparently understood that individuals do experience anger, stress, anxiety, frustration and depression. These need to be managed and coped with in an effective manner. Throughout the lives of individuals, they need to augment information in terms of strategies, which are facilitating in coping with various types of psychological problems in an appropriate manner. Furthermore, these are prevented from giving rise to impediments within the course of doing well in one's job duties and responsibilities and generating desired outcomes. Furthermore, individuals will lead to up-gradation of analytical and critical-thinking skills. These are the skills, which are facilitating in making selection of most useful and favourable methodologies and procedures. In addition, the individuals will inculcate the traits of

adeptness and proficiency.

As a consequence, individuals will be able to augment their information and understanding in a well-organized manner regarding different types of methodologies and procedures. Furthermore, they will hone motivation and concentration levels in putting into operation different types of job duties and responsibilities in an appropriate manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Hence, it is well-understood; promoting normal mind-sets is favourable to individuals in implementing different types of methodologies and procedures in a successful manner. Therefore, promoting normal mind-sets is regarded as one of the indispensable measures to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Developing Mutual Understanding with Family and Community Members

The individuals are required to implement some methodologies and procedures on an individual basis, whereas, there are others, which are implemented through working in co-ordination with others, including family and community members, hence, development of mutual understanding with them is essential. For this purpose, individuals need to be well-informed in terms of communication ethics, i.e. making use of polite language and decent words; treating others with respect and courtesy; making provision of factual information; building trust and understanding; reinforcing the traits of efficiency, honesty and truthfulness; depicting the traits of helpfulness and co-operation and possessing an approachable nature and an amiable attitude. The communication processes takes place in a verbal and written form. Verbal communication takes place face to face, video-calling or phones, whereas, written communication takes place through exchanging emails and messages. Furthermore, information is conveyed through sending letters and notices.

The communication processes needs to take place in a calm and composed manner. The individuals need to exercise control on the negative feelings of anger and frustration. As a consequence of developing mutual understanding, individuals will have support and assistance available from others in implementing various types of methodologies and procedures in a well-organized and regimented manner. Hence, in personal and professional lives, development of mutual understanding is meaningful in being well-informed in terms of different types of methodologies and procedures. Therefore, developing mutual understanding with family and community members is one of the significant measures to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Leading to Up-gradation of Enthusiasm Levels

The various types of methodologies and procedures are complicated and manageable, these are put into operation in less amount of time or can be more time-consuming and these are implemented on an individual basis or through working in co-ordination with family and community members. In putting into operation all types of methodologies and procedures in a well-ordered manner, individuals need to augment enthusiasm levels towards putting these into operation in a satisfactory manner. As a consequence, individuals will augment information in terms of strategies, which are facilitating in overcoming all types of setbacks. Furthermore, these are prevented from giving rise to impediments within the course of generation of desired outcomes.

The possession of information in terms of various types of methodologies and procedures is vital in leading to up-gradation of enthusiasm levels. Furthermore, individuals will hone confidence levels and overcome the feelings of apprehensiveness and vulnerability. This is essential in putting into operation different types of job duties and responsibilities in a well-ordered manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Furthermore, different types of methodologies and procedures will be put into operation in a successful manner. Hence, the up-gradation of enthusiasm levels is regarded to be of utmost significance for individuals in personal and professional lives. Therefore, leading to up-gradation of enthusiasm levels is an eminent measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Utilizing Pioneering Methods and Materials

With the advent of technologies, individuals in educational institutions of all levels and in all organizations and fields are utilizing various types of pioneering methods and materials. These are different types of tools, devices, apparatus, machinery, equipment and gear. The individuals need to acquire an efficient understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting information and understanding regarding these methods and materials. The factors, which enable individuals to generate information in terms of these methods and materials are, implementing effective communication processes with family members, educators, supervisors and employers; getting enrolled in training and development programs; being well-informed in terms of job duties and responsibilities; conducting research and work experience. As a consequence of utilizing these methods and materials, job duties and responsibilities are put into operation in an efficient manner.

The possession of information in terms of various types of these methods and materials is favourable in honing motivation levels. As a consequence, individuals will hone confidence levels and overcome the feelings of apprehensiveness and vulnerability. This is essential in putting into operation different types of job duties and responsibilities in a well-organized manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Furthermore, different types of these methods and materials will be implemented in a successful manner. Hence, individuals need to put in their best efforts in augmenting information in terms of these methods and materials, so they are successful in their works in personal lives, educational institutions of all levels and employment settings. Therefore, utilizing pioneering methods and materials is an expedient measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Making use of Technical Resources

In all occupations, fields and professions, individuals are making use of technical resources, i.e. computers, lap-tops, I pads, scanners, printers, photo-copiers, projectors, audio-visual aids, smartphones and so forth. The individuals need to acquire an efficient understanding of the concepts. Furthermore, they need to get engaged in regular practice. This is the key in augmenting information and understanding in terms of all types of technical resources. In putting into operation various types of methodologies and procedures, individuals are required to lead to up-gradation of technical skills. As a consequence, different types of

methodologies and procedures are put into operation in an efficient manner. In educational institutions of all levels, students, belonging to all grade levels are imparted information in terms of technologies, so they are able to augment their technical skills. In various types of employment settings as well, individuals, belonging to all job positions need to hone technical skills in implementing different types of methodologies and procedures in an efficacious manner.

The possession of information in terms of various types of technical resources is worthwhile in honing motivation levels. As a consequence, individuals will hone confidence levels and overcome the feelings of apprehensiveness and vulnerability. This is essential in putting into operation different types of job duties and responsibilities in a well-organized manner, achieving personal and professional goals and meeting the expectations of family members, educators and employers. Hence, individuals need to put in their best efforts in honing technical skills, so they are successful in implementing methodologies and procedures in personal lives, educational institutions of all levels and employment settings. Therefore, making use of technical resources is a renowned measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Inculcating the Traits of Morality and Ethics

The individuals, belonging to all job positions in all occupations, fields and professions need to inculcate the traits of morality and ethics. These are the traits, which are facilitating in acknowledging and implementing various factors, i.e. differentiating between various types of appropriate and inappropriate factors; reinforcing a constructive approach; forming positive viewpoints in terms of various factors and individuals; forming agreeable terms and relationships with family and community members; promoting calm and composed mind-sets; augmenting different types of skills and abilities; leading to up-gradation of motivation and concentration levels towards works; putting in efforts to one's best abilities; possessing the abilities to work under stress and carrying out all types of job duties and responsibilities in a well-ordered manner. These factors need to be acknowledged and put into practice by individuals in personal and professional lives.

As a consequence, individuals will be able to augment their information and understanding in a well-organized manner regarding different types of methodologies and procedures. This is essential in putting into operation different types of job duties and responsibilities in a satisfactory manner. Furthermore, individuals will be successful in meeting the expectations of family members, educators and employers and achieving desired goals and objectives. Furthermore, implementation of various types of methodologies and procedures will take place in an appropriate manner. One of the major benefits is, different types of dilemmas and challenging situations are overcome in a satisfactory manner. Furthermore, these are prevented from giving rise to impediments within the course of implementing various types of methodologies and procedures in an effectual manner. Therefore, inculcating the traits of morality and ethics is a decisive measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Implementing the Traits of Diligence, Resourcefulness and Conscientiousness

Implementing the traits of diligence, resourcefulness and conscientiousness is essential for individuals, belonging to all occupations, communities and socio-economic backgrounds. These are the traits, which are facilitating in acknowledging and implementing various factors, i.e. honing analytical and critical-thinking skills; making wise and productive decisions in terms of various factors; being well-informed in terms of various types of job duties and responsibilities; generating information in terms of various types of modern, scientific and innovative methods and materials; augmenting different types of skills and abilities; leading to up-gradation of motivation and concentration levels towards works; putting in efforts to one's best abilities; possessing the abilities to work under stress; providing solutions to various types of problems and carrying out all types of job duties and responsibilities in a well-ordered manner. These factors need to be acknowledged and put into practice by individuals in personal lives, educational institutions of all levels and employment settings.

As a consequence, individuals will be able to augment their information and understanding in a well-organized manner regarding different types of methodologies and procedures. One of the major benefits is, individuals will cope with various types of dilemmas and challenging situations in an effective manner. Furthermore, these are prevented from giving rise to impediments within the course of implementation of various types of methodologies and procedures. Furthermore, individuals will be successful in implementing different types of methodologies and procedures and achievement of desired goals and objectives. Therefore, implementing the traits of diligence, resourcefulness and conscientiousness is an imperative measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Augmenting Skills and Abilities

Throughout the lives of individuals, belonging to all occupations, communities and socio-economic backgrounds need to augment various types of skills and abilities. The different types of skills are communication skills, decision-making skills, analytical skills, leadership skills, negotiation skills, critical-thinking skills, personal skills, presentation skills, professional skills, time-management skills, problem-solving skills, technical skills, creative skills, artistic skills, public-speaking skills and educational skills. The abilities, which need to be honed are convincing, persuading, planning, organizing, directing, leading, negotiating, controlling, co-ordinating, emotional intelligence, systems thinking, putting in efforts to one's best abilities, possessing the abilities to work under stress, providing solutions to various types of problems and carrying out all types of job duties and responsibilities in a well-ordered manner. The skills and abilities need to be implemented by individuals in personal lives, educational institutions of all levels and employment settings.

As a consequence, individuals will be able to augment their information and understanding in terms of different types of methodologies and procedures. One of the major benefits is, individuals will cope with various types of problems in a satisfactory manner. Furthermore, these are prevented from giving rise to impediments within the course of implementation of various types of methodologies and procedures. Furthermore, individuals will be successful in implementing different types of methodologies and procedures and achievement of personal and professional goals. Therefore, augmenting skills and abilities is

a favourable measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Providing Solutions to various Problems

Within the course of putting into operation various types of methodologies and procedures in personal and professional lives, there are occurrences of problems in terms of various factors, i.e. job duties, responsibilities, work pressure, unawareness in terms of various subjects and factors, lack of implementation of time-management skills, lack of analytical, critical-thinking and problem-solving skills, scarcity of financial, human, technical, material and information resources, lack of infrastructure, amenities and facilities, health problems and illnesses and so forth. The occurrences of various types of problems are considered to be impediments within the course of implementing different types of methodologies and procedures, hence, these needs to be coped with in an appropriate manner. Furthermore, these need to be prevented from assuming a major form (Employee-Centred Leadership Style, 2018).

The individuals need to lead to up-gradation of problem-solving skills. These are the skills, which are facilitating in identifying the causes of problems. After the causes are identified, solutions are provided to these in an effective manner. Furthermore, these need to be prevented from giving rise to impediments within the course of putting into operation various types of methodologies and procedures. Furthermore, individuals will be successful in implementing different types of methodologies and procedures and achievement of personal and professional goals. This will be pleasing to family members, educators and employers. Therefore, providing solutions to various problems is an advantageous measure to be put into practice in implementing methodologies and procedures in a well-ordered manner.

Taking out Sufficient amount of Time for all Tasks and Functions

The various types of methodologies and procedures are implemented in less amount of time or can be more time-consuming. The individuals need to ensure, they take out sufficient amount of time for all tasks and functions. They assign priorities to the tasks and functions. The ones, which are more important are implemented first, whereas, the ones, which are less important are put into operation after the completion of more important ones. Procrastination is avoided. One of the major benefits of this measure is, individuals will be able to put into operation various types of methodologies and procedures within the stipulated period of time. This is facilitating in carrying out all types of job duties and responsibilities in a well-ordered manner. Furthermore, desired goals and objectives will be achieved in an effective manner. This is pleasing to family members and individuals in leadership positions within all types of professional settings.

The individuals, belonging to all occupations and fields have the major goal of being successful in their job duties and responsibilities in personal and professional lives. As a consequence of being wholeheartedly committed towards achievement of this goal, they need to understand that implementing various types of methodologies and procedures on time is regarded to be of utmost significance. Hence, individuals need to understand that they need to take out sufficient amount of time for all tasks and functions in personal lives, educational institutions of all levels and in all types of employment settings. Therefore, taking out sufficient amount of time for all tasks and functions is a useful measure to be put into practice in implementing

methodologies and procedures in a well-ordered manner.

Advantages of Generating Information regarding Methodologies and Procedures

The individuals, belonging to all occupations, communities and socio-economic backgrounds are required to implement various types of job duties and responsibilities in personal lives, pursuance of educational programs in educational institutions of all levels and in all types of employment settings. In putting these into operation in a well-organized manner, individuals need to generate information in terms of different types of methodologies and procedures. As a consequence of putting these into operation in a moral and ethical manner, individuals will be successful in doing well in various types of job duties and responsibilities. Furthermore, individuals will contribute in meeting the expectations of family members, educators and employers. In addition, they will be well-prepared in terms of techniques of achieving personal and professional goals (Enhancing Employability through Vocational Training, 2015).

Generating information in terms of various types of methodologies and procedures is considered to be advantageous to individuals and all types of professional settings on a comprehensive basis. Therefore, advantages of generating information regarding methodologies and procedures are, meeting the expectations of family and community members; promoting enhancement of career prospects; leading to up-gradation of overall personality traits and bringing about improvements in one's overall quality of lives. These are stated as follows:

Meeting the Expectations of Family and Community Members

Generating information in terms of various types of methodologies and procedures is considered to be advantageous to individuals and all types of professional settings. As a consequence, individuals will render an important contribution in putting into operation different types of job duties and responsibilities in a well-ordered manner, achieving desired goals and objectives and meeting the expectations of family members, educators and employers. Hence, it is well-understood; being well-informed in terms of various types of methodologies and procedures is essential in meeting the expectations of family and community members. Therefore, meeting the expectations of family and community members is regarded as one of the indispensable advantages of generating information regarding methodologies and procedures.

Promoting enhancement of Career Prospects

The individuals, belonging to all occupations, communities and socio-economic backgrounds have one of the major goals of promoting enhancement of career prospects. As a consequence of generating information in terms of various types of methodologies and procedures, individuals will implement all the factors in an appropriate manner that are facilitating in achieving this goal, i.e. job duties, responsibilities, techniques, strategies, approaches, skills, abilities, morality, ethics, diligence, resourcefulness, conscientiousness and honesty. As a consequence, individuals will render an important contribution in achievement of this goal. Therefore, promoting enhancement of career prospects is one of the significant advantages of generating information regarding methodologies and procedures.

Leading to up-gradation of overall Personality Traits

Leading to up-gradation of overall personality traits is an important goal of individuals, belonging to all age groups, occupations, communities and socio-economic backgrounds. As a consequence of generating information in terms of various types of methodologies and procedures, individuals are able to augment information in terms of factors that are facilitating in achieving this goal, i.e. diet and nutrition; exercises and physical activities; yoga and meditation; treating various types of health problems and illnesses; maintaining cleanliness within and outside the homes; eliminating loneliness; forming an effective social circle, comprising of family and community members; reinforcing the traits of efficiency, honesty and truthfulness; depicting the traits of helpfulness and co-operation; possessing an approachable nature and an amiable attitude; having a pleasant personal appearance and dressing neatly. The acknowledgment and implementation of these factors is the key in achieving this goal. Therefore, leading to up-gradation of overall personality traits is an eminent advantage of generating information regarding methodologies and procedures.

Bringing about improvements in one's overall Quality of Lives

Bringing about improvements in one's overall quality of lives is a common goal of individuals, belonging to all age groups, occupations, communities and socio-economic backgrounds. As a consequence of generating information in terms of various types of methodologies and procedures, individuals are able to augment information in terms of factors that are facilitating in achieving this goal, i.e. education, careers, employment opportunities, family, relationships, settlement, travelling, assets, property, resources, health, well-being, infrastructure, amenities, facilities and overall personality traits. The acknowledgment and implementation of these factors is regarded to be of utmost significance in achieving this goal. Therefore, bringing about improvements in one's overall quality of lives is an expedient advantage of generating information regarding methodologies and procedures.

Conclusion

The methodologies and procedures are the techniques, which are facilitating in doing well in various types of job duties and responsibilities within personal and professional lives of individuals. Furthermore, information needs to be generated in terms of measures to be put into practice in implementing methodologies and procedures in a well-ordered manner. In addition, one needs to be well-aware of advantages of generating information regarding methodologies and procedures. Finally, it can be stated, generating information in terms of methodologies and procedures is essential in promoting well-being of individuals, professional settings and communities.

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EMOTIONAL CONTINUITY AND STABILITY: EXAMINING BRAND LOVE AND RETENTION

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Abstract:

This article analyzes the important effects of emotional branding on maintaining long-term consumer/brand relationships, especially the effects of brand uniqueness, brand passion, and brand anthropomorphism, and the way that brand love moderates those effects. The research study is based on relationship marketing theory and uses a cross-sectional quantitative methodology to collect data from the subjects (consumer–brand relationships) using a structured questionnaire, as well as analyzing descriptive statistics, reliability analysis, correlation analysis, and multiple regressions as a method to analyze the data collected. The research findings indicate that emotional branding aspects play a large role in brand retention, and brand love amplifies those effects. This research study adds to brand-building literature by illustrating how emotional connections to brands are developed with consumers, and also provides valuable insights for marketers creating emotional connections through branding strategies.

Keywords: *Emotional branding, Brand uniqueness, Brand passion, Brand anthropomorphism, Brand love, Brand retention*

Introduction:

Marketing research and practice have made the emotional aspect of brand relationships a key focus in the modern consumer market (Vernuccio et al., 2025). One example of an emotional relationship between consumers and brands is known as brand love (BL). Brand Love is defined as the emotional tie that develops between a consumer and a certain brand and has been researched a lot in terms of its ability to create long-term loyalty and advocacy (Carroll & Ahuvia, 2006; Osorio et al., 2023). Brand love creates very desirable behaviors for consumers, such as repeat purchases, positive word-of-mouth, and brand defense in times of crisis (Dahrouj et al., 2025; Lee et al., 2024). This emotional component of the relationship is what helps a brand develop a more psychological connection with its consumers than just a transactional exchange. For example, the fact that Apple has a retention rate of approximately 89% illustrates the importance of developing an emotional connection to retain customers in a highly competitive marketplace (Orr, 2025).

Current work expounds upon the claim of (ul Hassan et al. 2026), who explored the emotional antecedents to brand love and how they impact brand retention, but did not consider other facets such as psychological ownership, hedonic pleasure, and brand hate. Instead, I provide an all-inclusive emotional

channel, which combines brand uniqueness, brand passion, and brand anthropomorphism as the antecedents to brand love and thus the antecedents to brand retention. This redefinition adds clarity on how affective and symbolic perceptions of brands are utilized to create long-lasting consumer/brand relationships.

When a consumer perceives that one company has several distinguishing traits from its competitors, they have a view of that company called brand uniqueness (Lee et al., 2024; Rahman et al., 2021). This impression creates a stronger awareness of the brand as well as helps to develop feelings of an emotional relationship, pride, and respect for the company (Cruz-Ros et al., 2024). Unique and innovative brand characteristics will assist consumers to see themselves as aligned with the company; thus, enhancing the emotional dimension of their relationship to the company and fostering brand love.

Brand Passion, defined as the profound emotional tie to a brand, is an essential element of developing an effective committed customer (Sarkar et al., 2012; Gilal et al., 2023). Customers who feel passionate about brands view them as extensions of themselves and tend to actively support them and will not switch to competing brands (Le, 2023). This deeply rooted, affective connection between a brand and a consumer is often transformed into greater Brand Love, whereby consumers develop a greater commitment to the brand (Jang et al., 2021).

Moreover, the process of attributing human characteristics to a brand, known as brand anthropomorphism, has been described by researchers as having a significant impact on consumers' emotional and relational constructs within their respective brands (i.e., strength of the bond between consumer and brand) (Aggarwal and McGill, 2007; Kim and Kramer, 2024). This enables consumers to accept the possibility that they might be developing an emotional connection with a brand because they perceive the brand as sympathetic and can respond to their emotions (Rauschnabel et al., 2024). Research has found that consumers who perceive brands as anthropomorphic will form strong emotional connections with those brands, such as brand love and/or intimacy (Delbaere et al., 2021; Landwehr et al., 2024).

Brand Love (i.e., an emotional attachment associated with a brand) was theorized to moderate the relationship between three dimensions of brand love (i.e., brand uniqueness, brand passion, and brand anthropomorphism) and brand retention (i.e., the long-term commitment of consumers towards a specific brand; Jamil et al., 2025; Noor et al., 2025). Furthermore, the moderation indicates that all emotional/symbolic attributes associated with a brand need to be converted to brand love to inspire behavioral loyalty. Thus, by incorporating these relationships, the present study contributes to the literature on emotional branding and also provides additional support to prior research conducted by (Ul Hassan et al., 2026), which indicated that affective processes are instrumental in sustaining long-term brand-consumer relationships.

The phrase 'from attraction to aversion' is a way of describing the consumer relationship with a brand, as described by (Ul Hassan et al., 2026). This means that consumers can experience a range of feelings toward a brand; this includes positive feelings but can also result in negative or hateful feelings. This paper focuses specifically on the positive feelings associated with the bond between the consumer and brand. Through research, we find that a brand's unique qualities and passion create a positive bond with the consumer, thus increasing consumers' loyalty to the brand. The goal of this study is to reframe the emotional instability of the consumer to emphasize the emotional consistency and stability in maintaining a long-term, positive

emotional relationship with the company.

Problem Statement:

While there has been much research regarding consumers' behavioral patterns and their brand loyalty, very little empirical work has evaluated the emotional mechanisms that contribute to a long-term relationship between consumers and brands. The majority of the literature concentrates on satisfaction, perceived performance, and utilitarian attributes to explain brand loyalty, while emotion-based constructs such as passion, anthropomorphism, and the sense of uniqueness are often overlooked. Additionally, the moderating effect of brand love has not received sufficient attention in terms of further enhancing the effects of emotional branding. Marketers currently do not have a comprehensive understanding of how emotional bonds can translate into long-term customer retention.

Research Objectives:

1. To test the impact of brand love on brand uniqueness?
2. Why does brand passion affect brand love development?
3. What is the effect of brand anthropomorphism on brand love?
4. To find out the position of brand love as a moderating variable between?
 - a. brand uniqueness and brand retention.
 - b. brand passion and brand retention.
 - c. brand anthropomorphism and brand retention.

Research Questions:

Based on the research objectives, this study seeks to answer the following questions:

1. How does brand uniqueness influence brand retention?
2. What is the impact of brand passion on brand retention?
3. How does brand anthropomorphism affect brand retention?
4. Does brand love moderate the relationship between emotional branding dimensions and brand retention?

Literature Review:

The current study is based on the premise that (ul Hassan et al. 2026) the duality of emotional attachment (between brand love and brand hate) and its resulting brand retention implications have been explored; however, the paper solely emphasizes the positive emotional pathway that leads to strengthening brand relationships over time. Specifically, this model will examine the role of brand uniqueness, brand passion, and brand anthropomorphism as antecedents of brand love, which then moderate the effect of these factors on brand retention.

Brand Uniqueness:

Brand uniqueness refers to a brand's distinguishing features, attributes, or designs that differentiate it from all other brands (Tian et al., 2001; Lee et al., 2024). Each individual brand establishes symbolic value that offers consumers opportunities for expressing their unique identities or social identities (Rahman et al., 2021). Prior research indicates that perceived brand uniqueness leads to increased emotional attachment through feelings of admiration and pride as key components of brand love (Cruz-Ros et al., 2024). Because of the consumers' perception that a brand cannot be replaced, increased loyalty and affection towards the

brand can create an irreplaceable bond between the brand and consumers (Sarkar et al., 2012). For this reason, brand uniqueness serves as a fundamental antecedent of brand love by fostering an emotional connection as well as enhancing the consumers' ability to express themselves through the brand's products.

Brand Passion:

Brand passion can be defined as an intense and constructive emotional state that motivates customers to take action and promote the brand (Albert et al., 2013; Gilal et al., 2023). Passion acts as an emotional driver shifting admiration to commitment (Sarkar and Sreejesh, 2014). Consumers who exhibit passionate attachment toward a brand are typically more passionate advocates than consumers who do not, therefore brand love is supported by substantial empirical data (Bauer et al., 2007; Jang et al., 2021). The creation of emotional intimacy through passion develops a connection between a consumer and a brand, resulting in behavioral outcomes such as increased likelihood of repurchasing from that brand and brand loyalty over time (Le, 2023). Therefore, it is hypothesized that brand passion will have a positive effect on brand love because it will produce greater levels of emotional intensity in the consumer-brand relationship.

Brand Anthropomorphism:

Brand anthropomorphism is when you project human qualities onto a brand (Aggarwal & McGill, 2007; Delbaere et al., 2021). This results in increased emotional and social aspects of branding. When consumers relate to brands as if they were people, they will develop relationships with the brand, which creates an emotional connection between the consumer and the brand that contributes to trust, attachment, and affection (Rauschnabel et al., 2024; Landwehr et al., 2024). Therefore, anthropomorphism can be seen as a form of psychological reconciliation that helps to convert utilitarian views of brands into emotional connections. It has been shown that anthropomorphized brands evoke feelings of love similar to those found in human interactions; thus, leading to "brand love," which serves as an intermediate factor for turning emotional attachments into long-lived loyalty (Kim & Kramer, 2024).

Brand Love as a Moderator:

In summary, according to (Carroll and Ahuvia 2006), brand love is a moderating variable that describes how the three variables of brand retention (uniqueness, passion, and anthropomorphism) are affected by brand love. Brand love is an emotional bond a customer has with a brand and serves to promote long-term relational experiences and less transitional attitudes toward changes in relationships with brands (Vernaccio et al., 2025; Osorio et al., 2023). Numerous studies have shown that emotional attachment is a determinant of consumer retention and loyalty (Batra et al., 2012; Jamil et al., 2025). The psychological mechanism through which consumers develop long-term loyalty to a brand is brand love which is a mediator that connects antecedent emotional drivers with retention (ul Hassan et al., 2026).

Brand Retention as an Outcome:

Retention through a brand refers to how well a customer has retained their interest in continuing to buy products or services associated with a particular brand (Noor et al., 2025; Jamil et al., 2025). The retention of a brand can result not only from being satisfied with past experiences but also from how much that customer feels emotionally committed to their relationship with the company (i.e., affection). The brand love to retain the chain is intended to show how consumers have committed to their brand based on emotion rather than just rational thinking. When a consumer feels strong emotional connections with a particular

brand (Rahman et al., 2021; Dahrouj et al. 2025), they are likely to support, purchase the brand again, and recommend it to others. As a result, brand love serves as an important moderating variable that is needed to link emotional antecedents (e.g., brand love) with outcome behaviors over the long-term.

Hypotheses Development:

Direct Relationships:

H1: Brand uniqueness has a positive effect on brand retention.

H2: Brand passion has a positive effect on brand retention.

H3: Brand anthropomorphism has a positive effect on brand retention.

Moderation by Brand Love:

H4: Brand love moderates the positive relationship between brand uniqueness and brand retention.

H5: Brand love moderates the positive relationship between brand passion and brand retention.

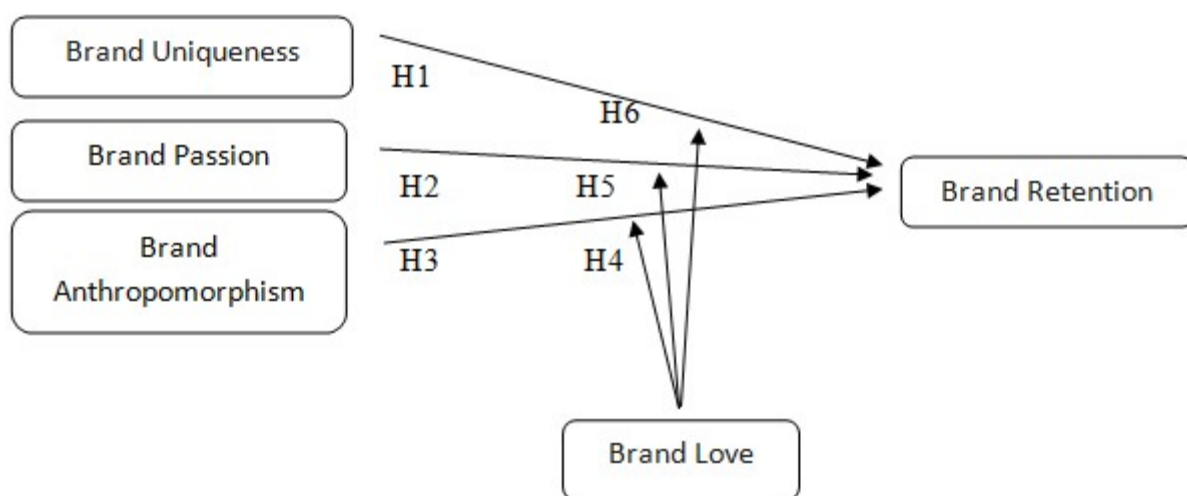
H6: Brand love moderates the positive relationship between brand anthropomorphism and brand retention.

Theoretical Framework:

This research is based on relationship marketing theory, which highlights the impact that feelings have on how consumers and brands will continue to connect for a long time.

The theory of relationship marketing states that developing an ongoing relationship is more important than just working with one another; building a relationship should be accomplished through creating a connection based on emotional ties. The connections that create loyalty come from developing emotional attachment, trust, and bonding, instead of just providing satisfying experiences (Morgan & Hunt 1994; Fournier 1998). By establishing an emotional connection with consumers through marketing, brands can move from selling products and services to developing long-term partnerships (Sheth & Parvatiyar, 2000; Park et al., 2010).

CONCEPTUAL FRAMEWORK:



Research Methodology:

Research Strategy:

Quantitative research was the selected methodology for the current study, as the intent is to statistically test the relationship of brand uniqueness, brand passion, brand anthropomorphism, brand love, and brand retention. A quantitative study produces a numerical dataset that will allow researchers to measure and quantify psychological constructs; therefore, the selected methodology will assist with testing hypotheses, conducting a mediation analysis, and generalizing results to a larger part of the population (Creswell & Creswell, 2018). As this research utilizes structural equation modeling (SEM), quantitative is also the best methodological choice due to the precision and objective nature of SEM (Hair et al., 2019).

Research Design:

Cross-sectional research designs are characterized by their data being taken from a single time in order that researchers have a snapshot of their market between time points. Cross-sectional designs have been frequently used in marketing research and consumer behavior studies. This is due to the use of a cross-sectional design, allowing researchers to develop a relationship between perceptions, behaviors, and emotions. (Saunders et al., 2019). Brand love will be explored as a moderating variable using a cross-sectional design because the cross-sectional design does not allow for an understanding of how the relationship will develop over time. Therefore, cross-sectional designs are well-suited to examine the theoretical relationships proposed within this model as proposed by (Rindfleisch et al., 2008).

Population:

Consumers who are currently engaged with a well-known consumer brand, one that has become synonymous with technology/lifestyle, have been targeted for inclusion in this study. These brands typically elicit strong feelings of loyalty and devotion, create a sense of identity, and anthropomorphize the brand (Kim and Kramer, 2024). The sample of respondents will consist of individuals 18 years of age or older who will be considered mature enough to be able to answer survey questions about their experiences with opinions about branded products/services.

Sample:

The purposive sampling method used is non-probability sampling, which is used to ensure that only respondents who have enough experience with the brand chosen can give a valid emotional judgment on the brand. The criteria for participants are as follows: Active users (those who have used one or more of the brands being studied), must not have used the brand for more than 6 months. Participants must be 18 years of age or older. Participants must show loyalty to at least one brand (Hair et al., 2019). This will provide adequate statistical power to perform the moderation test.

Unit of Analysis:

In this study, the unit of analysis is the individual consumer. The respondents were asked to express their perception of what would characterize an ideal brand along five dimensions; these dimensions include: uniqueness of the brand, passion for the brand, anthropomorphism of the brand, feelings of love for the brand, and brand retention. These five dimensions represent the main elements from which

to develop a framework to examine the relationship between a person's emotional and perceptual variables that may predict their retention of a brand.

Data Collection Tools:

Data was collected through a self-administered, structured online questionnaire via Google Forms and social media. Online surveys allow for convenience and ease of access, leading to a diverse sample. Surveys are extensively used in research on brands (Bryman, 2016). As part of the data collection process, a pilot test with 30 respondents will be conducted to check for comprehension of wording, reliability, and internal consistency of the scales.

Questionnaire Design:

The questionnaire will be structured into a series of closed-ended questions having a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The scales of each construct are pegged to those of validated scales of past research:

- Brand Uniqueness
According to Tian et al. (2001) and Rahman et al. (2021). Sample item: “The features of this brand are exceptional compared to those of other brands.
- Brand Passion
Modernized according to Albert et al. (2013) and Gilal et al. (2023). Sample question: I am a fan of this brand.
- Brand Anthropomorphism
According to Aggarwal and McGill (2007) and Delbaere et al. (2021). Sample item: This brand is to me like a human being.
- Brand Love
It is quantified according to Carroll and Ahuvia (2006) and Batra et al. (2012). Sample item: “I love this brand.”
- Brand Retention
According to Noor et al. (2025) and Jamil et al. (2025). Sample item: I would wish to continue buying this brand in the future.

Results:

The statistical analysis methods used in this research to test the hypotheses are described in this section. The analyses were performed using various methods and follow the guidance from Hair et al. (2019) and Hayes (2018) - these methods included descriptive statistical methods, Reliability Analysis, Pearson Correlations, Multiple Regression, and Moderated Regression.

Reliability & Validity Results:

Cronbach's alpha was used to evaluate the internal consistency of every construct and all constructs had alpha values greater than the established cut-off value of 0.70 for satisfactory reliability and internal consistency (Nunnally & Bernstein, 1994; Hair et al., 2019).

Using both SMARTPLS and SPSS for conformity purposes, Cronbach's alpha (CA) and Composite reliability (CR) indicated values above the 0.70 (Henseler et al., 2015) minimum, meeting the required threshold (Sarstedt et al., 2017). Similar to the above, 0.70 findings exist for other measures across regression weight (concurrent validity), CR, and average variance extracted (convergent validity). Therefore, CR values were between 0 and 1 (best acceptable > 0.7 - Jamil, et al., 2024), and values of AVE > 0.5 are supported for all constructs. Furthermore, as suggested by the use of SRMR as a fit index, the acceptable level for this statistic should be < 0.10 .

For all constructs with CA > 0.70 , the current results are consistent with previous work, which finds acceptable for using a minimum of 0.6 as a measure of consistency (Abbas, M. et al., 2025; Jamil et al., 2025). All constructs had CA results above 0.70 for Cronbach's alpha. ANOVA yielded significance ($p < 0.05$), suggesting that the differences were meaningful. The CR for each variable fell within the range of 0.80-0.95, which meets established levels of acceptability. AVE represents the averages of constructs and demonstrated the required range 0.60-0.81;

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
BA	0.930	1.021	0.934	0.670
BL	0.898	0.907	0.920	0.624
BP	0.759	0.782	0.848	0.585
BR	0.913	0.913	0.938	0.792
BU	0.724	0.760	0.829	0.554

Regression Analysis:

To analyze how brand uniqueness, brand passion, and brand anthropomorphism affect customers' willingness to retain their brands, multiple regression analysis was performed. Strong positive relationships were demonstrated by all three predictors of brand retention and thus confirm the hypotheses (H1, H2, and H3) as predicted.

	Beta	p-value	Results
BU → BR	0.31	0.001	Supported
BP → BR	0.37	0.001	Supported
BA → BR	0.29	0.01	Supported

Moderation Analysis

The moderating effect of brand love was tested by creating interaction variables from each of the emotional branding variable and the brand love variable. A hierarchical regression method was used to test the interaction effects per the procedures outlined by Hayes (2018). The results showed that brand love is a significant moderator of the relationship between all three dimensions of emotional branding and brand retention. As such, brand uniqueness, brand passion, and brand anthropomorphism were found to have a stronger positive effect on brand retention when brand love is high.

	Beta	Results
BU × BL	0.18	Significant
BP × BL	0.22	Significant
BA × BL	0.16	Significant

Discussion:

This research provides robust empirical support of emotional branding theory, suggesting that consumers establish long-lasting relationships with brands through emotional experiences rather than purely intellectual processes (Fournier, 1998; Thomson et al., 2005; Batra et al., 2012). The influence of brand passion, brand anthropomorphism, and brand uniqueness on brand retention all suggest that emotional meaning is fundamental to long-term consumer loyalty (Park et al., 2010; Albert & Merunka, 2013; Gilal et al., 2023).

The positive connection between brand uniqueness and brand retention further emphasizes the value of symbolic differentiation. Brands that are viewed as unique become vital to how customers see themselves, and enhance the emotional ties to each customer (Escalas & Bettman, 2003; Stokburger-Sauer & Teichmann, 2013; Rubio et al., 2020). This finding supports the relationship marketing theory, which states that the importance of identity alignment exists for people to maintain their relationships (Fournier, 1998; Aggarwal, 2004).

Brand passion results indicate that consumers' emotional ties have stronger bindings over time and involve stronger behavioral outcomes than those who do not have strong brand passion or emotional ties to the brand (Batra et al., 2012; Sarkar, 2011; Thomson et al., 2005). Brand passionate consumers tend to demonstrate more intense motivational energy to sustain their engagement with the brand, even in the face of competing brands (Albert & Merunka, 2013; Japutra et al., 2014).

Brand anthropomorphism is known to have a statistically significant effect on the consumer's ability to retain the brand, which is consistent with previous research that found that branding with human-like characteristics activates social scripts that develop and maintain emotional relationships between consumers and brands (Aggarwal & McGill, 2007; Epley et al., 2007; Waytz et al., 2010). Anthropomorphized brands are experienced by consumers as having a social presence and are more emotionally accessible, enabling consumers to develop greater trust and relational closeness with anthropomorphized brands (Rauschnabel & Ahuvia, 2014; Kim & McGill, 2011).

Additionally, brand love as a moderating variable suggests that consumers' emotional attachments contribute to how they interpret brand communications. This finding shows how attachment theory can be extended into the branding domain, where individuals who have an emotional bond with a brand are likely to experience an enhanced effect of the relational cue (Bowlby, 1982; Park et al., 2010; Batra et al., 2012).

Conclusion:

The purpose of this work was to investigate the ways in which each of the emotional characteristics related to the branding of products or services affects consumers' ongoing relationship with brands, as well as how brand love impacts these emotional characteristics. The research indicates that brand attributes such as uniqueness, passion, and anthropomorphism significantly influence the retention of brands. In addition, this study provides evidence that brand love increases the impact of these emotional attributes and shows the importance of brand love as a method for creating emotional connections through emotional connection in branding.

This study enhances our understanding of the ways that sustained loyalty to a brand, based on emotional reasons, is created through emotional connections in branding by building a unified model for emotional characteristics of branding. Further, the results of this study suggest that consumer loyalty is driven by emotional ties to brands, rather than simply by the degree to which consumers are satisfied with brands or perceive a value from a brand.

In summary, the research demonstrates that retention is primarily an emotional phenomenon arising from emotional connections with a brand, such as attachment and identity, and subsequently from the relational closeness of the consumer to the brand.

Implications:**Theoretical Implications:**

There are several important theoretical contributions of this study. First, it expands upon the emotional branding literature by looking at several emotional drivers together (as opposed to looking at them separately). Therefore, this gives researchers a more comprehensive view of how consumers think about and relate to brands.

Second, this study presents a new way of examining brand love by using it as a moderator (as opposed to just using it as a direct predictor). This helps to support attachment-based explanations for consumer behavior and shows that the emotional attachment consumers have with brands influences how consumers react to branding cues.

Lastly, this study supports the relationship marketing theory by showing that emotional engagement, as opposed to functional satisfaction, forms the basis for long-term loyalty. This supports existing research that frames brands as relationship partners rather than just market offerings.

Managerial Implications:

From a management perspective, the research provides many insights that you can act upon. For example, your brand identity should be emotionally unique rather than only functionally unique. By creating an emotionally distinct sense of identity with your customers through storytelling, symbolism and personalization, you can help them to build strong emotional attachments.

Additionally, marketers will need to foster emotional intensity and long-term loyalty through the experience

of passion for the brands they are promoting. Brands must use immersive experiences, emotional campaigns, and brand storytelling that is rich in emotion.

In addition, brands that connect with customers emotionally can humanize themselves through empathetic communication, conversational tone and relatable personification. The use of AI chatbots, brand mascots, and social media interactions will help in achieving anthropomorphism (the attribution of human-like qualities to non-human things).

Lastly, firms should work to cultivate brand love by continually reinforcing how much their products are valued by their customers and how well they fit into their lives. A customer who loves a product becomes not only a loyal customer but also an advocate of the brand.

Limitations:

While this study has made important contributions, it does have a number of limitations. The first limitation is the cross-sectional design of the research; therefore, causality cannot be established. Although we were able to propose a significant theory based upon established theory, there would be a stronger basis for causality with a longitudinal design.

Second, there is the possibility that the self-reported nature of the data collected influenced the study by introducing both common method variance and social desirability bias. We attempted to control for these effects via the protocols used in the data collection. Future research can add more validity to the findings through the use of either behavioral data or experimental designs.

Third, convenience sampling was employed as the basis for the sample used in this study; thus, the generalizability of the results will be limited. Future research should use probability sampling techniques and ensure that the samples utilized are representative of the populations from which they are drawn.

Finally, this study examined general brand relationships rather than examining specific relationships within specific industries. The emotional dynamics of brand associations may differ across product categories such as luxury brands, technology brands or service brands.

Future Research Directions:

There are a number of potential avenues for future research that could follow on from this project. Longitudinal designs could be used to examine how emotions change over time and how brand love emerges at different stages in someone's life as they experience various 'consumer journeys'.

Future studies could also test other constructs related to emotion, such as trust, nostalgia, and emotional security, to see if they moderate or mediate the emotional attachment people have to brands.

In addition, cross-cultural studies can help us understand how emotional processes work within specific cultural frameworks, since people from different cultures express emotions differently and build relationships with brands differently than those in their own culture.

Finally, qualitative methodologies such as interviews and diary studies could offer further depth into the emotional stories people create about their experiences with brands.

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EARNINGS MANAGEMENT, CAPITAL STRUCTURE, AND FINANCIAL DISTRESS: THE MODERATING ROLE OF FIRM LIFE CYCLE IN AN EMERGING MARKET

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Abstract

This study attempts to design a research framework investigating the impact of earnings management and capital structure on financial distress, while examining the moderating role of firm life cycle in Vietnamese listed firms. Based on agency theory, signaling theory, and life cycle theory, a comprehensive framework is developed to explain how managerial behavior and financing decisions influence financial stability across different developmental stages. Using a panel dataset of approximately 200–300 non-financial firms listed on HOSE and HNX from 2015 to 2024, the study employs regression techniques to test both direct and moderating effects. Earnings management is proxied by accrual quality, while capital structure is measured by leverage ratios. Financial distress is captured using the modified Altman Z-score model. This study is expected to contribute to the literature by integrating earnings quality, capital structure, and life cycle perspectives in an emerging market context. It also provides practical implications for managers and policymakers in improving financial transparency and risk management.

Keywords: *Capital Structure, Earning Management, Financial Distress, Firm Life Cycle, Z-Score.*

1. Introduction

1.1 Background of the Study

Financial distress has emerged as a critical concern for firms in emerging markets, particularly in Vietnam, where rapid economic growth coexists with structural financial vulnerabilities. Despite strong expansion, many listed firms face increasing refinancing pressure, high leverage, and unstable cash flows, all of which elevate the likelihood of financial distress (Phung & Pham, 2019; World Bank, 2023). Beyond threatening firm survival, financial distress also erodes investor confidence and undermines market stability (Gottardo & Moisello, 2019).

Consequently, identifying its key determinants is essential for both academic inquiry and practical financial management. Among these determinants, managerial behavior and financing decisions play a central role.

Earnings management can distort financial reporting and delay the timely recognition of deteriorating performance, while capital structure—particularly excessive leverage—amplifies financial risk by increasing exposure to liquidity shocks and potential bankruptcy (Chan et al., 2025). Importantly, these factors are interrelated, as firms under higher debt pressure may engage in earnings manipulation to meet contractual or market expectations (Gottardo & Moisello, 2019).

The Vietnamese context provides a compelling empirical setting, characterized by rising firm exits and significant corporate bond maturities that intensify liquidity constraints (GSO, 2022, 2023; Vietnam News, 2024). High average leverage further compounds these risks (Phung & Pham, 2019). In this regard, incorporating a firm life-cycle perspective is crucial, as financing needs, risk exposure, and reporting incentives evolve across stages (Chatterjee et al., 2023). Integrating life-cycle dynamics with capital structure and earnings management thus offers a comprehensive framework for detecting early-stage financial distress and enhancing financial sustainability.

1.2 Problem Statement

Earnings management, defined as managerial discretion in financial reporting to influence reported earnings, is a critical determinant of financial transparency and decision-making (Akbar et al, 2022). Managers often engage in such practices to meet market expectations, avoid losses, or comply with debt covenants, thereby distorting the firm's true economic performance and delaying the timely identification of financial distress (Mohammad et al., 2024; Thu, 2023).

Concurrently, capital structure—particularly leverage—constitutes a fundamental source of financial risk. Under trade-off theory, firms balance the tax advantages of debt against expected distress costs; however, excessive leverage heightens repayment obligations and increases vulnerability to liquidity shocks (Fathiha et al., 2024). Empirical evidence consistently shows that highly leveraged firms face a greater likelihood of financial distress, especially under adverse conditions (Arhinful et al., 2025).

In the context of Vietnam, these risks are further exacerbated by structural weaknesses in financial management, including heavy reliance on short-term and poorly structured debt, which intensifies refinancing pressure (Phung & Pham, 2019; Vietnam News, 2024). Moreover, a short-term performance orientation reinforces earnings management behavior, compounding financial opacity. Importantly, the misalignment between financial strategies and firm life-cycle stages amplifies these vulnerabilities. Prior studies suggest that the interaction between leverage, earnings management, and life-cycle dynamics significantly undermines financial stability (Naz & Sheikh, 2022; Chatterjee et al., 2023). Accordingly, this study investigates these interrelationships to provide deeper insights into financial distress prediction and to enhance transparency and long-term sustainability (Sari & Ismah, 2022).

1.3 Research Objective

The overall objective of this study is to firstly examine the effect of earning management and capital structure on financial distress in Vietnamese listed firms. Besides, it also discovers the moderated effect of company life cycle (decline and growing) on the influence of earning management and capital structure on financial distress in Vietnamese listed firms. The detailed objectives of the study are as follows.

- To examine the effect of earning management on financial distress in Vietnamese listed firms.
- To examine the effect of capital structure on financial distress in Vietnamese listed firms.

- To examine the moderating effect of company life cycle on the relationship between earning management and financial distress in Vietnamese listed firms.
- To examine the moderating effect of company life cycle on the relationship between capital structure and financial distress in Vietnamese listed firms.

2. Literature Review

2.1 Review of Theories

2.1.1 Agency Theory

Agency theory provides a fundamental framework for understanding managerial behavior in financial reporting and financing decisions. The separation between ownership and control creates information asymmetry, allowing managers to exercise discretion over accounting choices and potentially engage in opportunistic earnings management (Ben Rejeb et al, 2024; Viana Jr et al., 2022). From a contracting perspective, earnings management arises as managers attempt to avoid violations of debt covenants, meet compensation targets, or influence external perceptions of firm performance (Hartam, & Kresnawati, 2022).

Agency conflicts also extend to capital structure decisions. Managers may prefer debt or equity financing based on personal incentives rather than shareholder value maximization, particularly under financial pressure. In this context, leverage can serve both as a disciplinary mechanism and a source of agency costs, depending on the firm's governance quality (Douglas, 2022). Therefore, agency theory provides a coherent explanation linking earnings management, capital structure, and financial distress.

2.1.2 Life Cycle Theory

Firm life cycle theory posits that firms evolve through distinct stages—introduction, growth, maturity, and decline—each characterized by different financial structures, risk profiles, and managerial incentives (Al-Hadi et al., 2019). These stages influence firms' investment opportunities, financing needs, and reporting behavior. In early and growth stages, firms typically face high uncertainty and rely heavily on external financing, which increases incentives for earnings management due to information asymmetry. Mature firms, by contrast, exhibit more stable cash flows and lower reporting incentives, while declining firms may engage in opportunistic reporting to conceal deteriorating performance or renegotiate debt (Anggraini & Hendranastiti, 2023; Krishnan et al., 2021). Accordingly, life cycle theory suggests that both earnings management and capital structure decisions are not static but vary systematically across stages, thereby influencing the likelihood and severity of financial distress.

2.1.3 Signaling Theory

Signaling theory explains how firms communicate private information to external stakeholders under conditions of information asymmetry. Financial decisions such as leverage, dividend policy, and disclosure practices act as signals of firm quality (Viana Jr et al., 2022; Alhebri & Al-Duais, 2020). Leverage, for instance, may signal confidence in future cash flows; however, excessive debt can instead signal financial vulnerability, particularly in distressed conditions (Naz & Sheikh, 2022). Similarly, earnings management may distort signals by reducing the credibility of financial reporting, thereby misleading investors and creditors. In the context of financial distress, signals derived from financial statements become increasingly important. However, when earnings quality is compromised, the signaling mechanism weakens, reducing the effectiveness of market discipline and delaying corrective actions (Gottardo & Moisello, 2019).

2.2 Review of Previous Studies

Extensive empirical literature documents a significant relationship between earnings management and financial distress. Prior studies suggest that firms engage in earnings manipulation to conceal poor performance, avoid losses, or delay the recognition of financial difficulties (Ben Rejeb et al., 2024; Li et al., 2020). Such practices reduce the transparency and reliability of financial reporting, potentially misleading investors and creditors. Empirical evidence further indicates that firms experiencing financial pressure tend to exhibit higher discretionary accruals, particularly in the periods preceding distress or bankruptcy (Dewi & Rahma, 2025). Although some studies argue that earnings management may temporarily alleviate financial constraints, the prevailing view is that it exacerbates long-term financial instability by masking underlying economic problems (Krishnan et al., 2021).

Capital structure, particularly leverage, is widely recognized as a key determinant of financial distress. According to trade-off theory, firms balance the tax benefits of debt against the expected costs of financial distress; however, excessive leverage increases fixed financial obligations and reduces financial flexibility (Arhinful et al., 2025). Empirical studies consistently demonstrate that highly leveraged firms are more vulnerable to adverse economic conditions and face a higher probability of financial failure (Nguyen et al., 2025; Abdullah et al., 2023). In addition, refinancing risk and debt overhang problems further intensify liquidity constraints, especially in emerging markets with less developed financial systems. Importantly, capital structure is closely linked with managerial behavior. Firms under high debt pressure are more likely to engage in earnings management to meet contractual obligations or avoid covenant violations, indicating that leverage and earnings quality jointly influence financial distress rather than operating independently (Gottardo & Moisello, 2019).

Recent literature highlights the importance of firm life cycle in shaping financial behavior and distress risk. Earnings management incentives vary across stages, with higher manipulation observed in growth and decline phases due to financing needs, performance pressure, and resource constraints (Can & Ntim, 2020; Mohammad et al., 2024). Similarly, capital structure decisions evolve over the life cycle, as growth firms rely more on external financing, while mature firms achieve greater financial stability and declining firms face increased financial pressure (Akbar et al., 2022).

Despite these insights, prior studies largely examine earnings management, capital structure, and financial distress in isolation. Limited research has integrated these factors into a unified framework that considers their joint and interactive effects across firm life-cycle stages. This gap is particularly pronounced in emerging markets such as Vietnam, where firms are characterized by high leverage, increasing refinancing pressure, and evolving governance structures (Phung & Pham, 2019; World Bank, 2023). Addressing this gap, the present study contributes to literature in several ways. First, it examines the simultaneous effects of earnings management and capital structure on financial distress, providing a more comprehensive understanding of firm risk. Second, it incorporates firm life cycle as a moderating factor, capturing the dynamic nature of financial behavior across different stages of development. Third, by focusing on Vietnamese listed firms, the study offers context-specific evidence from an emerging market, where financial vulnerabilities and institutional characteristics differ from developed economies. By integrating these dimensions, the study enhances the explanatory power of financial distress models and provides

meaningful implications for improving financial transparency and long-term sustainability.

2.3. Hypothesis Development

2.3.1 Earning Management and Financial Distress

Earnings management is a critical determinant of firms' financial stability, as managerial discretion over accounting accruals can distort reported earnings and reduce the transparency of financial statements (Habib et al., 2013). Such distortions obscure the firm's underlying economic performance, limiting stakeholders' ability to accurately assess financial health and increasing the likelihood of suboptimal investment and lending decisions (Thu, 2023). Moreover, earnings management may enable firms to sustain inefficient financial policies—such as excessive borrowing or overinvestment—under the appearance of strong performance, thereby intensifying financial risk over time (Fathiha et al., 2024). Once these practices are revealed, firms often face declining market confidence, higher costs of capital, and constrained access to external financing, ultimately increasing the probability of financial distress.

H1: Earnings management is positively associated with financial distress.

2.3.2 Capital Structure and Financial Distress

Capital structure, particularly leverage, represents another fundamental driver of financial distress. While debt financing may enhance firm value through tax benefits, it simultaneously imposes fixed financial obligations that increase vulnerability to cash flow volatility (Ardi & Windijarto, 2023; Nguyen, 2024). Highly leveraged firms are more exposed to liquidity shocks and face a greater risk of default, especially during adverse economic conditions. In response, creditors may impose stricter financing terms, further limiting firms' financial flexibility and exacerbating distress risk (Zhou & Lok, 2024).

H2: Capital structure (leverage) is positively associated with financial distress.

2.3.3. Moderating Effect of Firm Life Cycle

Importantly, the firm life cycle provides a dynamic framework through which these relationships can be better understood. Firms at different stages exhibit varying financial characteristics, risk profiles, and managerial incentives (Chhillar, 2024). Growth firms, characterized by high financing needs and unstable cash flows, are more susceptible to distress when both leverage and earnings manipulation are elevated (Xin et al., 2023). In contrast, mature firms benefit from greater stability and governance, potentially mitigating these effects (Wardhana et al., 2025). However, in decline stages, deteriorating performance intensifies both financial pressure and opportunistic behavior, amplifying distress risk (Hartam & Kresnawati, 2022).

H3: Firm life cycle moderates the relationship between earnings management and financial distress.

H4: Firm life cycle moderates the relationship between capital structure and financial distress.

3. Methodology

3.1 Research Design

This study adopts a quantitative research design to investigate the relationships among earnings management, capital structure, and financial distress. Grounded in the positivist paradigm, it assumes that these relationships can be objectively measured and empirically tested using observable data. A deductive approach is employed, whereby hypotheses are derived from established theories and prior empirical evidence and subsequently tested using panel data techniques. The research follows a structured process,

including theory development, variable operationalization, econometric estimation, and interpretation of findings. This systematic approach enhances the reliability, validity, and generalizability of the results, ensuring robust and theory-consistent empirical conclusions.

3.2 Sample and Sampling Method

This study employs secondary (archival) data derived from the financial statements of listed firms in Vietnam, ensuring objectivity and measurement consistency. To enhance comparability, financial institutions are excluded due to their distinct regulatory and reporting frameworks (Salehi et al., 2022). The sample comprises firms listed on HOSE and HNX over the 2015–2024 period, allowing for longitudinal analysis of earnings management, capital structure, and life-cycle dynamics. Only firms with complete and reliable financial data are retained, resulting in an unbalanced panel of approximately 200–300 firms. This sampling design strengthens empirical robustness and ensures representativeness within the Vietnamese market context.

3.3 Variable Measurement

3.3.1 Dependent Variable

Financial distress is measured using a financial ratio-based approach, as prior literature demonstrates that accounting ratios provide effective early warning signals of distress conditions (García & Herrero, 2021). Rather than adopting a binary classification of bankrupt versus non-bankrupt firms, this study focuses on capturing the degree of financial vulnerability. Specifically, the study employs the Modified Altman Z-score, which excludes the market value of equity to total debt ratio to avoid redundancy with leverage measures (Li et al., 2020). This modification is particularly suitable for examining the role of capital structure and has been widely validated in prior studies (Suprabha et al., 2024; Viana et al., 2022). The formula for this case is conducted:

$$Z = 0.012 * X1 + 0.014 * X2 + 0.033 * X3 + 0.999 * X4$$

Where:

$$X1 = \frac{\text{Working capital}}{\text{Total asset}}$$

$$X2 = \frac{\text{Retained earning}}{\text{Total asset}}$$

$$X3 = \frac{\text{Earnings before interest and taxes/total assets}}{\text{Total asset}}$$

$$X4 = \frac{\text{Sales}}{\text{Total asset}}$$

A higher Z-score indicates better financial health and a lower probability of financial distress. This measure is particularly appropriate for firms in Vietnam due to the availability and reliability of financial statement data.

3.3.2 Independent Variable

Earning Management

Earnings management is proxied by accrual quality (AQ) following the model developed by Francis et al.

(2005), which integrates the frameworks of Patricia Dechow and Ilia D. Dichev. This approach captures the extent to which accruals reflect underlying cash flow realizations and distinguishes between discretionary and non-discretionary components. Total current accruals (TCA) are estimated and regressed on past, current, and future cash flows from operations, changes in revenue, and property, plant, and equipment (PPE), with all variables scaled by total assets. The residual term (ϵ) from this regression represents accrual estimation error. There were three main steps for this variable:

Firstly, this study conducts the ϵ based on the formula:

$$TCA_{i,t} = \beta_0 + \beta_1 * CFO_{i,t-1} + \beta_2 * CFO_{i,t} + \beta_3 * CFO_{i,t+1} + \beta_4 * \Delta REV_{i,t} + \beta_5 * PPE_{i,t} + \epsilon_{i,t}$$

Where:

TCA = total current accruals;

CFO_{t-1} = previous year's cash flow from operations;

CFO_t = present year's cash flow from operations;

CFO_{t+1} = next year's cash flow from operations;

ΔREV = change in the revenue from the previous year;

PPE = gross property, plant and equipment

All variables are divided to total asset at the time t.

The formula detail for this evidence is conducted:

$$TCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t}$$

Where:

ΔCA = change in current assets;

ΔCL = change in current liabilities;

$\Delta CASH$ = change in cash and cash equivalents;

ΔSTD = change in debt included in current liabilities;

NIBE = net income before extraordinary items.

Accrual quality is then measured as the standard deviation of residuals over a five-year rolling window (t to t-4). A higher standard deviation indicates lower accrual quality and greater earnings management. This measure is widely used in the literature due to its ability to capture the reliability of earnings and its suitability for emerging markets with available financial data. The formula for accrual quality is conducted based on this equation:

$$AQ_{i,t} = b_{i,0} + b_1 * SIZE_{i,t} + b_2 * CFO_{i,t} + b_3 * SALES_{i,t} + b_4 * NEGEARN_{i,t} + e_{i,t}$$

Where:

SIZE: firm size = $\ln(\text{total asset})$

σCFO = standard deviation of the cash flow from operations to total asset estimated over a 5-year rolling window.

$\sigma Sales$ = standard deviation of net sales to total asset estimated over a 5-year rolling window

NEGEARN = number of instances of loss reported by the firm in the last 5 years. It is calculated based on counting the net loss for net income in financial reporting.

The standard deviation for this model is the measurement for discretionary accruals quality or the earning management of Vietnamese listed firms. When the ε of accrual quality model is higher, it also increases the earning management for Vietnamese listed firms or reduced the quality of earning based on the cash flow operation, sale and negative earning for each firm.

Capital Structure

Capital structure is measured using leverage (CAP), defined as the ratio of total debt to total assets. The book value of debt is employed, as it more accurately reflects managerial financing decisions and repayment obligations (García & Herrero, 2021). This proxy effectively captures firms' financial risk exposure and is commonly used in empirical studies examining financial distress. The formula for capital structure is also conducted:

$$CAP = \frac{\text{Total debt}}{\text{Total asset}}$$

3.3.3 Moderating Variable

Firm life cycle is measured using three components: dividend payout, sales growth, and firm age. These indicators effectively capture growth or decline stages and are easily obtained from financial statements of Vietnamese listed firms. Dividend payout is calculated as total dividends over net income after tax, firm age is the difference between establishment and listing year, and sales growth reflects revenue changes between consecutive years. Together, these variables provide a practical and reliable basis for classifying firms across life cycle stages. There are some main steps to determine the firm life cycle of Vietnamese listed firms:

Firstly, three life cycle descriptors are selected, namely, dividend payout (DP), sales growth (SG), and Age. Secondly, the value of the three descriptors (DP, SG, and Age) is calculated for each firm and each year. To detail, these variables are collected in financial statements or financial ratios of Vietnamese listed firms based on this table:

Variable	Formula/ Source
Dividend payout (DP)	total dividend / net income
Sale growth	Change in revenue from presented year to previous year.
Firm age	Listed year – Established year

Thirdly, for each firm-year, median values of the descriptors (MDP and MSG) are calculated using prior 5-year data.

Fourthly, all descriptors are grouped into various life stages such as [Low, Medium, High] for MDP, MSG, and [Young, Adult, Old] for age for all the firm-years on the basis of this table. Equal number of firms was assigned to each life cycle stage according to the individual life cycle descriptor.

Life Cycle Stages	Dividend Payout	Sales Growth	Age
Growth	Low	High	Young
Mature	Medium	Medium	Adult
Stagnant	High	Low	Old

Firm life cycle is classified based on dividend payout, firm age, and growth. Firms with low dividend payout,

younger age, and high growth are categorized as growth-stage, while firms with high dividend payout, older age, and low growth are considered in decline. Firms are scored as 1 (growth), 2 (mature), or 3 (stagnant/decline), and a composite score is used for final classification into growth, mature, or decline stages. Two dummy variables—Growth_Dummy and Decline_Dummy—are applied, along with interaction terms between these dummies and key variables (earnings management and debt) to capture life-cycle effects. The details for growth dummy and decline dummy is conducted based on these equations:

Growth_Dummy: D=1 if the observation is determined as the growth firms based on the firm cycle tables, otherwise D=0

Decline_Dummy: D=1 if the observation is determined as the decline firms based on the firm cycle tables, otherwise D=0.

3.3.4 Control Variable

In the study, control variables include firm size, firm performance as the return on asset (ROA), firm age and market to book value. The details for control variables in this study are demonstrated in this table:

Variables	Authors	Variable description/ formula
Firm size	Chhillar & Lellapalli (2022)	SIZE = $\ln(\text{total asset})$
Firm performance		ROA = $\text{Net income} / \text{total asset}$
Firm age		AGE = $\text{Year listed firms} - \text{year established}$
Market to book value		MTB = $\text{market value} / \text{book value of equity}$

3.4 Research Model and Data Analysis

The empirical model of this study is grounded in prior literature examining the determinants of financial distress, particularly the roles of earnings management and capital structure (Chhillar & Lellapalli, 2022). Building on this framework, the study extends existing models by incorporating the moderating effect of firm life cycle to capture the dynamic nature of financial decision-making. Prior evidence suggests that firms' financing patterns evolve across life-cycle stages, shifting from internal financing to external sources such as debt and equity as firms mature (Ngo et al., 2023). Younger firms, characterized by higher informational opacity and growth opportunities, tend to rely more heavily on external financing, thereby increasing financial risk. From an agency perspective, managerial incentives also vary across life-cycle stages, influencing both reporting behavior and financing decisions, which in turn affect financial outcomes (Suprabha et al., 2024). To empirically test these relationships, two regression models are specified. The first model examines the direct effects of earnings management and capital structure on financial distress, while the second model introduces interaction terms to capture the moderating role of firm life cycle.

Model 1 (Baseline model):

$$\text{ZSCORE} = \varepsilon + \beta_0 + \beta_1 * \text{AQ} + \beta_2 * \text{CAP} + \beta_3 * \text{SIZE} + \beta_4 * \text{ROA} + \beta_5 * \text{AGE} + \beta_6 * \text{MTB}$$

Model 2 (Moderated effect):

$$\text{ZSCORE} = \varepsilon + \beta_0 + \beta_1 * \text{AQ} + \beta_2 * \text{CAP} + \beta_3 * \text{Growth} + \beta_4 * \text{Decline} + \beta_5 * \text{AQ} * \text{Growth} + \beta_6 * \text{CAP} * \text{Growth} + \beta_7 * \text{AQ} * \text{Decline} + \beta_8 * \text{CAP} * \text{Decline} + \beta_9 * \text{SIZE} + \beta_{10} * \text{ROA} + \beta_{11} * \text{AGE} + \beta_{12} * \text{MTB}$$

Where:

Dependent variable: ZSCORE: Financial distress

Independent variables:

AQ: Earning management

CAP: Capital structure

Moderated variables:

Growth: Firm growth based on the firm life cycle measurement

Decline: Firm decline based on the firm life cycle measurement

AQ*Growth: Moderated effect of firm growth on earning management.

CAP*Growth: Moderated effect of firm growth on capital structure.

AQ*Decline: Moderated effect of firm decline on earning management.

CAP* Decline: Moderated effect of firm decline on capital structure.

Control variables:

SIZE: Firm size

ROA: Firm performance based on return on asset.

AGE: Firm age

MTB: Market to book value.

The empirical analysis is conducted using panel data techniques in STATA. The estimation procedure follows several steps to ensure robustness and reliability. First, descriptive statistics are reported to summarize the characteristics of the sample and identify potential outliers. Second, correlation analysis is performed to examine the initial relationships among variables and detect potential multicollinearity issues. This is further assessed using the Variance Inflation Factor (VIF). Third, panel regression models are estimated using both fixed effects (FE) and random effects (RE) specifications. The appropriate model is selected based on the Hausman test and F-test, ensuring consistency and efficiency of the estimators. To address potential econometric issues, diagnostic tests are conducted. The Modified Wald test is used to detect heteroscedasticity, while the Wooldridge test examines autocorrelation in panel data. If these issues are present, the study applies Feasible Generalized Least Squares (FGLS) to obtain robust and efficient estimates. This comprehensive estimation strategy enhances the validity of empirical findings and ensures that the results are not biased by common panel data issues.

4. Conclusion

Financial distress represents a critical challenge for firms operating in emerging markets such as Vietnam, where rapid economic development is often accompanied by structural financial vulnerabilities. Despite its importance, the interaction between earnings management, capital structure, and firm life cycle remains insufficiently explored in the Vietnamese context. This study's main purpose is to address that gap by developing a research model investigating the direct and moderating effects of these factors on financial distress using a panel dataset of approximately 200 listed firms on HOSE and HNX over the period 2015–2024. By integrating firm life cycle into the analysis, the study provides a more dynamic and comprehensive understanding of financial risk. The study findings are expected to contribute to the literature by enhancing the predictive power of financial distress models and offering practical implications for

improving financial transparency, risk management, and long-term sustainability in emerging markets.

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POSITIONLESS MARKETING THEORY, POSITIONLESS MARKETING STRATEGY AND POSITIONLESS MARKETING PRINCIPLES

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Abstract:

The term Positionless Marketing was first coined by Saurav Kumar in his researches on marketing and consumer behaviour particularly based on artificial intelligence. The Marketing has evolved beyond static roles and siloed teams. In today's hyper-dynamic environment, customer expectations demand more: speed, relevance, empathy, and personalization. That is where the Positionless Marketer thrives. Enabled by Positionless Marketing, modern marketers are no longer confined to the limitations of marketing assembly lines. They can now execute any marketing task instantly and independently, from audience segmentation to campaign creation to performance optimization. While this shift is powered by AI, automation, and real-time data, the underlying success still depends on one thing: understanding people. This is where Dale Carnegie's timeless book: "How to Win Friends & Influence People," published in 1936, becomes surprisingly modern. With more than 30 million copies sold, Carnegie's principles remain essential for anyone trying to build meaningful relationships, including marketers. At its core, Positionless Marketing is about just that: forging genuine, personal connections at scale.

Research Objective: *How the core habits from Carnegie's classic, map directly to the practice of Positionless Marketing and provides Positionless marketing theory, Positionless marketing strategy and Positionless marketing principles.*

Research Methodology: *The study explains by using Dale Carnegie's habits how positionless marketing can be emphasized and provides Positionless marketing theory, Positionless marketing strategy and Positionless marketing principles.*

Originality value: *The research first to foster a unique way of explaining the positionless marketing.*

Keywords: *Positionless marketing theory, Positionless marketing strategy and Positionless marketing principles.*

Result & Findings: *Positionless Marketing Theory defined by Saurav Kumar "Positionless Marketing is about cultivating a team that doesn't just react to change, but anticipates it, embraces it, and leverages it to create unparalleled value for customers and businesses".*

Positionless Marketing Strategy stated by Saurav Kumar "Positionless Marketing Strategy means companies must built a hierarchical structure such as a "swarm intelligence" model, where individual

agents are highly informed and coordinated, but also free to react to local conditions.

Saurav Kumars Five Positionless marketing principles:

- 1.) Principle of Experience, Memories and Loyalty*
- 2.) Principle of Dynamic Personalization and Real-Time Engagement*
- 3.) Principle of Ethical Considerations in AI Personalization*
- 4.) Principle of Versatility and Adaptability*
- 5.) Principle of Integration and Collaboration*

Introduction

In today's hyper-competitive and fast-changing business environment, sticking to a rigid brand identity can limit growth and alienate consumers who expect brands to evolve with their needs and aspirations. Enter positionless marketing, a strategy that redefines traditional branding by focusing on adaptability, relevance, and consumer-centricity instead of a fixed position. The term Positionless Marketing was first coined by Saurav Kumar in his researches on marketing and consumer behaviour. While the concept has gained momentum globally, Indian companies are also increasingly adopting this approach to navigate the country's diverse consumer base and rapidly evolving market dynamics Kumar, S. (2024). Positionless marketing allows brands to fluidly adapt their identity, messaging, and offerings to stay relevant to evolving market trends and consumer preferences. Unlike traditional marketing, which emphasizes a fixed positioning (e.g., "luxury," "budget-friendly," or "eco-friendly"), positionless marketing avoids such constraints, enabling brands to appeal to different segments at different times. For example ; A tech company like Reliance Jio markets itself as a connectivity enabler for rural India with affordable data plans but also targets urban consumers with high-speed broadband services. Tata Group, a conglomerate, operates across diverse sectors like tea, automobiles, and software, maintaining relevance by tailoring its messaging to the specific audience of each vertical without limiting itself to a singular brand image Kumar, S. (2023). Positionless Marketing is a modern approach where AI and integrated tools empower every marketer to independently handle tasks traditionally split between specialists (data, creative, optimization), breaking down silos for faster, more agile, and hyper-personalized campaign execution, shifting from a slow "assembly-line" model to continuous, independent action. It grants marketers "Data Power" (insights), "Creative Power" (content), and "Optimization Power" (self-tuning campaigns) to create, test, and deploy at the speed of the customer, reducing bottlenecks and increasing efficiency Kumar, S. (2024). At its core, Positionless Marketing is about breaking down rigid roles and empowering marketers to move independently across data analysis, creative execution, optimization, and orchestration. Enabled by AI, today's marketers can do more, and do it faster. As AI reshapes what's possible in marketing, Positionless Marketing provides the framework to unlock that potential. It's not just about tools. It's about culture, ambition, and empowering every marketer to do more. **Research Objective:** *How the core habits from Carnegie's classic, map directly to the practice of Positionless Marketing and provides Positionless marketing theory, Positionless marketing strategy and Positionless marketing principles..* **Research Methodology:** *The study explains by using Dale Carnegie's habits how positionless marketing can be emphasized and provides Positionless marketing theory, Positionless marketing strategy and Positionless*

marketing principles..

Consumer Buying Process

In order to make a choice and carry out the act of purchase, the consumer must go through a complex decision-making process. In the model of Engel, Kollat and Blackwell (1995: 95), the consumer goes through five stages. Firstly, the consumer becomes aware of the lack he has, thus, a need will be created and the quest for the satisfaction of this need begins in order to compensate for this lack. In some cases the awareness of the problem may be due to a need whose motivation is linked to social influence Kumar, S. (2023). Once the need has been identified, the search for information begins. The extent of the search will depend on the degree of consumer involvement (e.g. buying a book requires less involvement than buying a camera). Generally there are two sources of information: internal (related to the individual's experience, education, knowledge, memory...) and external (family, friends, media communication, salespeople...). At this stage, when looking for information, the consumer can ask for advice from his or her family, listen to radio broadcasts, or seek advice directly from an expert in the store. The information gathered will influence his final choice Kumar, S. (2024). After researching information, it is now the stage of evaluating alternatives. The person can proceed to evaluate the products/services according to their degree of importance and the attributes they offer. Now it's time for the purchase decision, the person will proceed with the purchase act. This step is the concretization of the previous steps. Result or post-purchase evaluation, is the stage in which the consumer, after using / benefiting from the product, will proceed to evaluate the performance of the product or the provision of service in relation to his expectations. If there is no gap or just a little gap, satisfaction is achieved. Otherwise the consumer will have a negative feeling towards the brand, the product... The post-purchase experience influences the buyer's future decisions but also the opinion he will communicate to his peers. As we can see, during this process, the consumer is influenced by several actors: family, experts etc. They are called opinion leaders Kumar, S. (2023).

Opinion leader

An opinion leader is a person who informally influences the behaviour of others in a desired direction. They occupy a key position because of the skills they are credited with in a particular area and the size of community (Vernette and Flores, 2004: 35) Kumar, S. (2025). The more they share commonalities with their audience, the more they will be listened to. Before the advent of social media, it was the traditional mass media that mainly influenced consumers. Messages were conveyed by radio, newspapers or news in movies. There are of course other types of opinion leaders, such as politicians or celebrities. In order to influence the consumer, influencers could increase their influence by using communication tools. The next chapter aims to outline the advice given by Dale Carnegie in 1936.

Dale Carnegie' teaching in How to Win Friends and Influence People

Dale Carnegie was born on November 24, 1888 in Maryville, Missouri (USA). This writer and lecturer proposed a method of personal development adapted to the business world that today bears his name (Dale Carnegie, 2020). For Dale Carnegie, positive thinking is very important for professional success and employee motivation. His methods have been implemented in the training and development of salespeople and managers to approach customers and prospects. He died on November 1, 1955 (The Editors of Encyclopaedia Britannica 2020) Kumar, S. (2025).

How to Win Friends and Influence People

Dale Carnegie published *How to win Friends and Influence People* in 1936, which became a bestseller. It was first published in five thousand copies. Today it has sold some 40 million copies worldwide. The book has been translated into 37 languages. In *How to win Friends and Influence People*, Dale Carnegie shows us that it's not so hard to make new friends and get people to like you. There are techniques and behaviours to do this. That's what this book explains. So the advice in the book applies to everyday life as well as business. The teachings are punctuated by examples from the author's personal experiences. According to the author Kumar, S. (2024), the path to happiness and a better life is based above all on the desire to improve and master the principles that govern human relationships. Dale Carnegie has identified four major principles that are developed throughout the book.

The principles of the book

PART ONE: In the first part of the book, Dale Carnegie explains the 3 fundamental techniques for influencing others and making friends.

"Don't criticize, condemn, or complain" (Carnegie 2011: 40) : Dale tells us that instead of condemning people, it's better to try to understand them, find out the motive for their actions and do it all in order to stay in neutral mode. This is much more enjoyable and productive than criticizing, and it makes us more tolerant, understanding and good. People will be more open to listening to us.

"Give honest and sincere appreciation" (Carnegie 2011: 53) : There's only one way to get a person to do something. Indeed, it is to provoke in him the desire for that action. Dale Carnegie lists the different needs we ask for.

Dale Carnegie's list of needs:

1. Health and preservation of life
2. The food
3. Sleep
4. The money and property it provides
5. Future Survival
6. Physical satisfaction
7. The happiness of our children
8. The sense of our importance.

Very often, most of these needs are satisfied. However, the thirst to be appreciated, to be recognized, to be considered important is often not satisfied. To give a person this importance, it is enough to compliment them sincerely.

"Arouse in the other person an eager want" (Carnegie 2011: 72) Then the author tells us why we tend to always talk about what we want. That is why the only way to influence your neighbour is to talk to him about what he wants and how to get it. Put yourself in the other person's shoes, and look at things from both their point of view and ours. To influence others, we must first of all provoke in one of them a desire to act.

PART TWO: In this second part, Dale Carnegie tells us how to win the sympathy of others.

"Become genuinely interested in other people." (Carnegie 2011: 87) Kumar, S. (2025) The author tells us that in order for others to be interested in us, we must first be interested in them. Appreciating others helps

us make friends. The goal is to do it with sincerity.

"Smile" (Carnegie 2011: 95) Here the author talks about the importance of smiling. The sincere smile says: "I like you", "I'm happy to see you", "Your presence makes me happy", etc. The smile is so important that it can even be heard in our voice. People will have a better image of us.

"Remember that a person's name is, to that person, the sweetest and most important sound in any language" (Carnegie 2011: 103). Here Dale Carnegie talks about the importance of remembering names. He says that everyone prefers their name to every other name on earth. But if we forget or misspell a name, then we are likely to displease. The first step to making friends is to remember their names. Therefore, when we want to influence someone, calling them by their first name is a good thing.

"Be a good listener. Encourage others to talk about themselves" (Carnegie 2011: 113) Knowing how to listen sincerely and show it is very useful. To do this, it is necessary to ask stimulating, pleasant questions, to ask the person about his life, about what he has done. In this way we attract their sympathy.

"Talk in terms of the other person's interest" (Carnegie 2011: 118) According to the author, if we find out what interests someone, what they are passionate about, all we have to do is take an interest in it, use active listening, ask questions... In addition to the fact that the person in front of us will enjoy talking about themselves, we will also know more about them, which is to our advantage to influence them.

"Make the other person feel important, and do it sincerely" (Carnegie 2011: 129) Finally, the last tip tells us that we must make others feel their importance. That means holding those around us in esteem.

PART THREE: In the third part of the book, Dale gives us the tools to bring others to our point of view.

"Show respect for the other person's opinions. Never say "You're wrong."" (Carnegie 2011: 150) Here, the author shows us that if we disagree with another person, all we have to do is say "I could be wrong... let's see it together". Indeed, who can find anything wrong with that? That way, we won't get into trouble if we admit that we are prone to error.

"Start with questions to which the other person will answer yes" (Carnegie 2011: 172) When we want to convince someone, we must avoid, from the beginning, asking questions on which we disagree. This is an important point in making friends. Let's focus on the points that bring us together and underline them. To do so, asking questions whose answer is yes is very important, because if the answer is no, the person we are talking to will unconsciously be on the defensive.

"Let the other person feel the idea is his or hers" (Carnegie 2011: 183). Dale Carnegie also says that we should not impose our opinions at all costs, but make skillful suggestions, allowing the other person to draw his or her own conclusions.

"Appeal to the nobler motives" (Carnegie 2011: 200) Let's not judge and let's not have preconceived notions about people. Let us always think of them as potential friends and honest individuals. By thinking this way, we make ourselves more interesting to others.

"Dramatize your ideas" (Carnegie 2011: 204) By making our ideas big and sensational, we make it easier to make an impression on people. That way, they remember us more easily.

PART FOUR: In the 4th part, the author gives us the tools to be a leader, to change the attitude of others without irritating or offending.

"Talk about your own mistakes before criticizing the other person." (Carnegie 2011: 225) Hearing that they

are not the only ones who make mistakes makes people feel less guilty about the mistakes they make. It allows them to feel closer to us and to make us more human in their eyes. Finally, it makes us more credible in their eyes and encourages them to listen to us more.

"Praise every improvement" (Carnegie 2011: 237) According to Dale, every improvement, no matter how small, should be encouraged. That's how we stimulate those around us, that's how we encourage them to continue their efforts.

"Make the other person happy about doing what you suggest" (Carnegie 2011: 250) Finally, as last advice, the author tells us that we must convince others that our suggestions will benefit them. When we make a proposal, we have to formulate it in such a way that our interlocutor understands that he or she will gain personal benefit from it.

Discussion on relationship between Dale Carnegie' teaching and Positionless Marketing

The word "network" is attested since the 17th century in the lexicon of weavers. It was used to name the crossover between the fibres (Quentin, 2012). In the 18th century, its use was extended to the medical register to designate the blood system or the nervous system. It was in the 19th century that the word took on a new meaning to designate all the roads, roads and railways that run through a region or country. Whether it is a fibre network, a blood network, a nervous system or a road network, the word reflects the complexity of the links that exist between the different elements to represent a whole. All its uses suggest the interweaving, the circulation of elements for which the network is the support. For Pierre Mercklé (2004) Kumar, S. (2025), a sociologist who has carried out extensive research on the subject, "in everyday language, the return to the notion of network, [...] to designate groups of individuals and their relationships with each other, was confirmed in the middle of the 19th century". The advent of the Web and the transposition of social networks into platforms on the Internet have made it possible to translate the term "social network" in a new way. Social interaction between individuals, or groups of individuals, takes on a new dimension and it is now possible to create content. These new platforms for exchanges between several individuals, thanks to which a professional or private network can be built, allow to enrich and complete traditional social networks. In addition, the speed of contacts allows users to extend their contact networks to their contacts' contacts. This virtual transposition of a social network provides an additional opportunity to connect and interact. To reach 50 million users, it took thirty-eight years on radio, thirteen years on television, three years on the Internet, four years on the iPod, while Facebook will have won 100 million members in one year and Twitter has been even faster (Richter, 2012). The development of social networks has been rapid and, every day, new networks dedicated to specific uses or differentiated targets appear and integrate into our lives. In ten years, social networks have become a major part of the lives of Internet users, to the point where they spend an average of 136 minutes a day on them in 2018 (Clement, 2019). They have become platforms for exchange on which information and opinions can spread at high speed. Consumers are constantly looking for information on products, services, brands, and become experts in the fields that interest them: they move from consumers to prosumers (Toffler, 1980 :27) Kumar, S. (2025) and begin to form an opinion even before contacting a seller. For a long time, "public relations" remained the prerogative of a small number of personalities who had access to the media. Now, with the development of social networks and publishing services, everyone has become potentially visible on the Internet. The interest of these social platforms is,

beyond the community and user sharing aspect, to offer a marketing component. If a social network's primary purpose is to create connections and exchanges between its members, a social media opens up this network to a marketing dimension that includes a profit motive and advertising tools. As a result, everyone can create income through social networks in many ways. The era of social networks has seen the emergence of new influencers considered as opinion leaders. Now, an influencer is a person who uses a personal blog and/or social networks to communicate their opinions to Internet users and is able to influence them by changing their consumption patterns (Tuten and Solomon, 2019: 80). The influencer is most often a private individual, even if he is sometimes solicited by companies for commercial or advertising purposes. He can thus act as an ambassador for one or more brands or on his own behalf. Its power of influence depends on its popularity, its expertise on a given subject and the extent of its target (followers, fans, subscribers). Influencers are considered as opinion leader Kumar, S. (2025). Many brands are now turning to influencing bloggers to reach new audiences or engage them in a different way. They find ways to work together to ensure that their message is communicated by a source of authority to which the public pays attention. Newspaper advertising and the use of e-mail may soon disappear in favour of emarketing and social networks. After individuals, more and more companies are going on Facebook, Twitter or YouTube in order to reach millions of potential customers through the Internet. These new communication platforms are revolutionizing the sales and marketing strategies of small, medium and large companies. Indeed, social networks are real communication tools and thanks to their use, the brand image of a product or a company can quickly gain notoriety. The interaction between consumers and businesses is influenced by social networks (Darban & Li, 2012). Social networks thus become communities where information flows. These communities are considered by the consumer as a credible source of information for brand valuation. For example, a consumer who has purchased a product shares his or her opinion on social networks, whether positive or negative. He will thus be able to influence another consumer's decision. In this way the search for information during the purchasing process is changed. Indeed, besides asking family or friends for advice, people look at the opinion of social network influencers. It is now very quick to search for the desired information, just type in a few keywords. In addition, influencers very often share promo codes, which make it easier to buy something.

The evolution of promotional marketing

Due to the evolution of influencers, marketing has had to adapt to this new method of influencing in order to reach its customers. Previously, the push strategy referred to a "strategy to stimulate distributors to push the sale of such and such a product" (Lendrevie, Lindon, Lévy 2006: 353). This technique, through sales promotion and the distribution of samples, makes it possible to stimulate consumers and encourage them to buy. One company's pull strategy referred to a "strategy of attracting buyers to incite them to buy such and such a product" Kumar, S. (2025). This strategy was based on significant advertising investments with the objective of inciting the consumer to buy the brand (Lendrevie, Lindon, Lévy 2006: 352). Today, the distinction between these two techniques still applies to communication. In the world of media: push communication refers to traditional media, it starts from the organisation and moves towards the consumer; pull communication is that of digital media: the client follows the brands voluntarily (Lendrevie, Lindon, Lévy 2006: 355). Digital media have made it possible to move to a communication based on dialogue with

consumers, which can in other words allow a more long-term relationship thanks to the feeling of belonging to the brands. Another evolution in marketing concerns viral communication, which is based on digital word of mouth (WOM). WOM is defined as "the transmission of information and judgments of any kind from one individual to another, between peers, for noncommercial purposes." Viral marketing consists of generating word-of-mouth on the Internet (Baynast and Lendrevie, 2014: 36), via influencer marketing programs, communities, or viral videos. All contribute to building brand awareness. The Word of Mouth Marketing Association (WOMMA) was founded in 2004 with the aim of defining standards, identifying best practices and establishing viral marketing metrics. One of the most influential forms of communication is WOM. Trust in messages from peers is more important than trust in business (Smith, 2011: 489). A positive WOM can lead to product testing and purchase. However, it must be taken into account that if the WOM is negative, then it will lead to negative viral marketing and may then affect the brand in the long run. According to the Institute of Content Marketing (2020), content marketing is defined as "a strategic approach focused on creating and distributing valuable, relevant, and consistent content to attract and retain a clearly defined audience - and, ultimately, to drive profitable customer action. ». Thus, digital content marketing is positioned as the management of processes allowing to identify, anticipate and satisfy consumer needs through the use of digital content. Content marketing enables the creation of relevant content adapted to different user profiles Kumar, S. (2025). Numerous digital formats are available for the distribution of content: Posts on several social networks, Video, Podcast, Blogs etc. Each company defines its strategy according to the different customer profiles. The first use marketing through the influencers concerns sponsored articles (Bayle, N. 2019). A sponsored blog article consists, for a blogger, in being paid to publish content about the brand on his own blog, using his own tone. The beauty of sponsored articles is that each blogger can bring a unique perspective to the content so that it appeals to its readers. The second way is to use product reviews written by bloggers. This is another effective way to convince potential customers to make a purchase. Bloggers are known to be reliable sources, so their readers take note of any positive opinions about a brand. Then, influencers can also work through an affiliate program. This system can increase conversions for a product and bring a new audience to a brand. Offering contests in partnership with influencers and bloggers is also a way to do marketing. Finally, one of the other methods concerns advertising space. Indeed, placing ads on a YouTube video or on a blog allows you to awareness your brand by increasing the visibility of a brand.

Measure the power of influence in social media

The simplest way to calculate the power of influence of an influencer is to calculate its engagement rate (ER). An ER generally measures the commitment of consumers or subscribers to a publication, branded advertising or influencer (Sehl 2019). The notion of ER is mainly used in the field of social networks, each platform offers its own ER (Facebook ER, Instagram ER, etc.). The ER can also be used for blogs, articles, videos, etc. In general, a ER is calculated by dividing the total number of interactions related to a publication by the number of individuals exposed to that publication. The interactions taken into account are generally: likes, and comments. While they can be useful for making comparisons between different publications or for identifying trends, ER have two main limitations. They compile interactions that do not have the same value in terms of engagement. Indeed, a like is probably not worth a favourable comment or sharing. Finally, they

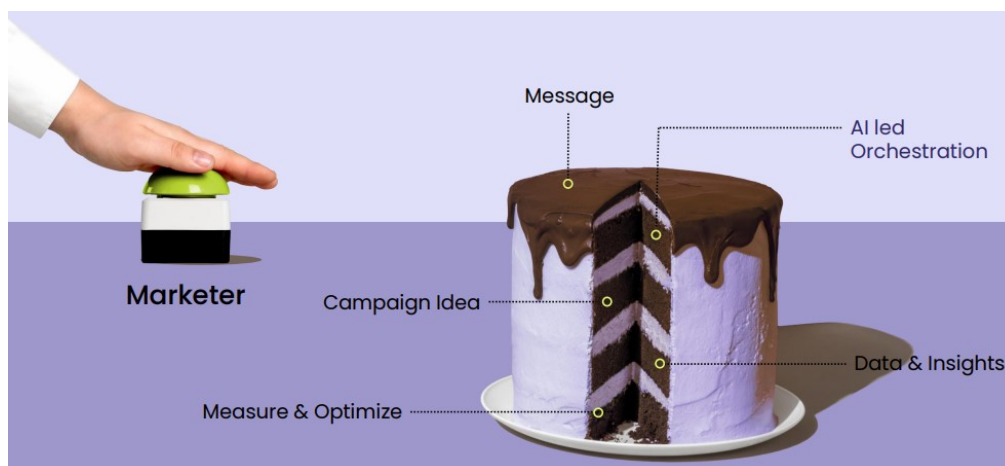
do not take into account the tone of the interactions. For example, a publication can be shared as part of a bad buzz. Also, ER can be distorted by the many robots that are rampant on social networks. For example, fake influencers can try to inflate their ER by buying likes or comments.

Viability of social network influences in the long term

Since influencers are sponsored, we could say that they will be less credible in the eyes of subscribers. The answer is yes and no. Most of consumers believe that partnerships with brands influence the advice and opinions of influencers (Chan, 2018). It is true that when money is at stake, our opinion can change. However, whether it's a fashion influencer or a YouTube gamer, the credibility of an influencer depends on the advice they give and the products they use. For example, a make-up specialist will have little interest in allying herself with a brand of cosmetics that she doesn't consider to be correct. Her image as an expert is based primarily on the advice she gives. And this is indeed the main characteristic of an influencer: her recognized position as an opinion leader. Having managed to position itself as an expert in its field among a large community of subscribers, its strength lies in the trust placed in it, which gives it real leadership in the consumer decisions of its community. Moreover, the article also shows us that consumers indicate that experts in their field are able to maintain their Moreover, if influencers abuse the trust of their subscribers, there is a high risk that it will come out. For example by recommend a product that subscribers will find bad, they will have less confidence in the influencer's advice afterwards. This is why it is in the interest of influencers to be transparent in their partnerships. Then Chan explains that consumers start to find repetitive content, it becomes rare to find original content among influencers. We find the same partnerships with the same brands between influencers, the same sunset photo Etc.. Thus, influencers must learn to innovate in order not to bore their audience.

1. Positionless Marketing Theory - Explanation

Traditionally, marketing roles were clearly defined: brand management, content creation, digital marketing, and analytics each had their specialized responsibilities. That structure resembled the clear-cut roles in basketball: point guards directed play, centers dominated the paint, and shooting guards nailed the three-pointers. The term Positionless Marketing was first coined by Saurav Kumar in his researches on marketing and consumer behaviour. However, the digital landscape's complexity and interconnectedness have dissolved boundaries, giving rise to the positionless marketer. While "positionless" might sound like a buzzword, its impact on your bottom line is anything but ethereal. Think about the traditional campaign cycle: ideation, creation, approval, launch, analysis. Each step a potential bottleneck, each hand-off a chance for miscommunication. With agile, positionless execution, you're looking at a dramatic reduction in time-to-market for campaigns. We're talking about shaving weeks, even months, off your cycle. This translates directly to increased responsiveness to market trends and customer feedback, leading to higher conversion rates and improved customer lifetime value. Consider the cost savings from reduced rework and more efficient resource allocation. When marketers are empowered with integrated data and tools, they make smarter decisions, faster. This isn't just about "doing more with less;" it's about "doing better, quicker, and with greater impact."



Expect to see your marketing ROI metrics climb as your teams become more autonomous and effective, turning insights into action before the competition even finishes their morning coffee.

Discussion on Experience Economy

Experience economy is used as an overarching concept for service providers in leisure and recreation industry whose primary goal is providing high quality experiences (Mehmetoglu & Engen, 2011). Pine and Gilmore (1999) explored the concept of experiences by coining the term, “experience economy”, which is the final phase of economic progression that has developed from commodity, product and service economy. Pine and Gilmore (1999, p. 12) defined experience as “events that engage individuals in a personal way”; whereas Oh et al., (2007, p. 120) define experiences as, “enjoyable, engaging, memorable encounters for those consuming these events”. While discussing experience economy, Pine and Gilmore (1998) identified four realms of customer experiences including entertainment, education, esthetic and escapism. These four dimensions are differentiated across two axes i.e., the degree of customer involvement and the connection of customer with the surroundings (Hosany & Witham, 2010). The first dimension is entertainment which is developed when passive absorption is observed by the customer such as watching a theatre performance (Oh et al., 2007). The second dimensions is esthetic where the customer has a passive participation and immersion in the experience. Examples for esthetic dimensions includes a beautiful arrangement of historical relics in a museum, an attractive servicescape or ambience in a resort hotel or experiencing the breath-taking scenery of Niagara Falls (Mehmetoglu & Engen, 2011). The third dimension is education which refers to an experience where the participant actively participates but is in absorption such as snorkelling, scuba diving or ski-schools. The fourth and the last dimension is escapism which happens when the participant is affecting the actual performances in the real or virtual environment for example, by rafting or playing in a casino (Hosany & Witham, 2010). To summarise, it can be stated that entertainment experience is about feeling, the educational experience learning, the esthetic experience presence, and the escapist experience doing influence customers’ emotions and satisfaction levels (Hosany & Witham, 2010; Mehmetoglu & Engen, 2011).

Conclusion 1: Positionless Marketing Theory defined by Saurav Kumar “Positionless Marketing is about cultivating a team that doesn't just react to change, but anticipates it, embraces it, and leverages it to create unparalleled value for customers and businesses”.

2. Positionless Marketing Strategy – Explanation

The "big deal" is simple: relevance. In a world where customer expectations are shaped by instant gratification and hyper-personalization, a marketing team structured like a 19th-century factory is a liability, not an asset. Positionless marketing tears down those internal walls. Imagine a marketer who isn't just a "social media specialist" but someone equipped with direct access to customer data, the creative tools to whip up a campaign, and the analytics to optimize it on the fly. They're not waiting for a brief to land on their desk; they're spotting opportunities and acting on them. This isn't just about efficiency; it's about fostering a culture of ownership, rapid experimentation, and genuine customer centricity. It's like giving every player on your team a universal remote, allowing them to switch channels, adjust volume, and even record, all without needing to call the control room. The result? Campaigns that hit harder, resonate deeper, and adapt faster than your competitors can say "quarterly review." Ready to ditch the silos? Here's your tactical roadmap. First, invest in a unified tech stack. This means CRM, marketing automation, analytics, and creative tools that talk to each other seamlessly. Data is the lifeblood of positionless marketing, and it needs to flow freely. Second, foster a culture of psychological safety and continuous learning. Empowering individuals means trusting them to make decisions and learn from their mistakes. Provide training not just in specific tools, but in broader marketing strategy, data interpretation, and creative thinking. Third, redefine "success." Move beyond vanity metrics to focus on tangible business outcomes. Encourage experimentation and rapid iteration over perfect, slow-moving campaigns. Think of it less as a hierarchical structure and more as a "swarm intelligence" model, where individual agents are highly informed and coordinated, but also free to react to local conditions. It's about building a team of T-shaped marketers: deep expertise in one area, broad understanding across many, ready to pivot and contribute wherever needed.

Conclusion 2: Positionless Marketing Strategy stated by Saurav Kumar “Positionless Marketing Strategy means companies must built a hierarchical structure such as a "swarm intelligence" model, where individual agents are highly informed and coordinated, but also free to react to local conditions.

Discussion on Harnessing Artificial Intelligence for Marketing Innovation

In the new era of AI in marketing, transformative approaches are reshaping the way businesses interact with their customers. Artificial Intelligence (AI) is revolutionizing the marketing landscape by providing innovative solutions and strategies. Through the use of AI, marketers can automate processes, personalize communication, and analyze vast amounts of data to make informed decisions. AI-powered technologies such as machine learning, natural language processing, and virtual assistants are transforming customer relationship management and enhancing strategic and tactical marketing. These transformative approaches offer numerous benefits, including improved data collection and analysis, increased return on investment (ROI), and enhanced customer relationships. However, they also come with risks that businesses must navigate, such as data interpretation challenges and security concerns. Embracing these transformative approaches is essential for businesses to stay competitive in the rapidly changing market. Across various sectors, businesses have harnessed artificial intelligence (AI) and big data analytics to handle enormous volumes of data from numerous sources, enabling autonomous decision-making and predictive capabilities. In the realm of marketing, AI has emerged as a game-changer, allowing companies to deliver personalized customer experiences, enhance advertising efficiency, and automate customer interactions (Chaturvedi &

Verma, 2022). Utilizing AI technologies such as machine learning algorithms and natural language processing (NLP), businesses can scrutinize extensive datasets, discern patterns, and craft customized marketing messages and services that bolster customer engagement and satisfaction (Nicolescu & Tudorache, 2022). The incorporation of AI into marketing strategies facilitates real-time personalization, dynamic content adjustments, and optimal resource management. Nevertheless, these advantages are accompanied by ethical and privacy challenges, including concerns about data security, algorithmic fairness, and transparency. Addressing these issues is essential to preserving consumer trust and ensuring ethical AI usage in marketing practices (Du & Xie, 2021). Unveiling the Benefits and Risks of AI-Driven Strategies AI-driven strategies in marketing offer a multitude of benefits. One key advantage is improved data collection and analysis, enabling marketers to gather valuable insights from vast amounts of information. This leads to increased ROI as businesses can make data-driven decisions and optimize their campaigns accordingly. AI also enhances customer relationships through personalized communication, allowing for more targeted and relevant interactions. Additionally, AI enables advanced performance measurement, providing marketers with real-time analytics to track and evaluate campaign effectiveness. However, there are risks associated with AI-driven strategies. Data interpretation challenges and cognitive biases can lead to inaccurate insights, while technological issues and security concerns pose potential threats. Businesses must carefully navigate these risks to harness the full potential of AI in marketing.

Conclusion 3: Saurav Kumar states the following five principles of Positionless marketing

Saurav Kumars Five Positionless marketing principles:

1.) Principle of Experience, Memories and Loyalty: It has been advised by Pine and Gilmore (2011) that customers' consumption experiences revolving around 4Es result in strong memories and positive behaviours. A limited number of scholars have studied this phenomena and they support the positive impact of 4Es on consumer memories (Gilmore & Pine, 2002; Quadri-Felitti & Fiore, 2013). In this context, Tung and Ritchie (2011) stated that a hedonic and entertaining experience that can enhance knowledge of the guests can end up with positive memories and positive behaviours such as revisits and recommendations to friends and family etc. (Kim, 2010; Quadri-Felitti & Fiore, 2012). Oh et al., (2007) and Hosany and Witham (2010) also observed a significant relationship between the 4Es and positive memories and loyal behaviour of guests in bed and breakfast and cruise ship industry.

2.) Principle of Dynamic Personalization and Real-Time Engagement: The adoption of AI in marketing strategies facilitates real-time personalization, enabling the adaptation of content and offers based on live interactions. AI platforms, as highlighted in recent research, convert complex customer data into actionable insights, allowing for personalized experiments and the optimization of promotions and pricing strategies. This approach guarantees that each customer enjoys a unique experience tailored to their specific needs, thereby enhancing satisfaction through timely and relevant content (Chaturvedi & Verma, 2022, p. 11).

3.) Principle of Ethical Considerations in AI Personalization: While AI offers numerous benefits in personalizing customer experiences, it also raises important ethical issues, particularly concerning data privacy and algorithmic bias. Ensuring transparency in AI operations and maintaining customer trust are critical challenges that marketers must address. Companies need to develop robust frameworks to protect consumer data and ensure fair treatment, thereby fostering a trustworthy relationship with their customers

(Du & Xie, 2021, p. 966). Several companies have successfully implemented AI to enhance customer personalization. For example, AI-driven customer service systems have shown to streamline operations, reduce costs, and augment human labor by handling thousands of customer queries efficiently. Moreover, companies employing AI technologies have seen significant improvements in customer satisfaction and operational efficiency (Gnewuch, Morana, & Maedche, 2017).

4.) Principle of Versatility and Adaptability : The positionless marketer is characterized by a diverse skillset. The positionless marketer can execute a variety of functions across channels, excelling not only in branding and content creation but also in emerging fields like influencer marketing, social media management, and data analysis. Such adaptability is crucial in a world where customer behaviors and market trends change rapidly. One of the most transformative contributions of Artificial Intelligence (AI) to digital marketing is its ability to personalize content accurately, dynamically, and on a massive scale. This advancement has radically changed how brands interact with consumers, enabling more relevant, contextual, and emotionally connected experiences. AI redefines segmentation strategies and allows messages to be tailored in real time based on each user's behavior, preferences, and needs. AI-based content personalization is primarily based on analyzing large volumes of data (Big Data) from various sources: social media, purchase histories, web browsing, and interactions with chatbots, among others. From this data, algorithms learn patterns and predict which type of content, format, or channel is most effective for each user profile. This ability to anticipate is key to delivering highly targeted messages that generate greater engagement and loyalty (Kietzmann et al., 2018).

5.) Principle of Integration and Collaboration : Just as positionless basketball emphasizes teamwork and fluidity, the positionless marketer thrives on cross-functional collaboration, integrating various marketing disciplines to create cohesive campaigns, using data-driven insights to guide their strategies. That collaborative approach ensures that messaging is consistent and resonates with the target audience across all touchpoints. A critical element in usability evaluation is the feedback the system can receive and adjust. The best tools are not simply generating content but allowing users to refine the results, adjust parameters, choose writing styles, or include specific prompts. This co-creation capability reinforces the idea of AI as an "intelligent assistant" rather than a replacement for human thought. On the other hand, the most recent evaluations also warn about the learning curve in some more sophisticated environments, especially when the platforms offer advanced features or integrate with other tools (such as CRM, SEO, or automation software). In these cases, the lack of clear guidelines or specific training can hinder effective adoption, underscoring the importance of educational resources, well-structured onboarding, and accessible technical support. It is important to highlight that the usability of AI tools in content production is a determining factor for their successful integration into digital marketing. While the technology has demonstrated great potential for increasing efficiency, its value lies in how users experience, understand, and incorporate it into their creative processes. Achieving fluid, empathetic, and flexible interaction with these platforms will be key to taking full advantage of their benefits without sacrificing the quality or identity of the content.

Result & Findings:

Positionless Marketing Theory

Positionless Marketing Theory defined by Saurav Kumar “Positionless Marketing is about cultivating a team that doesn't just react to change, but anticipates it, embraces it, and leverages it to create unparalleled value for customers and businesses”.

Positionless Marketing Strategy

Positionless Marketing Strategy stated by Saurav Kumar “Positionless Marketing Strategy means companies must built a hierarchical structure such as a "swarm intelligence" model, where individual agents are highly informed and coordinated, but also free to react to local conditions.

Saurav Kumars Five Positionless marketing principles:

- 1.) Principle of Experience, Memories and Loyalty
- 2.) Principle of Dynamic Personalization and Real-Time Engagement
- 3.) Principle of Ethical Considerations in AI Personalization
- 4.) Principle of Versatility and Adaptability
- 5.) Principle of Integration and Collaboration

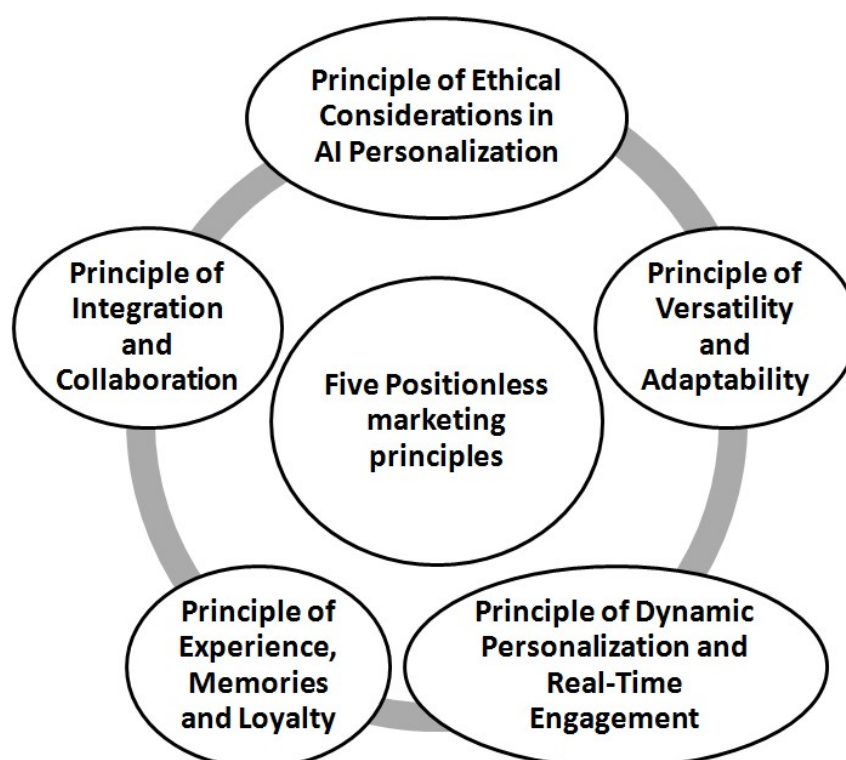


Figure : Saurav Kumars Five Positionless marketing principles

Conclusion

To conclude, the teachings of Dale Carnegies are still applicable to social networks despite the change in the type of communication, however some principles need to be adapted to this mass communication. Finally, to go a little further, it would be interesting to add some new principles on honesty and humor for example.

The researcher wishes to specify that it is important for him above all for an influencer to share what he is passionate about, whether it is travel, fashion, etc.. Indeed, an influencer will spend a lot of time on social networks. So it is important to share with passion, to put one's heart into it in order not to get bored on the long term and lose one's enthusiasm.

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FROM CHATS TO CARTS: THE IMPACT OF WHATSAPP INFLUENCERS ON CONSUMER WELL-BEING AND PURCHASE INTENTION

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Abstract:

The study investigates how social media influencers affect consumers' well-being and the degree to which this influence influences a consumer's decision to buy a product. The Elaboration Likelihood Model is used to explore influencers' characteristics like argument quality, source credibility, and reputation. A quantitative research strategy is used, and data is collected from 185 consumers using a Google form. Data analysis is done using SPSS and SmartPLS 4. The results show that AQ, SC, and reputation have a positive impact on CW, which, in turn, significantly affects PI. These findings indicate that when selecting SMIs, marketers should prioritize consumer welfare and pay attention to influencers' attributes.

Keywords: *Social Media Influencers, Argument quality (AQ), Source credibility (SC), Reputation (REP), Consumer Well-being, Purchase Intention, Elaboration Likelihood Method*

Introduction:

People with a robust fandom who interact with their audience through consistent posts and are used by brands for marketplace outreach are referred to as social media influencers (SMIs) (Reinkainen et al., 2020; Jamil et al., 2024). SMIs are not part of the organization, but they convey the emblem's message at a lower cost than traditional advertising (Malik et al., 2023). Their attractive content on social platforms makes them easy to reach, helping construct agreement with and affect buying decisions (Apple et al., 2020). Insignia strategists are strategizing to give more than 65% of their advertising budgets to social media influencers (SMIs) through 2027, according to Cheung et al. (2022), and current research affirms that manufacturers have already increased their influencer advertising and marketing budgets to 54% (World Federation of Advertisers, 2025). However, studies have examined the impact of influencers on exceptional social media applications (Jamil et al., 2024). Digital channels, such as WhatsApp, received little interest, despite their nascent role in e-commerce and virtual cart interaction (Jamil et al., 2024).

Studies related to SMIs have invoked theories, including the dual-process theory. Petty and Cacioppo (1986) presented the Elaboration Likelihood Model (ELM), an influential dual-process theory. According to it, an individual follows two distinct pathways to interpret facts: one is central, and the other is peripheral.

Individuals who are encouraged opt for central, while those who are uninspired opt for peripheral (Jamil et al., 2024). Argument quality (AQ) and source credibility (SC) are already used in a greater number of research studies (Bhattacharjee and Sanford, 2006; Leong et al., 2019; Jamil et al., 2024). However, influencer characteristics, such as reputation, have been studied in the Korean region (Ryu, E. A., & Han, E., 2021). A personal reputation is established based on an individual's impression on others or characteristics (Ha et al., 2020). Consumer choice leaned on influencer reputation (Ryu, E. A., & Han, E., 2021).

Building on the ELM model, different outcomes have resulted from AQ and SC; however, the impact on consumer well-being is limited (Jamil et al., 2024). Negative feelings like anxiety have risen because followers start comparing themselves with their influencer's lavish lifestyle (Jin and Ryu, 2020).

The above discussion highlights the route to showing the gap, such as the characteristic effect of WhatsApp influencers on consumer well-being. CW itself gained considerable notice recently, but more is needed. To find the gap, the following research questions are developed:

1. Do AQ, SC, and the reputation of WhatsApp influencers influence the CW?
2. What kind of relation is set up between CW and purchase intention?

To address these questions, the following research objectives are established:

1. To examine the social media influencers' characteristics (like argument quality, source credibility, and reputation) impact on consumer well-being.
2. To investigate the relation between consumer well-being and purchase intention.

Literature Review:

Argument Quality:

Bhattacharjee & Sanford (2006) analyze the elaboration-likelihood model (ELM) and find two pathways of influence: argument quality, defined as “the persuasiveness of arguments within an informational message,” and source credibility. The dual-process model shows that AQ is a central pathway that may help customers make decisions about product utility (Zhu et al., 2016). AQ is an influential metric that formulates customer beliefs and an optimistic mindset (Jamil et al., 2024).

Source Credibility:

Source credibility refers to the trustworthiness of the interlocutor and sways the target group (Shah & Wei, 2022). Hovland et al. (1953) proposed a theory about SC, asserting that SC drives persuasion because one is more persuadable by a credible source (Ozdemir et al., 2023). Recent studies ensure that SC generates positive results and reduces credulity (Yousaf et al., 2020). Credible influencer opinion is considered as former opinion (Fernandes et al., 2024).

Reputation:

SMI's reputation is gaining greater prominence as a holistic construct that integrates clarity, altruism, and knowledgeability, which in turn yield audience loyalty (Ki et al., 2020). Clarity removes uncertainty and stimulates perceived moral character (Boerman et al., 2017). According to Hudders et al. (2020), reputation building plays a vital role in forming alliances between a brand and an influencer.

Consumer Well-Being:

Consumer well-being is the consumer's cognitive affective reaction toward their experiences (Bhardwaj &

Kalro, 2024). Standard of living is boosted by consumer well-being (Sirgy, 2021). Consumer well-being upgrades and reconciliations within pragmatic consumption, for instance, giving special importance to life-altering style (Qayyum et al., 2023).

Argument Quality and Consumer Well-being:

The alliance between AQ and CW is little studied, despite extensive research (Jamil et al., 2024). Customer purchase satisfaction increases when information is readily available on a digital platform (Castellacci and Tveito, 2018). Information quality affects customers' purchase decisions (Haque et al., 2018). The quality of arguments influences the empowered consumer mentality (Tien et al., 2019). Effective communication that includes quality arguments evaluates the extent of evidence-based influence (Sussman & Siegel, 2003). Mostly, the literature shows constructive results of AQ, while social proof marketing shows mixed results, like a subtle impact of social media compared to newspapers (Jamil et al., 2024). Social media buzz has a stronger influence on consumer mindset than AQ (Jamil and Qayyum, 2021).

H1. AQ has a positive impact on CW.

Source Credibility and Consumer Well-being:

Source credibility (SC) cultivates symbolic interaction between social media personalities and their subscribers (Leung et al., 2022). Brands that are promoted by the influencer who has SC generate a favorable outcome (Añaña and Barbosa 2023). Digital platforms' hyperarousal is decreased by SC (Mundel et al., 2022).

H2. SC has a positive impact on CW.

Reputation and Consumer Well-being:

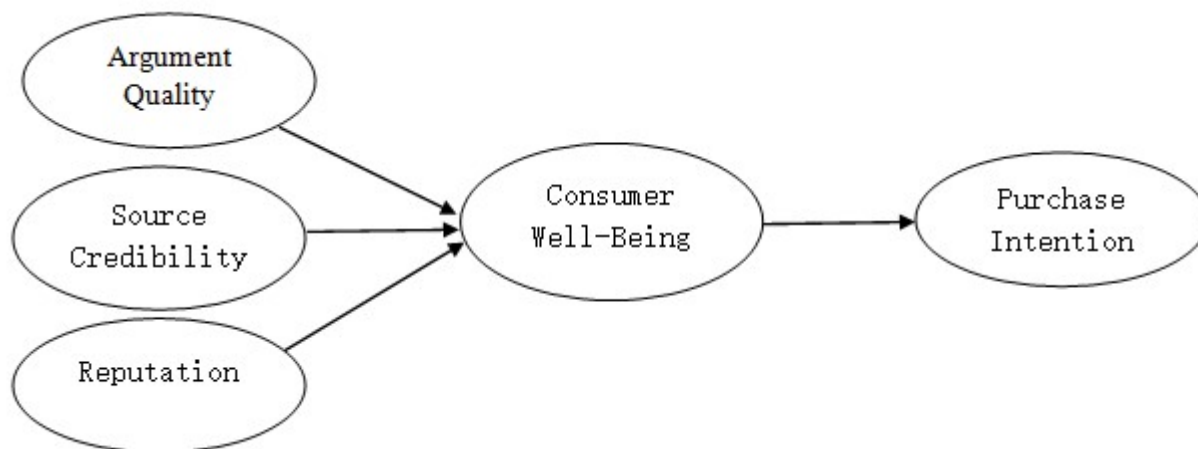
Jamil et al. (2024) suggested that marketing influencers are an emerging trend, and CW can be influenced by other characteristics. Reputation is the starting point to sink in as qualities and features of one based on their former acts (Mateus & Acosta, 2022). Reputation is a composite of factors that display overall traits of an individual or entity (Ryu & Han, 2021). In an earlier investigation, 49% of consumers counted on influencer advocacy (Hong & Jeon, 2016). SMI's reputation is a quick way for consumers to review or examine the product standard (Hasan et al., 2019).

H3. Reputation has a positive impact on CW.

Consumer Well-Being and Purchase Intention:

Limited research has been conducted on the CW effect on purchase intention (Jamil et al., 2024). As documented in the ELM model, the optimistic mindset of the consumer envisions constructive engagement (Cheung et al., 2008). CW played the primary role in customer need satisfaction (Eshaghi et al., 2023). Customer satisfaction beneficially contributes to buying intention (Lee & Lee, 2022).

H4. CW has a positive impact on purchase intention.



Methodology:

Research Strategy:

The research strategy that is adopted for this study is quantitative. The reason to adopt this strategy is to examine the alliances among the characteristics of SMIs and consumer experience. Quantitative research is best for this because it endorses a corpus of statistical data and analyzes it using statistical techniques to conceptualize findings over a vast group (Oranga & Matere, 2025). Primary data is collected to formulate the research.

Research Design Platform:

WhatsApp was chosen for the survey in Pakistan. According to 73% of people, they use WhatsApp in various regions, including South Asia and Africa (Poushter, 2024). WhatsApp extended its feature from chatting to business with a change in market trend and introduced WhatsApp Business (Zishan, n.d.). WhatsApp features, like channels, in the future may remodel and integrate content of public images like influencers (Nyazabe et al., 2025). WhatsApp empowers its users to cultivate their relationship with their customers (Jannah, 2023). WhatsApp also protects the privacy of customers by introducing features like an encrypted pathway (Nyazabe et al., 2025). SMIs are used by Pakistani brands for advertising (Jamil et al., 2024). Although research has been conducted related to SMIS and their impact on purchase intention through different social media apps, limited focus has been directed toward WhatsApp. According to Vrontis et al. (2021), the most focused platforms for SMIs are Instagram, which receives 32% attention, and YouTube, receiving 19% attention, while other platforms receive little or no attention. Therefore, WhatsApp is an emerging platform entitled to an in-depth investigation.

Population and Sample:

A survey was conducted with social media users. The survey was administered using Google Forms. The invitation link was sent to the consumer through personal contacts and social platforms like WhatsApp and Instagram. Those who opened the link were asked to complete a survey on SMI's characteristics (AQ, SC, and Reputation), CW, and Purchase Intention.

The convenience sampling method is used to collect primary data. A total of 185 consumers came forward for the survey. Data collection was conducted in December 2025.

Measures:

Measures were adopted from prior studies. AQ and SC measures were sourced from Bhattacharjee and Sanford (2006) and consist of four items each. 03 items were sourced from Zinko et al. (2016) for Reputation. Finally, three items for CW from Grzeskowiak and Sirgy (2007) and three items for purchase intention from Jamil et al. (2024) are adapted. All data is collected using a Likert scale.

Data Analysis and Result:

Data was scrutinized using the Statistical Package for the Social Sciences (SPSS) and Smart Partial Least Squares (SmartPLS). For any quantitative data analysis, SPSS is easy to use and has a user-friendly interface (Rahman & Muktadir, 2021). From available data, it creates an exclusive attribute variable (MacInnes, 2016).

Variables	Cases (%)
<i>Gender</i>	
Male	74(40%)
Female	111(60%)
<i>Age</i>	
20-30	159(85.9%)
30-40	20(10.8%)
Above 40	6(3.2%)
<i>Education</i>	
Undergraduate	52(28.1%)
Graduate	111(60%)
Postgraduate	22(11.9%)

Assessment of Measurement Model:

Using SPSS and SMARTPLS, “Cronbach’s (CA)” and “Composite reliability (CR)” were calculated to gauge the conformity, and the values are above 0.70 ([Henseler et al., 2015](#)), showing that they achieved the required criterion ([Sarstedt et al., 2017](#)). To find out concurrent validity, we examined the regression weight, and for convergent validity, we found composite reliability and average variance extracted. The value of CR is between 0 and 1, and the best acceptable value is above 0.7 (Jamil et al., 2024). AVE is acceptable when its value is greater than 0.5. Variance value factor (VIF) and standardized root mean square residual (SRMR) were computed to assess the model's fitness. The VIF value shouldn’t exceed 5, and if it does, it shows critical multicollinearity, and vice versa (Hair et al., 2021). SRMR is suggested as a goodness-of-fit

statistic, and if the statistic is below 0.10, it is interpreted as a good fit.

In most cases, the acceptable benchmark for Cronbach's alpha is 0.7; in some cases, 0.6 is also considered acceptable (Abbas, M. et al., 2025). All constructs illustrated have a Cronbach's alpha above 0.7. ANOVA results are significant ($p < 0.05$), showing a meaningful difference. For all variables, Cr is between 0.80 and 0.95, which falls within the recommended range. From the data, we calculate AVE, and its value occurs between 0.60 and 0.81, which conforms to the standard. The VIF value for all constructs is less than 5. We get 0.077 SRMR, which is a good model fit.

	Loading	VIF
Argument Quality		
<i>Adapted from Bhattacharjee and Sanford (2006)</i> $\alpha = 0.918$, CR = 0.942, AVE = 0.803		
The information provided by social media influencers was informative.	0.882	2.712
The information provided by social media influencers was helpful.	0.905	3.238
The information provided by social media influencers is valuable.	0.905	3.157
The information about the product provided by social media influencers is persuasive.	0.892	2.761
Source Credibility		
<i>Adapted from Bhattacharjee and Sanford (2006)</i> $\alpha = 0.915$, CR = 0.940, AVE = 0.707		
Social Media Influencers are knowledgeable on the topic.	0.913	2.646
Social Media Influencers are trustworthy.	0.878	2.92
Social Media Influencers are credible.	0.611	2.083
Social Media Influencers appear to be experts on the topic.	0.897	1.325
Reputation		
<i>Adapted from Zinko et al. (2016)</i> $\alpha = 0.891$, CR = 0.920, AVE = 0.696		
People like having social media influencers around for social events.	0.796	1.617
Social Media Influencers are popular.	0.779	1.976
Social Media Influencers are known to be experts in their area.	0.843	1.936
A social media influencer is known for being upstanding.	0.856	2.498
Social Media Influencers have the reputation of producing the highest quality performance.	0.894	2.619
Consumer Well-being		
<i>Adapted from Grzeskowiak and Sirgy (2007)</i> $\alpha = 0.87$, CR = 0.925, AVE = 0.805		
Social Media Influencers plays a very important role in social well-being.	0.895	2.868
Social Media Influencers play an important role in my leisure well-being.	0.913	2.305
Social Media Influencers play an important role in enhancing the quality of my life.	0.902	2.94
Purchase Intention		
<i>Adapted from Jamil et al. (2024)</i> $\alpha = 0.712$, CR = 0.823, AVE = 0.614		
Intend to buy the products after watching the promotional video by social media influencers.	0.905	3.478

Will likely buy the products after watching the promotional video by social media influencers.	0.905	2.712
Willing to buy the products after watching the promotional video by social media influencers.	0.892	3.238

Variable	Fornell-larcker criterion					HTMT ratios				
	AQ	CW	PI	REP	SC	AQ	CW	PI	REP	SC
AQ	0.896									
CW	0.859	0.897				0.954				
PI	0.634	0.681	0.783			0.867	0.755			
REP	0.794	0.822	0.648	0.835		0.685	0.916	0.757		
SC	0.883	0.836	0.674	0.813	0.893	0.962	0.931	0.741	0.889	

Note:AQ = Argument Quality, CW= Consumer Well-being, PI = Purchase Intention, REP = Reputation, SC = Source Credibility

Source: Created by author(s)

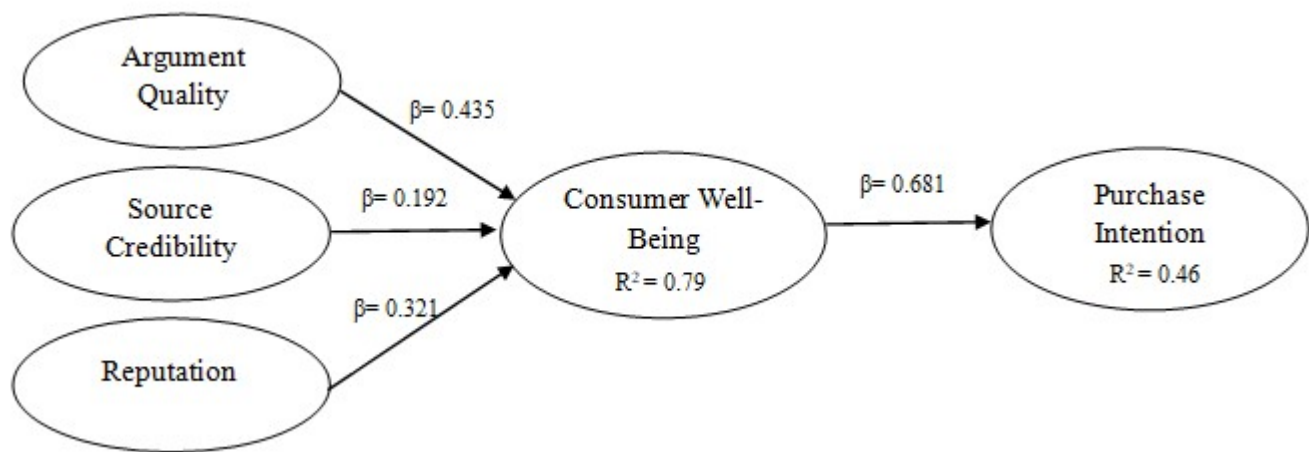
Assessment of Structural Model:

When constructive elements are integrated in a framework, PLS-SEM is recognized as a well-suited diagnostic approach. Constructive models must be examined by closely examining the significance of each item, multicollinearity, and outcome, according to Jamil et al. (2024). Moreover, it is pivotal to examine f-square. For f-square, the integral value is above 0.35; meanwhile, the value above 0.02 is also considered acceptable.

Relating to hypothesis verification, H1 advocated a positive impact of AQ on CW. Results show that AQ strongly affects CW ($t = 0.435$, $p < 0.001$). Similarly, SC has a strong effect on CW, supporting H2 ($t = 0.192$, $p < 0.05$). H3 is also supported by the result ($t=0.321$, $p < 0.001$) showing that reputation positively affects CW. The result ($t = 0.681$, $p < 0.05$) supports H4, i.e., PI is positively affected by CW.

Path	Standard beta	t value	f-square	p-value	Decision
H1: AQ→CW	0.435	4.276	0.18	***	Supported
H2: SC→CW	0.192	2.003	0.03	**	Supported
H3: REP→CW	0.321	3.901	0.15	***	Supported
H4: CW→PI	0.681	18.309	0.86	***	Supported

Note(s): ** $p < 0.05$; *** $p < 0.001$; AQ: argument quality; CW: consumer well-being; REP: reputation; SC : source credibility; PI : purchase intention



Discussion:

Deriving from ELM, this paper analyzed the influence of SMI's characteristics, which are categorized into central (AQ) and peripheral (SC & Reputation), on CW and Purchase Intention. So, the ensuing analysis provides the findings of the overarching framework.

Analysis of the Overarching Framework

Conclusively, AQ has a significant impact on CW (H1). The exemplary message was considered veracious by consumers. This analysis substantiates the former analyses (Jamil et al., 2024; Jamil and Qayyum, 2021; Leong et al., 2019) about the dual process model, ratifying that AQ is an essential marker of consumer sentiment and aspiration. Still, there is insufficient measured evidence on the alliances between AQ and CW. Based on current findings, we can infer that AQ embeds a constructive outlook within the consumers.

The repercussion of SC on CW was also considerable (H2). Consumers who are incapable of interpreting the information lean on peripheral cues to cultivate outlooks (Jamil et al., 2024; Sussman and Siegel, 2003). The former investigation about the dual process model by Jamil et al. (2024) is reinforced by this study, which unveils a positive relation between SC and CW. Contentiously, influencers' credibility plays a key role in lessening nervousness and reinforcing CW (Mundel et al., 2022).

Reputation cultivates CW (H3), fostering verifiable data in a domain with a scant established body of work. These inferences coincide with the dual-process model, implying that peripheral cues trigger a constructive outlook (Jamil et al., 2024).

Lastly, H4 confirmed that CW produces positive effects on purchase intention. The ELM model agrees that a receptive consumer mindset encourages constructive actions (Jamil and Qayyum, 2021; Sussman and Siegel, 2008). Consumer satisfaction is inversely related to anxiety and directly related to happiness (Kim & Kim, 2020). When customers are satisfied and pleased, their intention to buy increases (Jamil et al., 2024). Therefore, it is not surprising that CW influences purchase intention.

Conclusion:

The influencers on WhatsApp are playing a significant role in consumers' feelings and their buying decisions. The most influential factors are influencers' sharing skills, their reliability, and their overall reputation among consumers, according to the research. The persuasive power of high-quality and reliable

influencers is not just that they make consumers feel good about the decision they made, but also that they help them with that decision. Further, one reason for the purchase is the positive feeling of the consumer towards the influencer. The rise of influencers on WhatsApp has been a terrific opportunity for brands to choose the ones who are really concerned about their audience, thus resulting in more effective and healthier marketing situations. To put it differently, focusing on honesty and consumer wellness can ease the connection of brands and influencers with the audience, leading to a boost in engagement all around. The article affirms significant restrictions and recommends future possibilities.

Theoretical Implications:

Investigating the impact of WhatsApp influencers on consumer well-being and purchase intention is a reversal of the coin. From the theoretical perspective, it broadens the scope of the Elaboration Likelihood Model (ELM) by the combination of Argument Quality (AQ), Source Credibility (SC), and the influencer's personality in the consumer behavior study (Bhattacharjee & Sanford, 2006; Jamil et al., 2024), thereby providing a more comprehensive decision-making process that includes the emotional aspects. Practically, brands could refine their marketing methods by focusing on good-quality, credible influencer ties that not only sell products but also contribute to consumer happiness (Ki et al., 2020). This tactic involves choosing influencers with good reputations, creating appealing content, and addressing the emotional aspect of influencers' messages, thereby leading to positive consumer interaction and contentment.

Practical Implication:

The brands and marketers get great insight from the understanding of the WhatsApp influencer's effect on the consumer's well-being and purchase intentions. If the brands are to partner with influencers who have such a high argument quality and source credibility, that will lead to a significant increase in consumer trust, which in turn would be a big step towards the sales (Bhattacharjee & Sanford, 2006; Ozdemir et al., 2023). Moreover, the delivery of content that is both persuasive and instructional is a way of enhancing the influencer's persona while also positively affecting consumer moods and cognitive responses, thus promoting overall well-being (Jamil et al., 2024). Considering these factors, the marketers will be able to take a more ethical and, at the same time, very effective way of engaging the consumers (Jin & Ryu, 2020).

Limitations and Future Directions:

Firstly, this study makes an innovative attempt to explore the impact of reputation on CW. Still other characteristics, such as agility and adaptability, may also impact CW. Other than that, the effect of macro-influencer and mega-influencer types could be analyzed in the future to enhance understanding of their unique effects. Moreover, this study is cross-sectional, so longitudinal studies can be adopted to examine change over time.

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PROMOTING CULTURAL DIFFUSION: ESSENTIAL IN LEADING TO PROGRESSION OF INDIVIDUALS AND COMMUNITIES

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Abstract

The main objective of this research paper is to acquire an understanding of meaning and significance of promoting cultural diffusion. This is an important concept, which is facilitating to individuals in augmenting information and understanding in terms of ideas, customs, technologies and artistic styles. The individuals, belonging to all occupations, communities and socio-economic backgrounds have one of the major goals of leading to up-gradation of overall standards of living. As a consequence of being committed towards achievement of this goal, individuals are acknowledging the meaning and significance of cultural diffusion. Within the course of pursuance of educational programs in educational institutions of all levels, all types of employment settings and in initiating businesses of various products and services, the concept of cultural diffusion have acquired prominence. One of the major benefits is, individuals will communicate and work with individuals, belonging to other castes, creeds, races, religions and ethnicities in an effective manner. As a consequence, they will form cordial and amiable terms and relationships with others, including family and community members. Hence, the concept of cultural diffusion is regarded vital in all communities throughout the country. Therefore, it is well-understood; promoting cultural diffusion is essential in leading to progression of individuals and communities. The main concepts that are taken into account in this research paper are, understanding the meaning and significance of promoting cultural diffusion, advantages of promoting cultural diffusion and measures to be put into operation in promoting cultural diffusion.

Keywords: *Cultural Diffusion, Individuals, Information, Personality Traits, Promoting, Standards of Living, Understanding, Well-organized Manner*

Introduction

The individuals are different from each other in terms of number of factors, i.e. castes, creeds, races, genders, religions, ethnicities, educational qualifications, occupations, communities and socio-economic backgrounds. In spite of these differences, the individuals have one of the primary goals of bringing about improvements in their overall quality of lives. Furthermore, they are required to augment information and understanding in terms of various factors (Proctor, 2018). Cultural diffusion is regarded as one of the essential factors in the lives of individuals. It is referred to spreading of ideas, customs, technologies and artistic styles between societies. Furthermore, it involves enhancing diversity and innovation. It is driven by trade, migration, communication technology and social media, allowing for the exchange and integration of diverse cultural elements globally, such as, food, language and traditions. The individuals, belonging to all communities and

socio-economic backgrounds need to generate information in terms of number of factors, when they are committed towards bringing about improvements in their overall standards of living. Therefore, promoting cultural diffusion is regarded as essential in leading to up-gradation of overall personality traits and standards of living of individuals.

The individuals, belonging to all occupations, communities and socio-economic backgrounds have recognized the meaning and significance of education. They have formed the viewpoint that education is the instrument, which not only imparts information in terms of academic subjects and lesson plans, but also in terms of techniques that are facilitating in emerging into moral and ethical human beings and productive citizens of the country, hence, individuals are getting enrolled in educational institutions of all levels and acquiring education (Roche, 2014). Within educational institutions of all levels, individuals are different from each other in terms of number of factors. As a consequence of putting into operation effective communication processes with them, individuals are able to augment information in terms of number of factors, i.e. norms, values, cultures, food, language and traditions. The possession of information in terms of these is facilitating to individuals in development of mutual understanding. Within educational institutions of all levels, development of mutual understanding is regarded as the key in achievement of educational goals. Therefore, promoting cultural diffusion in educational institutions of all levels is essential in augmenting information and understanding.

Understanding the Meaning and Significance of Promoting Cultural Diffusion

Getting engaged in employment opportunities is regarded as one of the major goals of individuals, belonging to all occupations, communities and socio-economic backgrounds. This goal is difficult to achieve, but individuals need to put in their best efforts in achievement of this goal. The individuals need to ensure, employment opportunities are suitable to their needs and requirements. Within all types of employment settings, individuals, belonging to all job positions need to be well-informed in terms of various types of job duties and responsibilities. Furthermore, they need to augment information in terms of techniques of doing well in these and generating desired outcomes. In addition, up-gradation of various types of competencies and abilities is regarded to be of utmost significance. Within all types of employment settings, there are some job duties and responsibilities that are carried out on an individual basis, whereas, there are others, which are implemented through working in co-ordination with other members, hence promoting cultural diffusion is regarded as vital.

Within all types of employment settings, individuals are different from each other in terms of number of factors. As a consequence of putting into operation effective communication processes with them, individuals are able to augment information in terms of number of factors, i.e. norms, values, cultures, food, language and traditions. The possession of information in terms of these is facilitating to individuals in forming cordial and amiable terms and relationships with each other. This is essential in obtaining help from each other in overcoming various types of setbacks. As a consequence, individuals will be well-prepared in terms of techniques of achievement of different types of professional goals. Therefore, individuals are able to acquire an efficient understanding of the meaning and significance of promoting cultural diffusion, when it is facilitating in achievement of professional goals in all types of employment settings.

With advancements taking place and with the advent of modernization and globalization, in putting into operation various types of job duties and responsibilities, individuals, belonging to all fields and professions are making use of various types of methodologies and procedures. These are referred to the techniques of doing well in different types of job duties and responsibilities and generating desired outcomes. The individuals need to acquire an efficient understanding of the concepts and get engaged in regular practice. The regular practice is regarded as the key in putting into operation various types of methodologies and procedures in an adequate manner. As a consequence, individuals will lead to up-gradation of confidence levels and overcome the feelings of apprehensiveness and vulnerability. The information in terms of different types of methodologies and procedures is acquired through implementing effective communication processes with family and community members; being well-informed in terms of job duties and responsibilities; conducting research through utilizing various sources; getting enrolled in training and development programs and experience.

Promoting cultural diffusion is meaningful in augmenting information in terms of different types of methodologies and procedures. This is understood on a comprehensive basis that individuals, belonging to all fields and professions aspire to be successful in their job duties and responsibilities. As a consequence, possession of information in terms of different types of methodologies and procedures is essential. In order to facilitate this task, promoting cultural diffusion is regarded as crucial and needs to be paid attention towards on regular basis. As a consequence, individuals will communicate with others without any hesitance. Furthermore, they will be able to augment information in terms of different types of methodologies and procedures. Therefore, one is able to acquire an understanding of the meaning and significance of promoting cultural diffusion, when it enables individuals in generating information in terms of different types of methodologies and procedures.

From the stage of early childhood, throughout the lives of individuals, they need to understand that they cannot live their lives alone. Loneliness is regarded as one of the chronic and distressful conditions. It has unfavourable effects on the overall personality traits and standards of living of individuals. The individuals, throughout their lives need to augment information in terms of techniques, which are facilitating in alleviating loneliness. Furthermore, they need to put in their best efforts in forming an effective social circle. It comprises of family members, relatives, friends, neighbours, educators, classmates, employers, colleagues and service providers. Within personal lives, within the course of pursuance of educational programs in educational institutions of all levels and in all types of employment settings, there are some job duties and responsibilities that are carried out on an individual basis, whereas, there are others, which are implemented through working in co-ordination with other members, hence promoting cultural diffusion is regarded to be of utmost significance.

As a consequence of putting into operation effective communication processes with family and community members, individuals are able to augment information in terms of number of factors. Furthermore, the individuals are able to augment information in terms of various types of methodologies, procedures, techniques, approaches and so forth. The possession of information in terms of these is facilitating to individuals in forming cordial and amiable terms and relationships with each other. Furthermore, these are essential in obtaining help from each other in overcoming various types of setbacks. As a consequence,

individuals will be well-prepared in terms of techniques of doing well in all types of job duties and responsibilities. Furthermore, achievement of different types of professional goals will take place in an efficacious manner. Therefore, an understanding of the meaning and significance of promoting cultural diffusion is acquired, when it enables individuals to form an effective social circle and alleviate loneliness.

Advantages of Promoting Cultural Diffusion

An aimless life is a meaningless life. Hence, individuals, belonging to all occupations, communities and socio-economic backgrounds have goals and objectives to achieve. The different factors in terms of which these are formulated are, education, careers, employment opportunities, businesses, family, relationships, settlement, travelling, assets, property, resources, health, well-being, personality traits and overall standards of living. In order to achieve all types of goals and objectives, individuals need to be well-prepared. Furthermore, they need to augment information in terms of various types of competencies and abilities. In addition, inculcation of traits of proficiency and adeptness is regarded to be of utmost significance. As a consequence, individuals will be well-prepared in terms of strategies, which are facilitating in achievement of desired goals and objectives (Rosenthal, 2019).

The concept of cultural diffusion has acquired prominence. This is facilitating to individuals in augmenting information in terms of various types of subjects and concepts. As a consequence of being well-aware, individuals will put in their best efforts in doing well in their job duties and responsibilities, achieving desired goals and objectives and meeting the expectations of family and community members. One of the important aspects that needs to be taken into account is, individuals need to form positive viewpoints in terms of various factors and individuals. Furthermore, they should not possess any negative feelings regarding anyone. Promoting cultural diffusion is advantageous to individuals, professional settings and communities. Therefore, advantages of promoting cultural diffusion are stated as follows:

Achieving Educational Goals

The educational institutions are of various levels, i.e. nursery schools, elementary schools, secondary schools, senior secondary schools and higher educational institutions. In educational institutions of all levels, educators have the major goals of promoting student learning and leading to up-gradation of overall system of education. The students have major goals of acquiring an efficient understanding of academic subjects and lesson plans, scoring good grades, augmenting competencies and abilities and meeting the expectations of educators. Hence, educators and students need to work hard in achievement of educational goals.

Within educational institutions of all levels, individuals are different from each other in terms of number of factors. As a consequence of putting into operation effective communication processes with them, individuals are able to augment information in terms of number of factors. As a consequence, they will augment information in terms of each other's cultures and socio-economic backgrounds. The possession of information in terms of these is facilitating to individuals in forming agreeable terms and relationships with each other. Within educational institutions of all levels, reinforcing cordiality and amiability is regarded as the key in achievement of educational goals. Hence, promoting cultural diffusion in educational institutions of all levels is essential in not only augmenting information and understanding in terms of various subjects and concepts, but also in forming agreeable terms and relationships with other members. As a consequence, individuals will be able to achieve educational goals in a well-organized manner. Therefore, achieving

educational goals is regarded as one of the indispensable advantages of promoting cultural diffusion.

Doing well in Training Programs

The individuals, belonging to all age groups, occupations, communities and socio-economic backgrounds get enrolled in training centres to pursue training programs. The different subjects in terms of which these are organized are computers, English speaking, foreign languages, travel and tourism, arts and crafts, counselling and guidance, radio jockeying and so forth. These are from one month to even more than one year. The educators have the major goals of promoting student learning and promoting enrichment of overall system of education. The students have major goals of acquiring an efficient understanding of academic subjects and lesson plans, scoring good grades, augmenting various types of skills and abilities and meeting the expectations of educators.

Within all types of training centres, individuals are different from each other in terms of number of factors. As a consequence of putting into operation effective communication processes with them, individuals are able to augment information in terms of number of factors. As a consequence, they will augment information in terms of each other's cultures and socio-economic backgrounds. The possession of information in terms of these is facilitating to individuals in forming congenial terms and relationships with each other. Within all types of training centres, reinforcing cordiality and amiability is regarded as the key in augmenting knowledge and achievement of academic goals. All these factors are facilitated through promoting cultural diffusion. Hence, promoting cultural diffusion in all types of training centres is essential in not only augmenting information and understanding in terms of various subjects and concepts, but also in forming agreeable terms and relationships with other members. As a consequence, individuals will be able to achieve different types of academic goals in a well-organized manner. Therefore, doing well in training programs is one of the significant advantages of promoting cultural diffusion.

Doing well in Job Duties and Responsibilities within Employment Settings

Within all types of employment settings, individuals, belonging to all job positions need to be well-informed in terms of various types of job duties and responsibilities. Furthermore, they need to augment information in terms of techniques of doing well in these and generating desired outcomes. In addition, up-gradation of various types of competencies and abilities is regarded to be of utmost significance. Within all types of employment settings, there are some job duties and responsibilities that are carried out on an individual basis, whereas, there are others, which are implemented through working in co-ordination with other members, hence promoting cultural diffusion is regarded meaningful.

Within all types of employment settings, individuals are different from each other in terms of number of factors. As a consequence of putting into operation effective communication processes with them, individuals are able to augment information in terms of number of factors, i.e. norms, values, cultures, morals, ethics, traditions and so forth. The possession of information in terms of these is facilitating to individuals in forming cordial and amiable terms and relationships with each other. This is essential in obtaining help from each other in overcoming various types of dilemmas and challenging situations. As a consequence, individuals will be well-prepared in terms of techniques of doing well in their job duties and responsibilities. Furthermore, achievement of different types of professional goals will take place in an efficient manner. Therefore, doing well in job duties and responsibilities within employment settings is an

eminent advantage of promoting cultural diffusion.

Implementing Businesses in a Well-organized Manner

The individuals, belonging to all communities and socio-economic backgrounds initiate businesses of various types of products and services. The different types of products are jewellery, garments, decoration items, artworks, handicrafts, and so forth. The services are travel and tourism, insurance and so forth. Within all types of businesses, individuals, belonging to all job positions need to be well-informed in terms of various types of job duties and responsibilities. Furthermore, they need to augment information in terms of strategies of doing well in these and generating desired outcomes. In addition, up-gradation of various types of competencies and abilities is regarded to be of utmost significance. Within all types of employment settings, there are some job duties and responsibilities that are carried out on an individual basis, whereas, there are others, which are implemented through working in co-ordination with other members, hence promoting cultural diffusion is crucial.

Within all types of businesses, individuals are different from each other in terms of number of factors. As a consequence of putting into operation effective communication processes with them, individuals are able to augment information in terms of number of factors, i.e. job duties, responsibilities, methodologies, procedures, techniques, approaches and so forth. The possession of information in terms of these is facilitating to individuals in developing mutual understanding with each other. This is essential in obtaining help from each other in overcoming various types of dilemmas and challenging situations. Furthermore, these are prevented from giving rise to impediments within the course of generation of desired outcomes. As a consequence, individuals will be well-prepared in terms of techniques of doing well in their job duties and responsibilities. Furthermore, achievement of different types of professional goals will take place in a satisfactory manner. Therefore, implementing businesses in a well-organized manner is an expedient advantage of promoting cultural diffusion.

Being well-informed in terms of Methodologies and Procedures

The individuals, belonging to all fields and professions are making use of various types of methodologies and procedures in implementing different types of job duties and responsibilities. The individuals need to acquire an efficient understanding of the concepts and get engaged in regular practice. This is vital in putting into operation various types of methodologies and procedures in an appropriate manner. As a consequence, individuals will lead to up-gradation of confidence levels and overcome the feelings of apprehensiveness and vulnerability. The information in terms of different types of methodologies and procedures is acquired through implementing effective communication processes with family and community members; being well-informed in terms of job duties and responsibilities; conducting research; getting enrolled in training and development programs and experience.

Promoting cultural diffusion is meaningful in augmenting information in terms of different types of methodologies and procedures. This is understood to a major extent that individuals, belonging to all fields and professions aspire to be successful in their job duties and responsibilities. As a consequence, possession of information in terms of different types of methodologies and procedures is worthwhile. In order to facilitate this task, promoting cultural diffusion is regarded as crucial and needs to be focused on regular basis. As a consequence, individuals will communicate with others without any hesitation. Furthermore, they

will be able to augment information in terms of different types of methodologies and procedures. Therefore, being well-informed in terms of methodologies and procedures is a renowned advantage of promoting cultural diffusion.

Utilizing Modern, Scientific and Innovative Methods and Materials

Within the advent of technologies, individuals, belonging to all fields and professions are utilizing various types of modern, scientific and innovative methods and materials. These are utilization of different types of tools, devices, apparatus, machinery, equipment and gear. The individuals need to acquire an efficient understanding of the concepts and get engaged in regular practice. This is worthwhile in putting into operation various types of these methods and materials in a satisfactory manner. As a consequence, individuals will lead to up-gradation of confidence levels and overcome the feelings of apprehensiveness and vulnerability. The information in terms of different types of these methods and materials is acquired through implementing effective communication processes with family and community members; being well-informed in terms of job duties and responsibilities; conducting research through utilizing various sources; getting enrolled in training and development programs and experience.

Promoting cultural diffusion is meaningful in augmenting information in terms of different types of methodologies and procedures. This is understood on a comprehensive basis that individuals, belonging to all fields and professions aspire to be successful in their job duties and responsibilities. As a consequence, possession of information in terms of different types of these methods and materials is worthwhile. In order to facilitate this task, promoting cultural diffusion is regarded as crucial. As a consequence, individuals will communicate with others in an effective manner. Furthermore, they will be able to put in their best efforts in utilizing these methods and materials in an appropriate manner. Therefore, utilizing modern, scientific and innovative methods and materials is a decisive advantage of promoting cultural diffusion.

Forming an Effective Social Circle

Throughout the lives of individuals, they need to form an effective social circle. It comprises of family and community members. Within personal lives, within the course of pursuance of educational programs in educational institutions of all levels and in all types of employment settings, there are some job duties and responsibilities that are carried out on an individual basis, whereas, there are others, which are put into operation through working in co-ordination with other members, hence promoting cultural diffusion is regarded to be of utmost significance. As a consequence of acknowledging the importance of cultural diffusion, individuals will put in their efforts in forming an effective social circle.

As a consequence of putting into operation effective communication processes with family and community members, individuals are able to augment information in terms of number of factors. Furthermore, individuals are able to augment information in terms of various types of methodologies, procedures, techniques, approaches and so forth. The possession of information in terms of these is facilitating to individuals in forming cordial and amiable terms and relationships with each other. Furthermore, these are essential in obtaining help from each other in overcoming various types of problems. As a consequence, individuals will be well-prepared in terms of techniques of doing well in all types of job duties and responsibilities. Furthermore, they will incur the feelings of pleasure and contentment. Therefore, forming an effective social circle is an imperative advantage of promoting cultural diffusion.

Alleviating Loneliness

Loneliness is regarded as one of the chronic and distressful conditions. It has unfavourable effects on the overall personality traits and living conditions of individuals. The individuals, throughout their lives need to augment information in terms of techniques, which are facilitating in alleviating loneliness. Furthermore, they need to put in their best efforts in reinforcing contacts with family and community members. Within personal lives, within the course of pursuance of educational programs in educational institutions of all levels and in all types of employment settings, there are some job duties and responsibilities that are carried out on an individual basis, whereas, there are others, which are implemented through working in co-ordination with other members, hence, alleviating loneliness is essential. Promoting cultural diffusion generates information in terms of various factors, which are facilitating in alleviating loneliness.

As a consequence of putting into operation effective communication processes with family and community members, individuals are able to augment information in terms of number of factors. Furthermore, individuals will lead to up-gradation of motivation levels towards generation of desired outcomes. As a consequence, individuals will be well-prepared in terms of techniques of doing well in all types of job duties and responsibilities within personal and professional lives. Furthermore, achievement of different types of professional goals will take place in an efficacious manner. As a consequence, there will not be any room for loneliness. Therefore, alleviating loneliness is a meaningful advantage of promoting cultural diffusion.

Augmenting Information and Understanding

As a consequence of promoting cultural diffusion, individuals, belonging to all communities and socio-economic backgrounds need to generate information in terms of number of factors, when they are committed towards bringing about improvements in their overall standards of living. The different factors are norms, values, morals, ethics, principles and standards. In addition, leading to up-gradation of different types of skills and abilities is regarded to be of utmost significance. Furthermore, individuals are able to augment information in terms of various types of methodologies, procedures, techniques, approaches, strategies and so forth. All these need to be utilized in an efficacious manner in achievement of desired goals and objectives in both personal and professional spheres. The possession of information in terms of all the essential factors is facilitating to individuals in forming cordial and amiable terms and relationships with each other. Furthermore, these are essential in obtaining help from each other in overcoming various types of problems. This is facilitated in personal and professional lives of individuals.

As a consequence, individuals will be well-prepared in terms of different types of techniques, which are facilitating in doing well in all types of job duties and responsibilities within personal lives, educational institutions of all levels and in all types of employment settings. Furthermore, they will incur the feelings of pleasure and contentment. Hence, promoting cultural diffusion is regarded as essential in leading to up-gradation of overall personality traits and living conditions of individuals. Therefore, augmenting information and understanding is a worthwhile advantage of promoting cultural diffusion.

Honing Competencies and Abilities

From the stage of early childhood, throughout the lives of individuals, they need to lead to up-gradation of various types of competencies and abilities. These are convincing, persuading, planning, organizing, leading, negotiating, controlling, co-ordinating, directing, emotional intelligence, systems thinking, putting in efforts

to one's best abilities, possessing the abilities to work under stress, coping with various types of dilemmas and challenging situations in an appropriate manner and carrying out all types of job duties and responsibilities in a well-ordered manner. The individuals are required to put into operation all these competencies and abilities within personal lives, educational institutions of all levels and in all types of employment settings. As a consequence, individuals will be well-prepared in terms of different types of techniques, which are facilitating in doing well in all types of job duties and responsibilities. Furthermore, they will achieve desired goals and objectives in personal and professional lives and meet the expectations of leaders (Samiksha, n.d.).

As a consequence of promoting cultural diffusion, individuals, belonging to all communities and socio-economic backgrounds need to generate information in terms of number of factors, when they are committed towards bringing about improvements in their overall living conditions. They augment information in terms of norms, values, morals, ethics, principles and standards. Furthermore, they will be well-prepared in terms of techniques, which are facilitating in promoting enhancement of career prospects. As a consequence, progression will take place of individuals in an efficacious manner. Therefore, honing competencies and abilities is a useful advantage of promoting cultural diffusion.

Measures to be put into operation in Promoting Cultural Diffusion

Throughout the lives of individuals, they need to augment information in terms of measures to be put into operation in promoting cultural diffusion. All types of measures are required to be put into operation in a well-ordered and regimented manner. Furthermore, positivity needs to be reinforced in all types of measures. One of the important aspects that needs to be taken into account is, all measures need to be facilitating in promoting well-being and goodwill of individuals, professional settings and communities. The information in terms of different types of measures is acquired through implementing effective communication processes with family and community members; being well-informed in terms of job duties and responsibilities; conducting research through utilizing various sources; getting enrolled in training and development programs and experience. Therefore, measures to be put into operation in promoting cultural diffusion are, participating in various types of functions; watching television programs; being well-informed in terms of job duties and responsibilities and migration and tourism. These are stated as follows:

Participating in various Types of Functions

From the stage of early childhood, throughout the lives of individuals, they participate in various types of functions, i.e. social, cultural, economic, religious and political. In all types of functions, putting into operation effective communication processes with others, enables individuals to augment information in terms of number of factors, i.e. norms, values, cultures, skills, abilities, principles, standards, morals, ethics and traditions. The possession of information in terms of these is facilitating to individuals in promoting cultural diffusion. Hence, it is well-understood; participating in various types of functions is facilitating in generating information in terms of techniques of promoting cultural diffusion (Social Well-being – Inter-personal Relationship, n.d.). Therefore, participating in various types of functions is regarded as one of the indispensable measures to be put into operation in promoting cultural diffusion.

Watching Television Programs

The individuals, belonging to all occupations, communities and socio-economic backgrounds take pleasure

in watching television programs. These are serials, movies, religious programs, religious sermons, hymns, news channels, science channels, discovery channel programs, and so forth. The individuals are able to augment their information and understanding in terms of various types of subjects and concepts. Furthermore, they generate information in terms of number of factors, i.e. norms, values, cultures, skills, abilities, principles, standards, morals, ethics and traditions. The possession of information in terms of these is facilitating to individuals in promoting cultural diffusion. Therefore, watching television programs is one of the significant measures to be put into operation in promoting cultural diffusion.

Being Well-informed in terms of Job Duties and Responsibilities

Within personal lives, educational institutions of all levels and in all types of employment settings, individuals need to be well-informed in terms of their job duties and responsibilities. These are manageable and complicated, these are put into operation in less amount of time or can be more time-consuming and these are carried out on an individual basis or through working in co-ordination with others, including family and community members. Furthermore, individuals need to augment information in terms of techniques of carrying these out in a well-ordered manner. All types of techniques are put into operation in a moral and ethical manner. Furthermore, up-gradation of different types of competencies and abilities is regarded as the key in generating desired outcomes. As a consequence, individuals will communicate with others in an effective manner. Furthermore, they will be able to put in their best efforts in meeting the expectations of family members, educators and employers. Therefore, being well-informed in terms of job duties and responsibilities is an eminent measure to be put into operation in promoting cultural diffusion.

Migration and Tourism

The individuals, belonging to all occupations, communities and socio-economic backgrounds take pleasure in migration and tourism. In some cases, individuals take pleasure in communicating with individuals, whom they do not know. As a consequence, they generate information in terms of norms, values, cultures, skills, abilities, principles, standards, morals, ethics, traditions and lifestyles. Furthermore, making visits to historical places, religious places, marketplaces, parks and so forth are facilitating in augmenting information and understanding in terms of various types of subjects and factors. Hence, it is understood on a comprehensive basis, possession of information in terms of these is facilitating to individuals in promoting cultural diffusion. Therefore, migration and tourism is an expedient measure to be put into operation in promoting cultural diffusion.

Conclusion

Cultural diffusion is referred to spreading of ideas, customs, technologies and artistic styles between societies. This is meaningful in augmenting information among individuals in terms of other cultures, norms, values, ethics, morals, principles and socio-economic backgrounds. Furthermore, individuals need to augment information in terms of advantages of promoting cultural diffusion. In addition, individuals need to be well-aware in terms of measures to be put into operation in promoting cultural diffusion. Finally, it can be stated, promoting cultural diffusion is essential in leading to progression of individuals, professional settings and communities.

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AI-DRIVEN INNOVATIONS IN THE LOGISTICS SECTOR: OPPORTUNITIES AND CHALLENGES

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Abstract

The logistics sector, a critical enabler of global trade and economic activity, is undergoing a profound transformation driven by artificial intelligence (AI). This paper provides a comprehensive review of AI-driven innovations in logistics, examining both the opportunities and challenges associated with their adoption. Through a systematic synthesis of recent academic literature, the study identifies key application domains—including predictive analytics, route optimization, warehouse automation, and sustainability management—while critically evaluating the implementation barriers that organizations face. Drawing on systems theory as an analytical lens, the paper develops an integrated framework that conceptualizes AI adoption as a systemic transformation requiring alignment across technological, organizational, and environmental dimensions. The findings reveal that while AI offers substantial benefits in operational efficiency, cost reduction, and sustainability performance, significant challenges persist in data quality, legacy system integration, skills shortages, and ethical governance. The paper concludes by proposing a research agenda that addresses these gaps and offers practical implications for logistics managers and policymakers.

Keywords: *Artificial Intelligence, Logistics, Supply Chain Management, Digital Transformation, Sustainability, Systems Theory*

1. Introduction

The logistics industry operates at the heart of the global economy, facilitating the movement of goods across increasingly complex and interconnected networks. In 2022 alone, more than 185 million people were affected by major disasters worldwide, generating economic losses exceeding \$220 billion, underscoring the sector's vulnerability to disruptions and its critical role in resilience. Simultaneously, the transportation and logistics sector contributes approximately 24% of global CO₂ emissions, placing it under mounting pressure to decarbonize operations. These dual pressures—operational efficiency and environmental sustainability—have accelerated the search for transformative technologies capable of reshaping logistics capabilities.

Artificial intelligence (AI) has emerged as a central pillar of this transformation. Unlike conventional analytical tools, AI systems offer the capacity to process vast datasets, identify patterns, generate predictive insights, and automate complex decision-making processes. The academic literature has documented a sharp acceleration in AI-related logistics research from 2021 onward, reflecting growing recognition of its strategic importance. More recently, generative artificial intelligence (GAI) has extended these capabilities beyond prediction to content creation, scenario simulation, and autonomous decision support, representing a qualitatively different paradigm (Bahroun et al., 2026).

However, the path to AI adoption in logistics is fraught with challenges. High implementation costs, integration difficulties with legacy systems, data quality issues, and a shortage of skilled professionals continue to impede progress (Fatorachian & Kazemi, 2026). Moreover, concerns about algorithmic bias, data privacy, and the explainability of AI-driven decisions raise important ethical and governance questions (Ojo T.P, 2025). Despite growing scholarly attention, a holistic understanding of how AI transforms logistics systems—and under what conditions—remains underdeveloped.

This paper addresses this gap by providing a systematic review of AI-driven innovations in the logistics sector. Drawing on recent academic literature, it identifies key application domains, evaluates documented benefits, and critically examines adoption barriers. The study is organized as follows: Section 2 presents the theoretical framework grounded in systems theory. Section 3 reviews AI applications across logistics functions. Section 4 examines opportunities and benefits. Section 5 analyzes challenges and barriers. Section 6 develops an integrated framework and discusses implications. Section 7 concludes with future research directions.

2. Theoretical Framework: Systems Theory and AI Adoption in Logistics

To understand the transformative impact of AI on logistics, this study adopts systems theory as an analytical lens. Systems theory conceptualizes organizations and supply chains as holistic systems composed of interconnected subsystems that require effective communication and integration for optimal performance (Fatorachian & Kazemi, 2026). In logistics, these subsystems include procurement, transportation, warehousing, inventory management, and last-mile delivery—each with distinct functions yet interdependent in achieving overall system objectives.

Applying systems theory to AI adoption highlights several critical insights. First, the introduction of AI into logistics cannot be treated as an isolated technological upgrade; it fundamentally alters the relationships and information flows between subsystems. For example, AI-powered demand forecasting affects inventory planning, which subsequently influences warehousing and transportation decisions. These ripple effects must be managed coherently to realize value.

Second, successful AI integration requires alignment between technological advancements and the overall system's needs. Organizations must ensure that AI capabilities are not merely adopted but harmonized with

existing processes, organizational structures, and strategic objectives (Fatorachian & Kazemi, 2026). This alignment is particularly challenging in logistics, where legacy systems, diverse stakeholder interests, and regulatory constraints create friction.

Third, systems theory emphasizes the importance of open system interactions—the dynamic interplay between the logistics system and its external environment. Environmental pressures such as climate change, geopolitical instability, and shifting consumer expectations shape the conditions under which AI is adopted and the outcomes it produces.

This theoretical perspective informs the analysis that follows. Rather than treating AI applications in isolation, we examine how they interact across logistics subsystems and with broader environmental factors, identifying both synergies and tensions.

3. AI Applications in Logistics: A Review of Key Domains

Recent bibliometric analyses reveal that AI research in logistics has expanded rapidly across multiple functional domains, with machine learning, predictive analytics, and optimization techniques dominating the literature. This section reviews major application areas.

3.1 Predictive Analytics and Demand Forecasting

Demand forecasting represents one of the most mature and widely documented AI applications in logistics. Machine learning algorithms, including supervised learning methods and deep learning architectures, analyze historical sales data, market trends, and external variables to generate more accurate demand predictions (Noor et al., 2026). The benefits extend beyond accuracy improvement; AI-enabled forecasting enables proactive inventory planning, reduces stockouts and overstock situations, and enhances supply chain responsiveness.

Recent advances in generative AI have extended forecasting capabilities by enabling scenario generation and "what-if" analysis. Managers can now simulate demand patterns under various disruption scenarios, stress-test supply chain configurations, and develop contingency plans. This shift from reactive prediction to proactive scenario creation represents a qualitative advance in decision-making capability.

3.2 Route Optimization and Transportation Management

Route optimization has emerged as a high-impact application of AI in logistics, with significant implications for both operational efficiency and environmental sustainability. AI algorithms analyze real-time traffic data, weather conditions, delivery constraints, and vehicle capacities to determine optimal routing (Balvinder Singh Banga, Anuja Shukla, 2025). The integration of predictive analytics enables dynamic rerouting in response to changing conditions, reducing fuel consumption, delivery times, and operational costs.

AI-powered transportation management systems also enhance fleet visibility through real-time tracking and

surveillance, improving security and operational control (Ojo T.P, 2025). In humanitarian logistics contexts, AI-driven route optimization has demonstrated value in disaster response, enabling faster and more equitable distribution of relief supplies under conditions of infrastructure damage and uncertainty.

3.3 Warehouse Automation and Inventory Management

AI-driven automation is transforming warehouse operations, with applications spanning robotic picking systems, autonomous mobile robots, and intelligent inventory tracking. Real-time tracking technologies, integrated with machine learning algorithms, enable precise inventory visibility and reduce waste through improved stock rotation (S. C. V. Suresh Babu, S. Kahini, 2025).

Generative AI further enhances warehouse planning through autonomous simulation capabilities. Industry cases document that generative AI-enabled logistics centers achieve 20-40% cost reduction, 25% throughput improvement, and 30% spatial efficiency gains through adaptive planning and autonomous simulation. These improvements stem from AI's ability to continuously learn from operational data and adjust warehouse layouts, slotting strategies, and labor allocation dynamically.

3.4 Sustainability and Green Logistics

The intersection of AI and sustainability has attracted significant scholarly attention, driven by mounting environmental pressures on the logistics sector. AI applications in green logistics include route optimization to reduce fuel consumption, predictive maintenance to extend vehicle life, and carbon footprint analytics to inform emissions reduction strategies (S. C. V. Suresh Babu, S. Kahini, 2025).

Generative AI offers novel capabilities for sustainability management. A systematic review of 81 studies found that GAI applications in green logistics span risk assessment and mitigation, decision support, real-time environmental response, and resilience testing through scenario planning. These capabilities enable organizations to move beyond compliance toward proactive environmental strategy. However, the same review identified 38 distinct barriers to GAI adoption in green logistics, underscoring the gap between potential and realization.

3.5 Cybersecurity and Risk Management

The digital transformation of logistics has expanded the attack surface for cybercriminals, making cybersecurity a critical application domain for AI. AI-driven systems enhance threat detection through anomaly identification, network monitoring, and predictive analytics, reducing response times by up to 65% (Ojo T.P, 2025). Applications include endpoint security, supply chain risk assessment, and detection of unauthorized network access.

In humanitarian logistics, AI-enabled decision support systems have been applied to demand forecasting, facility location, transportation routing, and resource allocation under uncertainty. However, research remains concentrated on early-phase emergency response, with recovery, mitigation, and long-term

resilience receiving less attention.

4. Opportunities: Documented Benefits of AI in Logistics

The literature documents substantial benefits from AI adoption across multiple performance dimensions. This section synthesizes the evidence.

4.1 Operational Efficiency and Cost Reduction

Operational efficiency improvements are the most consistently documented benefit of AI in logistics. Predictive analytics reduce forecasting errors, enabling more efficient inventory management and reduced waste (Noor et al., 2026). Route optimization lowers fuel consumption, vehicle wear, and labor costs (Balvinder Singh Banga, Anuja Shukla, 2025). Warehouse automation improves throughput, reduces picking errors, and optimizes space utilization.

Quantitative evidence from industry cases is compelling. Generative AI-enabled logistics centers achieve 20-40% cost reduction and 25% throughput improvement. AI-driven cybersecurity systems reduce threat detection times by up to 65% (Ojo T.P, 2025). These efficiency gains translate directly to competitive advantage in price-sensitive logistics markets.

4.2 Improved Decision-Making and Responsiveness

AI enhances decision-making across strategic, tactical, and operational levels. Strategic decisions—such as network design, facility location, and capacity planning—benefit from AI's ability to analyze complex trade-offs and simulate scenarios (Fatorachian & Kazemi, 2026). Tactical decisions, including inventory deployment and transportation mode selection, are improved through real-time analytics and predictive insights. Operational decisions, such as route adjustments and warehouse task allocation, are increasingly automated through AI systems.

The integration of AI with Internet of Things (IoT) networks enables real-time visibility and responsiveness. Logistics managers can track shipments, monitor environmental conditions, and detect exceptions as they occur, enabling faster corrective actions (Seghezzi et al., 2025).

4.3 Sustainability Performance

AI contributes to sustainability through multiple mechanisms. Optimized routing and transportation strategies reduce fuel consumption and carbon emissions (S. C. V. Suresh Babu, S. Kahini, 2025). Predictive maintenance extends vehicle life and reduces waste. Demand forecasting enables more efficient inventory management, reducing spoilage and obsolescence (Noor et al., 2026).

Generative AI offers additional sustainability benefits through lifecycle assessment, decarbonization planning, and sustainability reporting. By synthesizing complex datasets and simulating environmental scenarios, GAI systems enable organizations to evaluate trade-offs, identify improvement opportunities, and

communicate sustainability performance to stakeholders.

4.4 Resilience and Risk Mitigation

AI enhances supply chain resilience by enabling faster detection of disruptions, more accurate risk assessment, and more effective response planning. Machine learning models identify patterns in supply chain data that signal emerging risks, enabling proactive mitigation. In humanitarian contexts, AI-enabled decision support improves coordination and resource allocation under severe uncertainty.

The SCOR-based mapping of AI applications reveals that planning and enable processes account for nearly four-fifths of reported applications, while manufacturing and reverse logistics remain underexplored (Seghezzi et al., 2025). This distribution reflects both the maturity of planning applications and opportunities for expansion into other domains.

5. Challenges: Barriers to AI Adoption in Logistics

Despite substantial opportunities, AI adoption in logistics faces significant barriers. This section synthesizes evidence across technical, organizational, and environmental dimensions.

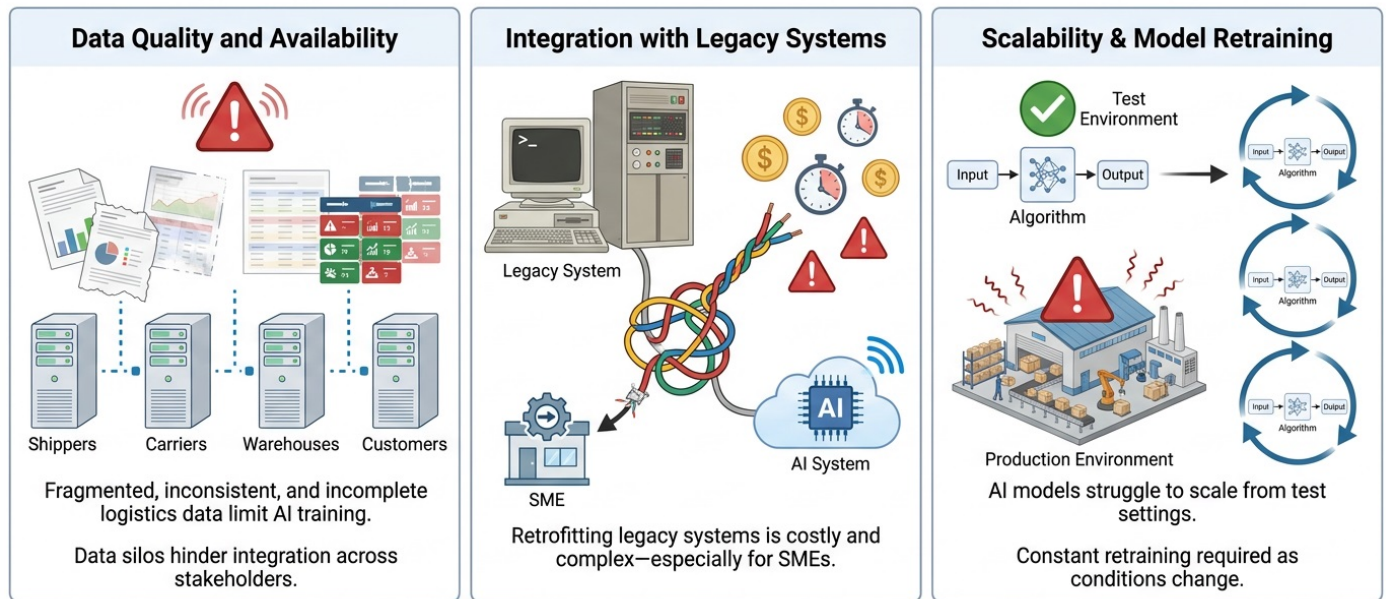
5.1 Technical Barriers

Data quality and availability represent the most fundamental technical barrier. AI systems require large volumes of high-quality, structured data to train accurate models. However, logistics data are often fragmented across systems, inconsistent in format, and incomplete in coverage (Fatorachian & Kazemi, 2026). Data silos between shippers, carriers, warehouses, and customers further compound the challenge.

Integration with legacy systems poses another significant technical barrier. Many logistics organizations operate on legacy information systems that were not designed for AI integration (Balvinder Singh Banga, Anuja Shukla, 2025). Retrofitting these systems is costly, time-consuming, and technically complex. The problem is particularly acute for small and medium-sized enterprises (SMEs) with limited digital readiness.

Scalability and model retraining present ongoing technical challenges. Machine learning models that perform well in controlled environments often fail to scale to production environments with diverse conditions and high data volumes (Noor et al., 2026). Models also require regular retraining to maintain accuracy as conditions change, adding operational complexity.

Technical Barriers to AI Adoption in the Logistics Industry



Infrastructure fragmentation, legacy systems, and model scalability/retraining are key technical barriers to effective AI adoption in logistics.

Figure 1. Technical Barriers to AI Adoption in the Logistics Industry

5.2 Organizational Barriers

Skills shortages are consistently identified as a critical barrier to AI adoption. The logistics industry faces a shortage of professionals with expertise in data science, machine learning, and AI system deployment (Fatorachian & Kazemi, 2026). This shortage affects both technical implementation and strategic oversight, limiting organizations' ability to identify AI opportunities and manage adoption effectively.

Resistance to change within organizations impedes AI adoption. Employees may perceive AI systems as threats to job security or as undermining established ways of working. Building trust in AI-driven decisions requires transparency, communication, and stakeholder engagement—investments that organizations often underestimate.

Implementation costs present a significant financial barrier, particularly for SMEs. The costs of AI software, hardware, data infrastructure, and skilled personnel are substantial. Even when cost-benefit analyses are favorable, the upfront investment required may exceed organizational capacity.

Barriers to AI Adoption in the Logistics Industry

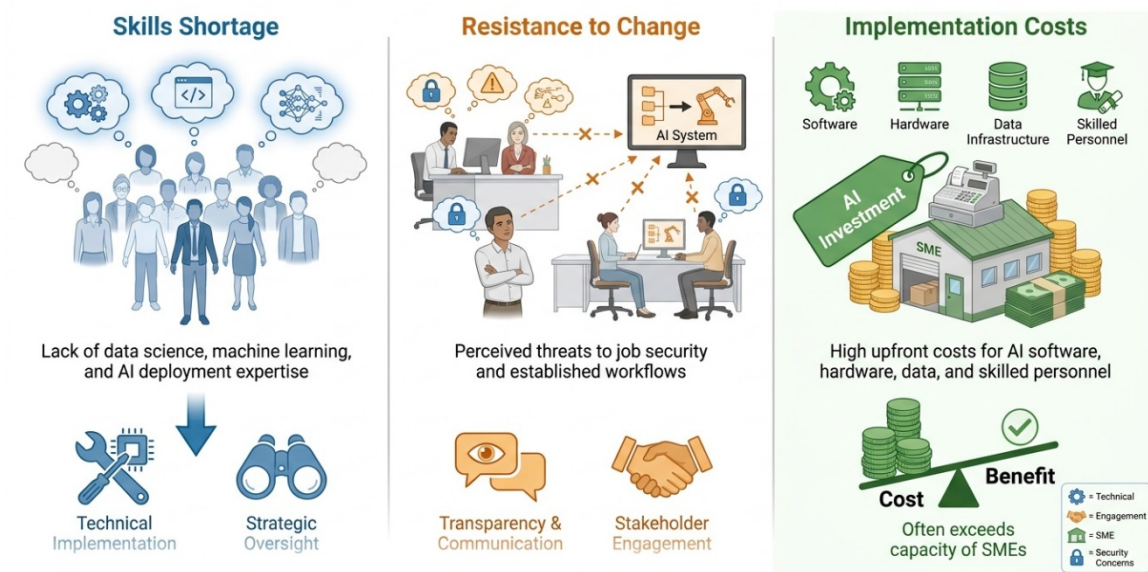


Figure 2. Organizational Barriers to AI Adoption in the Logistics Industry

5.3 Environmental and Regulatory Barriers

Regulatory compliance creates complexity for AI adoption. Logistics organizations must navigate regulations covering data privacy, cybersecurity, and algorithmic accountability (Ojo T.P, 2025). The regulatory landscape varies across jurisdictions, adding compliance costs and uncertainty.

Vendor dependency emerges as a concern as organizations rely on external providers for AI capabilities. Dependence on vendors for critical logistics systems raises issues of lock-in, transparency, and bargaining power (Seghezzi et al., 2025). Organizations may also struggle to transfer knowledge and capabilities from vendors to internal teams.

Ethical considerations around algorithmic bias, fairness, and transparency are increasingly recognized as barriers to responsible AI adoption. AI systems trained on historical data may perpetuate or amplify existing biases in logistics operations (Ojo T.P, 2025). Ensuring fairness in automated decisions—particularly in contexts such as resource allocation and service prioritization—requires deliberate attention to model design and governance.

6. Integrated Framework and Implications

Drawing on the synthesis of applications, opportunities, and challenges, this section proposes an integrated framework for understanding AI adoption in logistics as a systemic transformation.

6.1 A Systems-Theory-Based Framework

The framework conceptualizes AI adoption as occurring across three interconnected layers: technological enablers, organizational integration, and system outcomes.

Technological enablers include AI capabilities (predictive analytics, generative AI, machine learning), data infrastructure, and connectivity (IoT, digital twins). These enablers must be configured to support logistics subsystems—procurement, production, logistics, and planning—rather than applied as standalone solutions (Fatorachian & Kazemi, 2026).

Organizational integration encompasses the processes through which AI capabilities are embedded within logistics operations. This includes strategic alignment, skills development, change management, and governance. Poor integration—where AI capabilities are adopted but not aligned with organizational systems—leads to suboptimal outcomes and limited value capture.

System outcomes emerge from the interaction of technological enablers and organizational integration across logistics subsystems. These outcomes include operational efficiency, sustainability, resilience, and responsiveness (Seghezzi et al., 2025). The framework emphasizes that outcomes depend on the coherence of the entire system, not on individual AI applications in isolation.

6.2 Implications for Research

The integrated framework suggests several research priorities. First, longitudinal studies are needed to examine how AI adoption evolves over time and under what conditions value is sustained or eroded. Most current evidence is cross-sectional and may not capture the dynamic nature of system transformation (Fatorachian & Kazemi, 2026).

Second, research should address the underexplored logistics functions identified by SCOR-based mapping. Manufacturing processes and reverse logistics account for only 4% and 1% of reported AI applications respectively (Seghezzi et al., 2025). Understanding AI's potential in these domains could unlock significant value.

Third, research on AI in logistics should incorporate the ethical and governance dimensions increasingly recognized as critical. Issues of algorithmic bias, transparency, and accountability require conceptual development and empirical investigation (Ojo T.P, 2025).

6.3 Implications for Practice

For logistics managers, the findings underscore the importance of a systemic approach to AI adoption. Rather than treating AI as a set of independent tools, organizations should consider how AI capabilities interact across logistics subsystems and with broader organizational systems. This requires coordination across functions, alignment with strategic objectives, and investment in integration capabilities.

For policymakers, the findings suggest that addressing barriers to AI adoption requires a multi-faceted approach. Skills development programs, regulatory frameworks that balance innovation with responsible

deployment, and support for SMEs in overcoming data and infrastructure gaps could accelerate value creation.

7. Conclusion and Future Research Directions

This paper has reviewed AI-driven innovations in the logistics sector, examining both opportunities and challenges through a systems theory lens. The literature documents substantial benefits—operational efficiency, cost reduction, improved decision-making, sustainability performance, and enhanced resilience—while also revealing significant barriers including data quality issues, integration challenges, skills shortages, and governance concerns.

The analysis leads to the following conclusions. First, AI represents a transformative general-purpose technology for logistics, but its impact depends on systemic integration rather than isolated application. Second, the benefits of AI are substantial but not automatic; realizing value requires organizational adaptation and capability development. Third, the governance of AI in logistics—including ethical, regulatory, and security dimensions—demands increased attention from both researchers and practitioners.

Future research should address several priorities. Methodologically, longitudinal and empirical studies are needed to complement the predominantly conceptual and case-based literature (Fatorachian & Kazemi, 2026). Topically, research should explore underexplored areas including generative AI's role in logistics design, AI-enabled autonomous logistics systems, and the intersection of AI with circular economy principles (Bahroun et al., 2026). The integration of AI with digital twin architectures and the development of governance-by-design frameworks represent promising directions for responsible and scalable adoption.

The logistics sector stands at a critical inflection point. AI offers unprecedented opportunities to address long-standing challenges of efficiency, sustainability, and resilience. Realizing these opportunities, however, requires not only technological advancement but also systemic thinking, organizational capability, and responsible governance.

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