

# Artificial Intelligence Decision Support Systems as Predictors of Managerial Decision Quality among Small Retail Business Owners in the Case of Greater Accra, Ghana

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## Abstract

Quality decisions made at work have become pivotal for business transformation and prosperity in the modern era. Grounded in this notion, this study investigated an artificial intelligence (AI) decision support system as a determinant of quality managerial decision-making using retail business owners in Accra and Tema Metropolis in Greater Accra, Ghana. The study specifically investigated how decision automation affects decision timeliness, assessed how the utilization of predictive analytics influences decision accuracy, and evaluated the degree of the relationship between real-time information support and decision effectiveness. The study adopted a quantitative research model in which small-scale business owners served as the unit of analysis. Findings indicated that decision automation positively affected decision timeliness with “ $r^2 = 0.815$ ,  $p < 0.05$ ”; in addition, a significant positive influence was exerted by the utilization of predictive analytics on decision accuracy with “ $r^2 = 0.713$ ,  $p < 0.05$ ”. Furthermore, real-time information support had a positive and significant relationship with decision effectiveness with “ $r = 0.805$ ,  $p < 0.05$ ”. These findings demonstrate that decision support capabilities stemming from AI-powered systems can adequately enhance quality managerial decision-making by ensuring more accurate, faster, and more effective decisions among owners of small-scale businesses. Grounded in the Technology Acceptance Model and Bounded Rationality Theory, the study specifically inquired into how decision automation affects decision timeliness, assessed how the use of predictive analytics influences decision accuracy, and evaluated the degree of the relationship between real-time information support and decision effectiveness. In conclusion, adopting AI decision support systems remains a strategic resource that is pivotal to improving operational performance and

business competitiveness among small-scale retail businesses in the region. Thus, owners of small-scale businesses should increase their use of predictive analytics, invest more in AI-powered decision support technologies, and incorporate real-time information systems into their decision-making process. Therefore, government agencies and business associations should promote training in artificial intelligence decision support systems for small retail businesses because of their impact on Ghana's development economy.

### **Keywords**

AI Decision Support Systems, Decision Automation, Managerial Decision Quality, Predictive Analytics, Real-Time Information Support, Small Retail Businesses

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## **1. Introduction**

Artificial intelligence has emerged as a fundamental tool for transforming the managerial decision-making process across organizations by empowering managers to make more accurate, faster, and evidence-based decisions [1]. The decision-making process hinges on AI-powered Decision Support Systems (AI-DSS) that incorporate predictive analytics, machine learning, automation, natural language processing, and real-time data processing to improve organizational performance and augment managerial judgments [2]. Compared with traditional Decision Support Systems, which primarily analyze historical data, AI-DSS continuously learns from new information, enabling them to recognize complex patterns and processes to generate predictions and actionable recommendations [3] [4]. Consequently, organizations across diverse sectors are constantly leveraging AI technologies to improve operational efficiency, enhance the quality of managerial decisions, and reduce uncertainty in an increasingly evolving business environment [5].

According to [6], the increasing digital transformation of businesses has made decision quality critical for evaluating organizational capabilities. Business environments in the contemporary era are characterized by rapidly changing technologies, volatile customer preferences, increasing competitive pressures, and uncertain supply chains. Under these conditions, managers are expected to make decisions that are not only timely but also effective and accurate. Thus, the quality of management decisions determines how efficiently resources are allocated within organizations, as well as how successfully strategic and operational objectives are actualized and how swiftly firms can respond to environmental challenges. Consequently, intuition-based decision-making within organizations is increasingly being replaced by AI-assisted analytical methods that enhance managerial judgment through business intelligence and data analytics [7].

Small retail businesses are among the largest contributors to the Ghanaian private sector economy. They stimulate entrepreneurship, offer employment, and

contribute significantly to national economic development by facilitating domestic trade. Greater Accra main marketplaces in Accra and Tema Metropolis, which serve as Ghana's principal commercial hubs, house thousands of small retail enterprises operating in highly competitive markets, where business owners constantly make decisions related to product assortment, inventory replenishment, pricing, customer relationship management, supplier selection, and financial planning [8]. These decisions are often made under conditions of limited financial resources, uncertainty, and incomplete information. As a result, the ability of small retail business operators to make high-quality managerial decisions significantly affects business sustainability, profitability, customer satisfaction, and long-term competitiveness [9].

The affordability of cloud computing, digital payment systems, mobile technology, and AI-enabled business applications has created opportunities to adopt intelligent decision-support technologies that were previously available only to large corporations and are now used by small businesses. Thus, AI-powered inventory management systems, predictive demand forecasting applications, intelligent point-of-sale platforms, automated business intelligence tools, and customer analytics software are becoming increasingly accessible to small-scale enterprises. These technologies help managers forecast future market conditions, automate routine decisions, and provide real-time operational information that enhances managerial responsiveness [10].

Among the emerging capabilities of AI-DSS is decision automation, which has become crucial for enhancing operational efficiency. Automating decisions involves applying AI algorithms to execute routine managerial decisions with minimal human intervention. Intelligent pricing recommendations, automated inventory replenishment, fraud detection, customer segmentation, and reorder notifications exemplify how decisions are automated in contemporary retail businesses. According to [2], eliminating routine manual processes and reducing administrative delays empowers managers to provide swift responses to operational challenges. Decision timeliness has thus become a critical metric of managerial decision quality because delayed decisions often lead to loss of sales, reduced competitiveness, dissatisfied customers, and inventory shortages.

Another significant capability of AI-based decision support systems is predictive analytics. Predictive analytics uses statistical models, historical data, and machine learning algorithms to forecast future business events and identify emerging trends before they occur. Within the retail landscape, predictive analytics empowers managers to optimize stock levels, estimate customer demand, forecast sales performance, and anticipate seasonal fluctuations while identifying purchasing behaviors. These predictive abilities can reduce uncertainty and enhance evidence-based decision-making [11].

Real-time information is another indispensable tool in today's fast-moving retail landscape. This type of AI-enabled decision support system constantly obtains, processes, and provides current information concerning inventory move-

ments, customer purchases, supplier performance, financial transactions, and competitor activities. Access to real-time information empowers managers to identify operational challenges instantly and implement corrective measures swiftly before minor concerns become major issues within organizations. According to [7], organizations empowered with AI-driven real-time information systems typically demonstrate improved customer service, higher operational responsiveness, and superior decision effectiveness compared with firms whose management relies on manually generated reports. The study further argues that the utilization of AI-generated recommendations, supported by information quality and transparency, can enhance the quality of managerial decision-making across organizations [1].

## **2. Theoretical Framework**

Founded on the technology acceptance model and bounded rationality theory, the technology acceptance model (TAM) explains this topic from two major angles which are perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness explains the extent to which an individual believes that the use of technology will enhance performance. On the other hand, perceived ease of use (PEOU) reflects the degree to which individuals believe that the deployment of technology requires minimal effort. This theory is relevant because it brings to the fore that increased perceived usefulness and ease of use stimulate the frequent deployment of AI-generated decision support, resulting in superior managerial outcomes.

Despite the acknowledged benefits of AI technologies universally, adopting and effectively utilizing them by small retail businesses in numerous developing nations remains disproportionate. Even though Ghana has experienced considerable growth in mobile commerce, digital entrepreneurship, and financial technology, many small retail business activities still depend heavily on personal judgment, manual record-keeping, conventional management information systems, and experience-based forecasting. Inadequate digital infrastructure, resource limitations, implementation costs, and limited AI competencies, coupled with insufficient awareness, continue to plague AI adoption among small-scale business owners [12]. As a result, managerial decisions are often marred by inaccurate forecasts, delayed responses, missed market opportunities, and ineffective inventory management, which further reduces organizational competitiveness [13]. Based on the foregoing arguments, this study therefore examined Artificial Intelligence Decision Support Systems as Predictors of Managerial Decision Quality among Small Retail Business Owners in Greater Accra, Ghana.

## **3. Purpose of the Study and Research Questions**

The purpose of this study was to investigate artificial intelligence decision support systems as predictors of managerial decision quality among small retail business owners in the Accra and Tema Metropolises in the Greater Accra Region, Ghana.

Specifically, the objectives of this study were to examine the effect of decision automation on decision timeliness, investigate the influence of predictive analytics utilization on decision accuracy, and evaluate the relationship between real-time information support and decision effectiveness among small retail business owners in the region.

Based on the specific objectives above, the following hypotheses were developed to pilot the study.

H1: Decision automation has an effect on decision timeliness among small retail business owners in the Greater Accra Region.

H2: Predictive analytics influences decision accuracy among small retail business owners.

H3: A significant relationship exists between real-time information support and decision effectiveness among small retail business owners in Accra and Tema in the Greater Accra, Ghana.

## 4. Methods

### Research Model and Respondents

A quantitative research approach, adopted through a cross-sectional survey research design, was used for the study. I conducted this descriptive, cross-sectional, and correlational study between March and June 2026 in Greater Accra, Ghana. I selected the main marketplaces in Tema and Accra using a proportional probability selection method based on the number of retailers. This approach was appropriate because it helped with the collection of information from small retail business owners at a single point, using a simple random sampling method to select the retailers from the markets. In simple random sampling, every possible combination of elements has an equal chance of being included in the sample. A total of 357 business retailers responded to the investigation. The ages of the respondents ranged from 18 to 65 years old [13].

The study was carried out following the guidelines of the market associations on ethics and consent of the respondents. The Accra Institute of Technology University Research and Development Faculty and Ethics Committee approved the study, dated February 2026. I obtained informed consent to participate from all respondents and collected all data anonymously [14].

This design and approach allow for hypothesis testing using statistical analysis. The study used a quantitative research approach, with surveys distributed to small retail business owners in the Accra and Tema metropolitan areas [15]. The surveys evaluated artificial intelligence decision-support systems as predictors of managerial decision quality among small retail business owners in Tema and Accra, the main business markets: cash-based markets, heavy foot-traffic areas, and language-diverse areas. Statistical methods of regression analysis and bivariate correlation analysis were used to investigate the influence, effect, and relationship between the indicators of artificial intelligence decision-support systems and managerial decision quality among small retail business owners.

#### 4.1. Data Collection Tools

The population targeted for this study involved owners of small retail businesses registered in the Accra and Tema Metropolis, using the Likert scale to obtain demographic information about the respondents from the information form. It consisted of questions about the socio-demographic characteristics of business retailers: a) the level of AI-based Decision Support System usage, and b) managerial decision quality, AI usage, and decision quality. These businesses are expected to have adopted and be using digital technologies that facilitate managerial decision-making.

The sample size was obtained using Cochran's (1977) formula, which is used in cases of large populations. The Cochran (1977) formula is found below:

$$n = \frac{Z^2 pq}{e^2} n = \frac{Z^2 pq}{e^2} n = \frac{Z^2 pq}{e^2} n$$

where:

$$Z = 1.96 \quad Z = 1.96 \quad Z = 1.96 \quad (95\% \text{ confidence level})$$

$$p = 0.50 \quad p = 0.50 \quad p = 0.50$$

$$q = 0.50 \quad q = 0.50 \quad q = 0.50$$

$$e = 0.05 \quad e = 0.05 \quad e = 0.05$$

From the above, the minimum sample size calculated was three hundred and eighty-four (384) respondents. A multistage sampling technique was utilized. First, a purposive method was employed to select major commercial hubs within Accra and Tema due to the high concentration of retail businesses. Then, simple random sampling was employed to select eligible retail businesses from the sampling frame obtained through local government business registers and other business associations.

#### 4.2. Data Collection and Analysis

Primary data used in this study were obtained through structured questionnaires that were directly administered to owners of small retail businesses. The questionnaires comprised two sections. **Section A:** Respondents' demographic characteristics, while **Section B** measured the variables of the study using a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Variables were measured using **Table 1** below.

**Table 1.** Cronbach alphas of the study variables.

| S/N                                                     | Variables                        | Authors                         | No. of Items | Initial Cronbach Alpha | Cronbach Alpha after the pilot Study |
|---------------------------------------------------------|----------------------------------|---------------------------------|--------------|------------------------|--------------------------------------|
| <b>Artificial Intelligence Decision Support Systems</b> |                                  |                                 |              |                        |                                      |
| 1.                                                      | Decision Automation              | Buschmeyer <i>et al.</i> (2023) | 5            | 0.912                  | 0.782                                |
| 2.                                                      | Predictive Analytics Utilization | Khan <i>et al.</i> (2023)       | 5            | 0.875                  | 0.791                                |

**Continued**

|                                    |                               |                                 |   |       |       |
|------------------------------------|-------------------------------|---------------------------------|---|-------|-------|
| 3.                                 | Real-Time Information Support | Buschmeyer <i>et al.</i> (2023) | 5 | 0.893 | 0.800 |
| <b>Managerial Decision Quality</b> |                               |                                 |   |       |       |
| 4.                                 | Decision Timeliness           | Abu-AlSondis (2023)             | 4 | 0.864 | 0.793 |
| 5.                                 | Decision Accuracy             | Khan <i>et al.</i> (2023)       | 5 | 0.910 | 0.815 |
| 6.                                 | Decision Effectiveness        | Ghorayeb <i>et al.</i> (2023)   | 5 | 0.861 | 0.725 |

Source: Authors' Computation (2026).

## 5. Eligibility Criterion for the Usage of AI-DSS

The inclusion of businesses in the study was premised on the verification that they were registered and had used at least one AI-enabled decision support technology, such as automated inventory systems, predictive analytics, customer relationship management tools, or intelligent point of sale systems with AI features, for a minimum of seven months before the survey.

## 6. Verifying AI-DSS Adoption

Before the questionnaire administration, prospective respondents were screened by the researchers through a brief eligibility checklist that assisted in confirming AI-DSS adoption. Respondents were asked to indicate the exact AI-enabled technologies employed, the duration of deployment, and the business functions this technology supported. Where feasible, these responses were substantiated and validated by directly observing documentary evidence and digital systems in operation, such as system-interface subscriptions and software dashboards. Therefore, only businesses that met the predefined benchmark and eligibility requirements were included as units of analysis.

For validity, we subjected the questionnaire to both face and content validity by using evaluations from experts in information systems, management, and research methodology. Their comments and recommendations were incorporated before we finally administered the questionnaires. For reliability, we conducted a pilot study using approximately 35 small retail business owners around Mallam Junction, Community 4, and the Block Factory arena. Internal consistency was assessed using Cronbach's alpha, with 0.70 serving as the minimum acceptable coefficient according to [16].

For analysis, data were coded and analyzed using IBM Statistical Package for the Social Sciences version 29. The study hypotheses were tested at a 5% significance level ( $\alpha = 0.05$ ). Statistical significance was determined using p-values, with  $p < 0.05$  indicating a statistically significant relationship.

For ethical considerations, approval was obtained from the relevant institutional review authorities, where applicable. Participation was voluntary, and informed consent was obtained from all respondents. In addition, anonymity and confidentiality were maintained, and the data collected were strictly used for aca-

demic purposes.

## 7. Results

### Response Rate on Questionnaire Administration.

The table below (**Table 2**) indicates that a total of three hundred and eighty-four (384) questionnaires were distributed; three hundred and fifty-seven (357) were returned, and three hundred and fifty-one (351) were found useful, reflecting a response rate of 91.4%.

**Table 2.** Result on questionnaire administration.

| Detailed Response Rate | Distributed Copies | Retrieved Copies | Copies not Retrieved | Used Copies |
|------------------------|--------------------|------------------|----------------------|-------------|
| Total                  | 384                | 357              | 27                   | 351         |

Source: Field Survey (2026).

Of the three hundred and fifty-seven (357) returned questionnaires, six (6) were excluded because they contained significant voids and considerable pitfalls due to incompleteness, thereby failing the eligibility screening requirements. This resulted in three hundred and fifty-one (351) valid questionnaires, which were finally used for analysis. In addition, we handled incomplete and missing responses using listwise deletion. Thus, questionnaires with significant response omissions or critical missing data were discarded, while those with internally consistent and complete responses were retained for statistical analysis. This method ensured the reliability and integrity of the dataset.

### 7.1. Hypothesis Testing with Regression and Correlation Analysis

#### Hypothesis One

**H1:** Decision automation has an effect on decision timeliness among small retail business owners in the Greater Accra, Ghana.

**Table 3.** Model Summary of Regression Analysis on how decision automation affects decision timeliness among small retail business owners in Greater Accra, Ghana.

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | F        | Sig.              |
|-------|-------------------|----------|-------------------|----------------------------|----------|-------------------|
| 1     | .819 <sup>a</sup> | .815     | .814              | .459                       | 1411.241 | .000 <sup>b</sup> |

Source: SPSS, (2026).

The summary table above (**Table 3**) illustrates the extent to which decision automation affects decision timeliness among small retail business owners in Greater Accra, Ghana. The coefficient of determination ( $R^2 = 0.815$ ,  $p\text{-value} < 0.05$ ) revealed that 81.5% of the variation in decision timeliness resulted from decision automation. Based on this finding, the results demonstrated that decision automation affects decision timeliness among small retail business owners. Based

on this exposition, the study rejected the null hypothesis and concluded that decision automation affects decision timeliness among small retail business owners in the marketplaces.

## 7.2. Hypothesis Two

H2: Predictive analytics utilization has an influence on decision accuracy among small retail business owners in Greater Accra, Ghana.

**Table 4.** Model Summary of Regression Analysis on the Influence of predictive analytics utilization on Decision Accuracy among small retail business owners in Greater Accra, Ghana.

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | F        | Sig.              |
|-------|-------------------|----------|-------------------|----------------------------|----------|-------------------|
| 1     | .714 <sup>a</sup> | .713     | .713              | .329                       | 1311.251 | .000 <sup>b</sup> |

Source: SPSS, (2026).

The summary table above (**Table 4**) explains how much influence predictive analytics utilization has on decision accuracy among small retail business owners. The coefficient of determination ( $R^2 = 0.713$ ,  $p\text{-value} < 0.05$ ) revealed that 71.3% of the variation in decision accuracy was as a result of predictive analytics utilization. From this standpoint, the results indicated that decision accuracy was influenced by predictive analytics among small retail business owners. On this note, the null hypothesis was rejected, as the results revealed that decision accuracy was influenced by predictive analytics among small retail business owners in Greater Accra, Ghana.

## 7.3. Hypothesis Three

H3: A significant relationship exists between real-time information support and decision effectiveness among small retail business owners in the Greater Accra, Ghana.

**Table 5.** Bi-Correlation Analysis on the relationship between real-time information support and decision effectiveness among small retail business owners in the Greater Accra, Ghana.

|                               |                     | Real-Time Information Support | Decision Effectiveness |
|-------------------------------|---------------------|-------------------------------|------------------------|
| Real-Time Information Support | Pearson Correlation | 1                             | .805**                 |
|                               | Sig. (2-tailed)     |                               | .000                   |
|                               | N                   | 351                           | 351                    |
| Decision Effectiveness        | Pearson Correlation | .805**                        | 1                      |
|                               | Sig. (2-tailed)     | .000                          |                        |
|                               | N                   | 351                           | 351                    |

Source: SPSS, (2026).

From the bi-correlation analysis above, the results showed a positive relationship between real-time information support and decision effectiveness ( $r = 0.805$ ,  $p\text{-value} < 0.05$ ). The exposition above signposted that a positive relationship exists between real-time information support and decision effectiveness. On this basis, the null hypothesis was rejected because the results in **Table 5** indicated otherwise. This signposted a positive relationship between real-time information support and decision effectiveness among small retail business owners in Greater Accra, Ghana.

## 8. Discussion

This study examined artificial intelligence decision support systems as predictors of managerial decision quality among small retail business owners in Greater Accra, Ghana. Three hypotheses were formulated to guide the study.

The first hypothesis predicted whether decision automation has an effect on decision timeliness among small retail business owners in two marketplaces in Greater Accra, Ghana. Findings revealed that decision automation positively affects decision timeliness among small retail business owners in Greater Accra, Ghana. Findings showed that automated decision systems improve operational responsiveness by providing timely insights from sales, customer demand, inventory, and financial data, which then empower business owners to make more informed and faster decisions. This result is consistent with the conclusion by [2], which stated that the quality and speed of managerial decisions are significantly improved through AI-enabled decision support technologies. The result also agrees with the position of [5], which revealed that AI-driven decision automation is capable of improving the agility of organizations through the acceleration of managerial responses to emerging business situations.

Similarly, the finding is in alignment with the study by [3], whose report claimed that automation can substantially reduce decision-making time through the automation of data collection, processes, and analysis. In addition, the finding supports the conclusion by [1], who found that digital decision support technologies can enhance organizational responsiveness as well as operational efficiency. This finding also corroborates the findings of [13], which reported that AI-based decision automation can enhance decision speed, especially with the integration of predictive analytics with real-time organizational data. Furthermore, the current finding is in agreement with the study by [4] [7], whose argument centered on the fact that managerial performance is improved through AI-assisted decision-making, primarily through increased decision timeliness.

For the second hypothesis, which projected whether predictive analytics utilization influences decision accuracy among small retail business owners in Greater Accra, findings revealed that decision accuracy is significantly influenced by the utilization of predictive analytics among small retail business owners in Greater Accra, Ghana. This indicates that using predictive analytics empowers business owners to generate data-driven forecasts, anticipate customer demands, and iden-

tify market trends, which further improves the precision of managerial decisions. By leveraging real-time and historical data, predictive analytics is used to reduce uncertainty and improve the quality of both strategic and operational decisions. The findings agree with the study of [13] [15] which discovered that decision accuracy can be improved using predictive analytics by empowering managers to optimize resource allocation and forecast business outcomes. The study findings also align with the position of [10], who reported that AI-powered predictive analytics strengthens managerial decision quality by transforming complex business data into actionable and accurate insights, thereby minimizing errors associated with intuition-based decision-making.

In addition, the findings also align with the study of [2], which concluded that predictive analytics fosters the effectiveness of decisions within organizations by improving risk assessment, demand forecasting, and strategic planning. Similarly, the study supports the conclusion of [13], which found that predictive systems integrate historical and real-time data to produce reliable forecasts that significantly improve managerial decision accuracy in dynamic business environments. In addition, the findings are in agreement with the study by [3], whose study argued that predictive analytics functions as a tool for augmenting decisions, as an avenue for supporting managers with accurate recommendations, and for preserving human judgment when finally making decisions.

For the third hypothesis, which predicted whether a significant relationship exists between real-time information support and decision effectiveness among small retail business owners in Greater Accra, Ghana, the findings from this study indicate that a significant relationship exists between real-time information support and decision effectiveness. This signpost indicates that access to up-to-date and timely business information allows business owners to make decisions that are both effective and efficient by responding swiftly to customer preferences, market changes, and operational challenges. This finding is consistent with the study by [1], who opined that the effectiveness of decisions is improved through real-time information systems by making accurate and timely data available to managers to aid both operational and strategic decisions.

The findings also support the report by [1] [2], which concluded that AI-enabled information promotes managerial responsiveness and decision quality among SMEs by facilitating evidence-based decision-making. The findings also agree with the report from [10], who reported that real-time information support fosters organizational agility and enhances the quality of managerial decisions via swift access to relevant business intelligence. Likewise, the findings agree with the study by [4], who observed that organizational decision effectiveness can be improved by real-time data analytics, empowering managers to promptly respond to changing business conditions and identify market trends. Furthermore, the findings support the study by [1] [17], which reported that digital information support systems bolster organizational performance by improving operational efficiency and decision effectiveness. Overall, the current study showed that real-time information support is a vital tool for enhancing effective decision-making among

small retail business owners in Greater Accra, Ghana.

## 9. Limitation

This investigation has a few limitations that warrant consideration. First, the cross-sectional survey research design adopted captured respondents' perceptions at a single point in time and thus could not provide causal relationships between artificial intelligence support systems and quality managerial decision-making. Second, the study exclusively focused on small retail business owners in Greater Accra, Ghana (main marketplaces in Tema and Accra metropolis) which limits the generalizability of the findings to other regions, sectors, and larger enterprises. Third, the study relied on self-reported questionnaire data, which may be subject to social desirability bias and response bias. Finally, the study examined only three AI decision support systems: "decision automation," "predictive analytics utilization," and "real-time information support." In contrast, other organizational and relevant technological factors that may affect managerial decision quality were excluded. Despite these limitations, this study offers valuable empirical insights into how AI-driven decision support systems can enhance and enrich managerial decision quality among small retail businesses within the Ghanaian landscape.

## 10. Conclusions

Based on the study outcomes, the study concluded that artificial intelligence decision support systems significantly foster managerial decision quality among small retail business owners in the selected study areas in Greater Ghana. In particular, decision automation significantly improves decision timeliness, while predictive analytics influences decision accuracy, and real-time information support enhances decision effectiveness. Based on the above, it is concluded that the integration of AI-driven decision support tools empowers small retail business owners to make swift, more accurate, faster, and more effective managerial decisions, which in turn improves operational efficiency and competitiveness. Therefore, small retail business owners in the selected study area should invest in affordable AI-driven decision support systems that incorporate decision automation, predictive analytics, and real-time information capabilities. Thus, business associations, government agencies, and technology providers should also offer regular training and capacity-building programs to empower business owners with the required digital skills to effectively navigate and use these technologies for improved managerial decision-making and business performance [3] [17].

In addition, both the technology acceptance model (TAM) and boundary rationality theory offered comprehensive theoretical insight into understanding the connection between AI-DSS and managerial decision-making quality among owners of small retail businesses in the selected study areas in Ghana. TAM suggested that the perceived usefulness, as well as ease of use, of an Artificial Intelligence Decision-Making System stimulates business owners' acceptance and continuous deployment, which in turn increases managers' willingness to incorporate

AI into the businesses' decision-making protocol. Conversely, bounded rationality theory shows how managers' cognitive limitations can be mitigated using AI-DSS by providing data-driven insights that are accurate and timely as mechanisms for improving decision effectiveness, accuracy, and timeliness. Altogether, these theories create a positive impression that adopting AI-DSS will not only facilitate technology acceptance but also enhance the quality of managerial decisions by providing support for more rational and informed decision-making in a retail environment that is dynamic and constantly changing.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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