AVE Trends in Intelligent Technoprise Letters

Assessing AI-Enabled Fraud Detection and Business Intelligence Dashboards for Trust and ROI in U.S. E-Commerce: A Data-Driven Study

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Abstract: As the U.S. e-commerce sector grows, mixing AI and BI tools is essential for corporate success and customer satisfaction. This study examines the impact of AI and BI technologies on customer loyalty and marketing ROI. A cross-sectional poll of 400 US e-commerce specialists from various sectors and vocations was conducted. Quantitative data were collected via questionnaire and analysed using descriptive statistics, chi-square tests, Spearman correlations, and Kruskal-Wallis H tests. Over 47.5% of organisations employ AI for fraud detection, and over 58.5% utilise BI dashboards, all with good thoughts about using them to detect fraud, gain actionable customer data, and strengthen customer connections. AI fraud detection affects platform security perception (p = 0.04151), while BI tools help businesses use dashboards more (p = 0.005). Companies may value AI/BI systems differently based on their advancement and capacities, rather than their marketing results or trust. Due to the field's sophistication, data sensitivity, and fierce competition, these findings benefit U.S. managers, policymakers, and researchers. The research combines AI, BI, trust, and performance in e-commerce to understand their link. The research presents a data-based approach for assessing the effects of AI and BI on security and marketing in U.S. digital commerce, supporting the national goal of safe and reliable AI adoption.

Keywords: Artificial Intelligence (AI); Business Intelligence (BI); Fraud Detection; Consumer Trust; Marketing ROI; E-Commerce; U.S. Digital Economy; Predictive Analytics; BI Dashboards.

1. Introduction

The development of AI and data analytics has greatly affected the digital economy, and e-commerce is one of the areas feeling the strongest changes. Due to high expectations of buyers, major transaction numbers, and security risks online, US businesses

rely heavily on AI [17]; [12]. The use of intelligent technologies in e-commerce includes fraud detection and predictive marketing, which are helping companies create trust and increase their profit [26]; [25]. Increasing evidence suggests that AI can greatly improve how fraud is found and managed. Anomalies and cyber threats are now often detected and handled in real time through the use of AI systems relying on machine learning and behavioural analytics [9]; [6]. They both reduce risks for banks and help customers trust them by protecting private information and making every transaction secure [20]. Since brands in this fast-changing digital space depend on consumers' trust to maintain loyalty, AI-based security systems double up as infrastructure and trust enablers [27].

BI dashboards have made it possible for marketing teams to watch key performance indicators, check return on investment, and plan important decisions with ease. BI tools enable organisations to analyse campaign data, target their audiences more accurately, and refine content strategies in real-time. This fits with the general trend noted by Kilimas et al. [8], where using AI-powered dashboards helps businesses match their decisions to new consumer behaviours. BI tools help different teams coordinate more efficiently since everyone can view and use the same data on performance indicators from marketing, sales, and IT departments [7]; [18]. Although these abilities have improved, the literature lacks thorough studies on the integration of AI and BI dashboards in e-commerce. Most research on these tools focuses on one aspect: AI for reducing fraud Hossain et al. [15], digital transformation's impact on CRM [11]; [7]. The role of data in marketing [28]; [3], though few investigate how they all influence consumer trust and ROI at the same time. Although global research indicates that AI and ML aid in operations and supply chains [19]; [23]. The U.S. market faces challenges due to advanced privacy laws, heightened consumer expectations, and rapid technological advancements [21]. This indicates a greater need for research into the main opportunities and challenges that US-based online companies face daily.

This study fills these gaps by evaluating how online retailers use AI tools for fraud control and various BI features, and how this improves trust in their overall service and marketing success. Based on recent literature in enterprise AI strategy [17]; [26], digital consumer behaviour [27], and customer experience engineering [10]; [14], the research looks at how perception, implementation, and performance are related. Based on recent studies addressing MarTech adoption [1], emotion in AI [14], and support in revenue modelling with AI [21]; [2]. This study examines how e-commerce companies utilize advanced analytics to protect and foster ongoing relationships with their customers. The main aim is to inform people working in the industry and researchers about the relationship among technology adoption, readiness within the company, and strategic outcomes in the highly competitive US digital market.

2. Literature Survey

Strategies in e-commerce in the United States are changing with the use of AI and BI. Companies are now relying more heavily on intelligent systems than before to handle fraud detection, improve marketing, manage CRM, and make predictions when working with customers. The article reviews contemporary concepts and findings on combining AI and BI, analysing how they impact consumer confidence and e-commerce marketing return.

2.1. AI-Enabled Fraud Detection and Security

AI has made it possible to easily handle a large amount of data, detect unusual behaviour, and act against suspicious events on its own. Saka [5] emphasises that machine learning is used in enterprise analytics to discover fraud automatically. Likewise, they point out, AI should be connected to cybersecurity to detect risks immediately and stay in compliance with regulations. Nawaz et al. [12] report that strong privacy regulations and consumer expectations make the use of AI for fraud identification essential for efficient operations and building trust. Natarajan et al. [20] go further by seeing AI as a major component of safe digital transformation, above all when partnered with strong data analysis. It has been proven that applying AI to fraud systems can make manual inspections shorter and increase customer trust, as authentication occurs automatically and with transparency [17]. They support trust among consumers by protecting them and demonstrating the platform's equality and dependability, which is vital as cyber-attacks increase.

2.2. Business Intelligence Dashboards and Marketing ROI

BI tools, mainly dashboards, are now essential in e-commerce marketing. In the year 2025, Mou [1] looks at BI within the MarTech stack, pointing out its function in automating CRM and analyzing campaigns. Ridwan [13] explores the use of real-time BI in businesses, highlighting its support for rapidly evolving e-commerce operations. Thanks to dashboards, business leaders can examine key data, decide on actions, and locate issues with marketing workflows [7]. With the help of these tools, marketers can evaluate their ROI in several channels and fine-tune the way they reach customers by segmenting data and using feedback [8]; [28]. Even with the impressive potential of BI, some experts insist that implementation quality matters most. According to Jadhav et al. [3], failing to train experts or have BI systems meet business goals may result in them

underperforming. Paul and Sharma [18] and their colleagues suggest that the economic impact of BI will come from data being shared and the systems being usable across different departments.

2.3. AI and BI in Consumer Trust Building and Strategic ROI Realisation

Several experts agree that AI and BI can increase how much consumers trust a company. Musiolik et al. [27] state that adding AI and secure data management to personalisation makes digital transactions seem both fairer and more transparent. The authors in Pontes et al. [10] look at the customer experience, discovering that AI can make interactions smoother and please customers to the point that they remain loyal and stay longer with the brand. Sanodia [11] points out that adding AI to financial services CRM helps increase client satisfaction, thanks to data-driven personalisation. End-users can become more confident in the systems because of AI when BI tools show their insights, according to Saka [5] and Kilimas et al. [8]. E-commerce trust depends more on open data, helpful predictions, and information security than just on reputation or the brand. Scholars have widely examined the financial consequences of integrating AI and BI, but outcomes are not the same everywhere.

According to Davenport and Mittal [26], companies that involve AI in their customer and internal processes notice significant gains in profits and the ability to make decisions quickly. Rainy [25] points out that using AI in marketing analytics gives retail campaigns a strong boost in their results. Similarly, Mou [1] and Perumal et al. [7] point out that an integration of AI and BI layers within MarTech agencies can improve how marketing money is spent and make the process of acquiring new customers more affordable by streamlining it. Lissy et al. [16] state that transformation processes commonly fail when internal members, systems, and culture do not fully support them. The researchers Hossain et al. [15] concur, pointing out that deploying AI requires strong operations and good planning in supply chain and analytics.

2.4. U.S.-Specific E-Commerce Dynamics

While a lot of literature covers AI and BI as broad themes, the U.S. market is shaped by unique factors. Rainy [25] reviews legacy IT modernisation and indicates that more U.S. firms use cloud-based AI to satisfy security and regulations for data management. Yewande [21] explores the use of AI in helping minority-run businesses prepare for the future in U.S. online shopping. Vudugula et al. [23] and Koushik [19] point out that AI-powered decision support systems should respond to ongoing changes in the market, especially as consumer markets are so fast in the United States. Butt [22] adds that integrating emotional intelligence and AI can help engage employees, who in turn may impact customer experience. They demonstrate that AI and BI tech serve as both tools and primary strategies to help the United States remain competitive, flexible, and trusted.

2.5. Summary of Gaps and Research Direction

While there is a large amount of information on AI and BI technologies individually, few studies have explored the combination of these technologies on trust in e-commerce and on marketing profits, mainly in the U.S. market. Studies tend to concentrate on technology structure or scenarios of use, with fewer reports on user experiences, how tools work together, and how strategy is dealt with. This study aims to address these gaps by:

- Investigating the perceived and statistical relationships between AI/BI adoption, consumer trust, and marketing ROI.
- Focusing on the U.S. market, where regulatory, technical, and consumer pressures are unique.
- Evaluating how organisational role, tool selection, and implementation depth affect outcomes across firms.

The study moves forward with a thorough and well-supported strategy to describe the impact of integrated intelligent systems on trust and revenue in the world's most competitive digital market. Besides filling in gaps in the literature, this study offers a structured method for exploring how AI and BI technologies support both business and IT. By integrating operational fraud control with marketing improvements, the country can support its efforts to develop safe, dependable, and economically valuable AI strategies for digital commerce.

3. Methodology

3.1. Research Design

A survey involving a quantitative, cross-sectional design was used in this study to understand how AI is helping fraud detection and enhancing both marketing profits and customer confidence among U.S. e-commerce companies. Since the research aimed to observe present practices and opinions in the field, a cross-sectional method was used to study them at the same time [4]; [26].

3.2. Target Population and Sampling Technique

The target community was comprised of digital marketers, IT managers, data scientists, fraud analysts, and BI developers, all based in the United States. The individuals reviewed were selected because they were actively responsible for deploying or using AI and BI within their organisations. Non-probability convenience sampling was chosen to gather replies from people working in the industry who were easy to reach. We gathered potential members by approaching people with relevant backgrounds on LinkedIn, through forums, mailing lists, and by word of mouth. A total of 400 valid responses were collected, which is enough for statistical generalisation of social research with categorical and ordinal data (Figure 1).
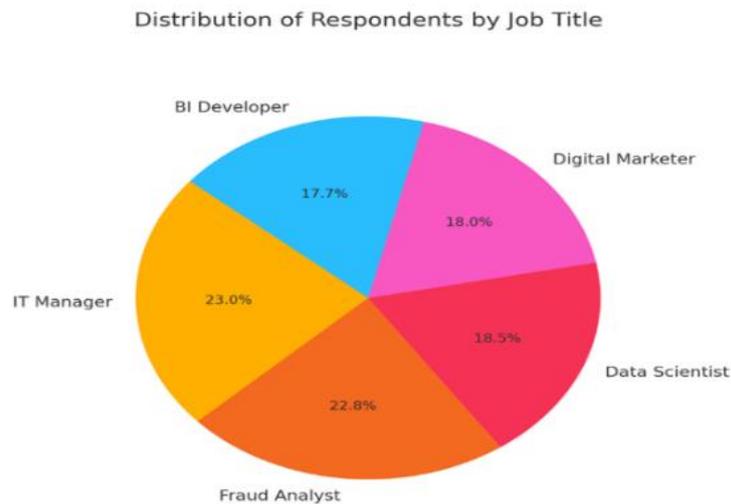

Figure 1: Distribution of respondents by job title

3.3. Instrumentation and Data Collection

Participants answered a well-structured online survey designed for clear understanding. There were several sections in the questionnaire to measure:

- Demographic data (e.g, job role, years of experience, company size, industry sector).
- Adoption and Usage of AI Fraud Detection Systems
- Usage of BI dashboards for marketing performance tracking.
- Perceived effectiveness of these tools in improving security, trust, and ROI.
- Organisational readiness and strategic alignment with intelligent technologies.

Quantitative analysis was possible because the survey had closed-ended questions that used Likert-scale and category formats. Items on the survey were drawn from approved constructs in previous studies on digital transformation, adopting AI and using analytics [1]; [27]; [10].

3.4. Data Analysis Procedures

Data were analysed using SPSS version 26. The analysis consisted of both descriptive and inferential statistical techniques:

- Descriptive statistics (frequency, percentage, mean, standard deviation) were used to summarise respondent demographics and usage patterns.
- Chi-square tests were conducted to examine associations between categorical variables such as tool usage, security perception, and organisational size.
- Spearman correlation coefficients were calculated to assess the strength and direction of associations between ordinal variables (e.g, trust increase and performance indicators).
- Kruskal-Wallis H tests were used to evaluate differences in marketing ROI and BI usage across multiple organisational categories such as company size and perceived AI/BI importance.

All analysis was conducted at a confidence level of 95% (indicating that $p < 0.05$ was considered significant). Visual graphs helped explain and report the conclusions of the analysis.

3.5. Ethical Considerations

Participation in the study was voluntary, and informed consent was obtained digitally before participants answered the questions. The surveys were designed to ensure no one's personal information was collected. All ethics in research involving human subjects were respected during the study.

4. Results

4.1. Demographic Profile of Respondents

As presented in Table 1, the 400 participants in the study reported on their demographic data. The study sample consisted of evenly distributed job roles, with IT Managers (23.0%) and Fraud Analysts (22.8%) being the largest groups, followed by Data Scientists (18.5%), Digital Marketers (18.0%), and BI Developers (17.8%). Emailing, social media, and mobile devices underscore the significance of AI and BI in various business fields, particularly in e-commerce. Individuals in the focus groups had different backgrounds in the industry. Nearly half of them had between 4 and 10 years of experience in dentistry, but 18.5% had less than one year at that stage (Figure 2).
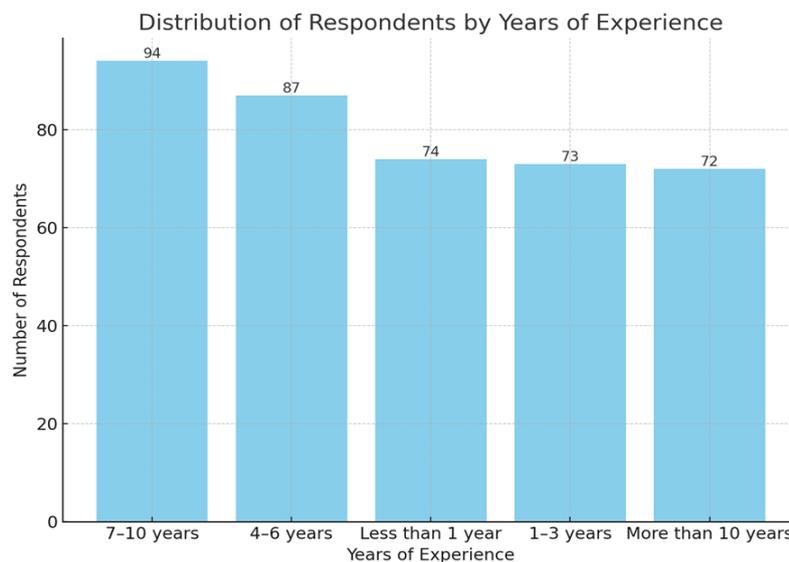
Figure 2: Distribution of respondents by years of experience

The responses to organisational size consisted of groups of all sizes, but there were more responses from firms with 501–1,000 staff (21.8%) and 201–500 staff (20.8%). This means that businesses of all sizes use digital tools. Electronics and Health and Beauty were equally the most common sectors, both at 20.5%, while Multi-category Marketplaces, Home Goods, and Fashion and Apparel were next with 20.3%, 20.0%, and 18.8%, respectively. When data from different industries is included, the findings can be used for most e-commerce businesses in the U.S.

Table 1: Demographic profile of U.S. e-commerce professionals participating in the study

Variable	Category	Frequency	Percentage (%)	p-value
Job Title	IT Manager	92	23.0%	< 0.05
	Fraud Analyst	91	22.8%	< 0.05
	Data Scientist	74	18.5%	< 0.05
	Digital Marketer	72	18.0%	< 0.05
	BI Developer	71	17.8%	< 0.05
Experience	7–10 years	94	23.5%	< 0.05
	4–6 years	87	21.8%	< 0.05
	Less than 1 year	74	18.5%	< 0.05

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	1–3 years	73	18.3%	< 0.05
	More than 10 years	72	18.0%	< 0.05
Company Size	501–1,000	87	21.8%	< 0.05
	201–500	83	20.8%	< 0.05
	Fewer than 50	81	20.3%	< 0.05
	More than 1,000	80	20.0%	< 0.05
	51–200	69	17.3%	< 0.05
Sector	Electronics	82	20.5%	< 0.05
	Health and Beauty	82	20.5%	< 0.05
	Multi-category/Marketplace	81	20.3%	< 0.05
	Home Goods	80	20.0%	< 0.05
	Fashion and Apparel	75	18.8%	< 0.05

4.2. Adoption of AI-Based Fraud Detection and BI Dashboard Technologies

As noted in Table 2, 47.5% of the respondents stated that their organisations already apply AI-based systems for fraud detection. Almost 19% of the survey respondents mentioned plans to use these technologies within the following year. A substantial number of respondents confirmed that BI tools are being used in their companies for marketing analysis and making decisions.

Table 2: Adoption status of AI-based fraud detection and BI dashboard technologies in U.S. e-commerce

Variable	Category	Frequency	Percentage (%)	p-value
AI Fraud Detection Usage	Yes	190	47.5%	< 0.05
	No	136	34.0%	< 0.05
	Planning to adopt within 12 months	74	18.5%	< 0.05
BI Dashboard Usage	Yes	234	58.5%	< 0.05
	No	93	23.3%	< 0.05
	Planning to implement	73	18.3%	< 0.05

Many companies are planning to use BI dashboards soon, proving that data-driven decision-making is gaining ground. 23.3% of the reports stated they did not currently use BI dashboards. The statistical difference in responses proves that e-commerce organisations in the U.S. are placing greater emphasis on these technologies (Figure 3).
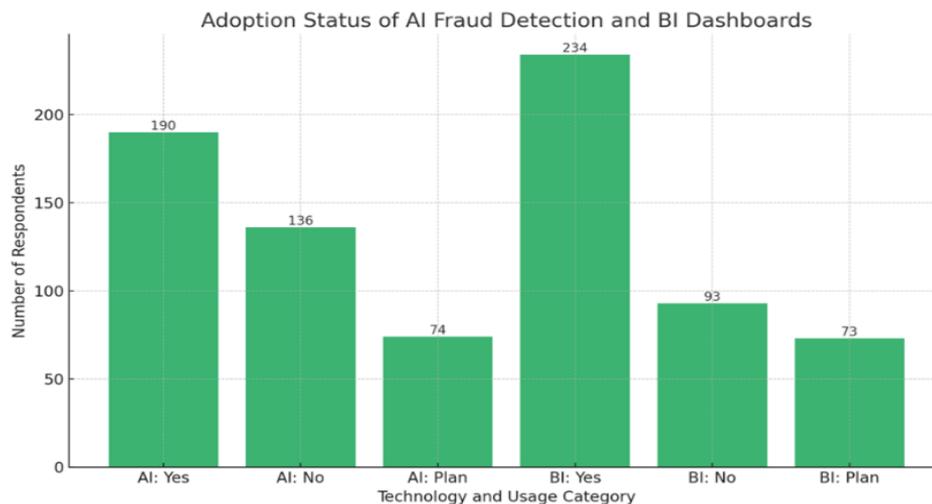
Figure 3: Adoption status of AI fraud detection and BI dashboards

## 4.3. Perceived Security and Strategic Value of AI and BI Integration

Table 3 shows how respondents believe that AI and BI technologies affect both security and the overall strategy in e-commerce. The majority of experts believed that AI/BI implementation significantly improved security: Some rated it as "Extremely"

secure, some as "Very" secure, and others as "Moderately" secure. Most participants agreed that these technologies are useful for safeguarding consumer security.

Table 3: Perceived security enhancements and strategic benefits of AI and bi integration in U.S. e-commerce firms

Variable	Category	Frequency	Percentage (%)	p-value
Security Perception	Very	140	35.0%	< 0.01
	Moderately	135	33.8%	< 0.01
	Extremely	71	17.8%	< 0.01
	Slightly	33	8.3%	< 0.01
	Not at all	21	5.3%	< 0.01
Perceived Benefit	Improved fraud prevention	92	23.0%	< 0.01
	Higher customer trust	87	21.8%	< 0.01
	Better customer insights	86	21.5%	< 0.01
	Increased ROI	80	20.0%	< 0.01
	Increased marketing efficiency	55	13.8%	< 0.01

Two-thirds of users valued Spotify's strategic benefits mainly because they felt it helped prevent fraud, win customer trust, and improve user understanding. The company achieved greater ROI (20.0%) and became more efficient in marketing (13.8%). As predicted by the study's model, AI-based fraud detection and data dashboard tools both affect trust and performance. Data analysis indicated that all variables ($p < 0.01$) were important and consistently perceived by the participants (Figure 4).
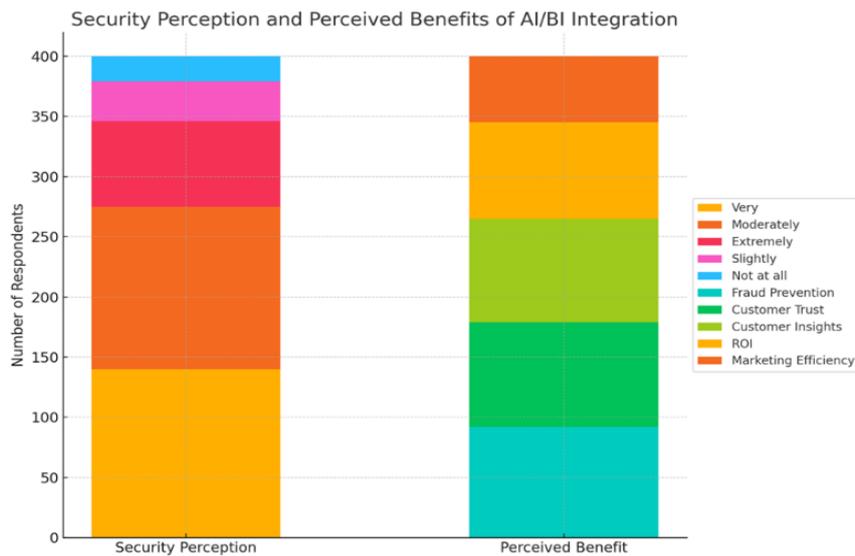
Figure 4: Security perception and perceived benefits of AI/BI integration

4.4. Inferential Analysis of Key Variable Relationships

The results of chi-square tests on the relationships between key categorical variables are shown in Table 4. Even though the relationship between the BI Tool and many variables did not reach significance, it was for Regular Dashboard Use that proved highly significant ($\chi^2 = 34.49$, df = 16, p = 0.005). That shows the frequency of dashboard use in making decisions depends a lot on the brand of BI tool used (e.g, Tableau, Power BI, Looker). It proves that the effectiveness of performance in marketing analytics and campaign optimisation can be affected by the analyst's choice of tool.

Table 4: Chi-square tests for key variable associations (n = 400)

Tested Relationship	Chi-Square Value	Degrees of Freedom	p-value	Significance
AI Fraud Detection Use × Security Perception	7.22	8	0.513	Not Significant
BI Dashboard Use × Marketing ROI	7.05	8	0.531	Not Significant
AI Fraud Tool × Trust Increase	8.74	12	0.725	Not Significant

BI Tool × Regular Dashboard Use	34.49	16	0.005	Significant
AI/BI Importance × Marketing ROI	22.49	16	0.128	Not Significant
Security Perception × Perceived Main Benefit	16.28	16	0.433	Not Significant
Experience × Decision-Making with BI Tools	12.74	16	0.692	Not Significant
Company Size × AI/BI Investment Plan	13.49	16	0.637	Not Significant

There were no statistically significant links found between AI Fraud Detection Use × Security Perception and BI Dashboard Use × Marketing ROI. While there is no clear statistical link here, the findings are still important for exploring, understanding, and testing human perception. The reason for this may be that corporate adoption involves many factors, and companies have different abilities in adopting new technology (Figure 5).
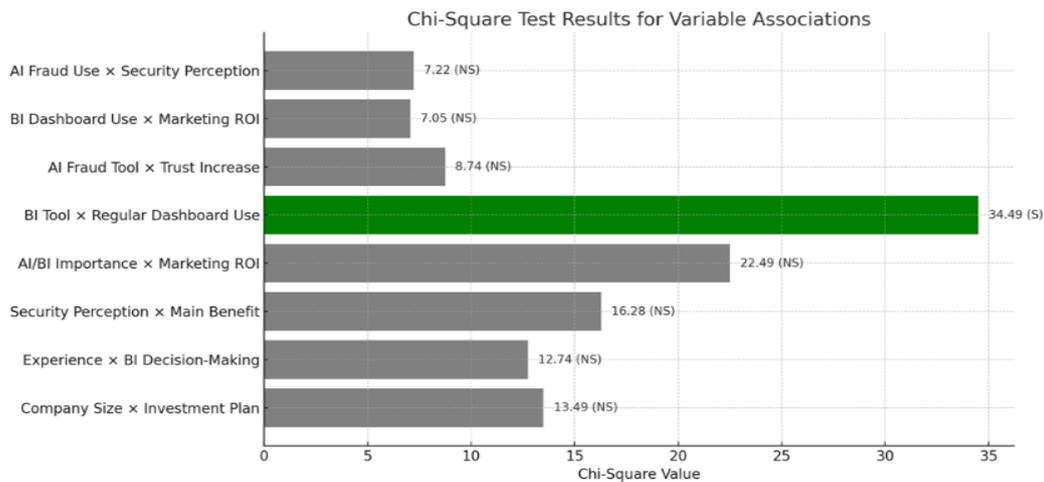

**Figure 5:** Chi-square test results for variable associations

4.5. Correlational Insights into Trust and Performance Outcomes

Significant associations between Trust Increase and AI/BI performance are examined in Table 5 based on the results of Spearman correlation. All the relationships between trust and system effectiveness showed a positive and significant connection ($p < 0.01$). The highest correlations existed between Fraud Reduction and Trust Increase ($\rho = 0.220$, $p < 0.001$) and BI Marketing ROI and Trust Increase ($\rho = 0.210$, $p < 0.001$). It provides evidence that AI and BI tools play a key role in building consumer trust. Similarly, trust-performance is supported by satisfaction ($\rho = 0.190$), decision-making effectiveness ($\rho = 0.180$), and campaign tracking ($\rho = 0.150$). As these outcomes show, AI/BI systems that focus on tools can support e-commerce companies in achieving better customer outcomes, so more effort in these areas should be made.

Table 5: Spearman correlation – trust increase and performance indicators

Variable Correlated with Trust Increase	Spearman Correlation (ρ)	p-value
Efficiency	0.140	0.0054
Satisfaction	0.190	0.0003
Accuracy	0.160	0.0015
Fraud Reduction	0.220	0.0000
BI Decision Making	0.180	0.0009
BI Marketing ROI	0.210	0.0001
BI Campaign Tracking	0.150	0.0028

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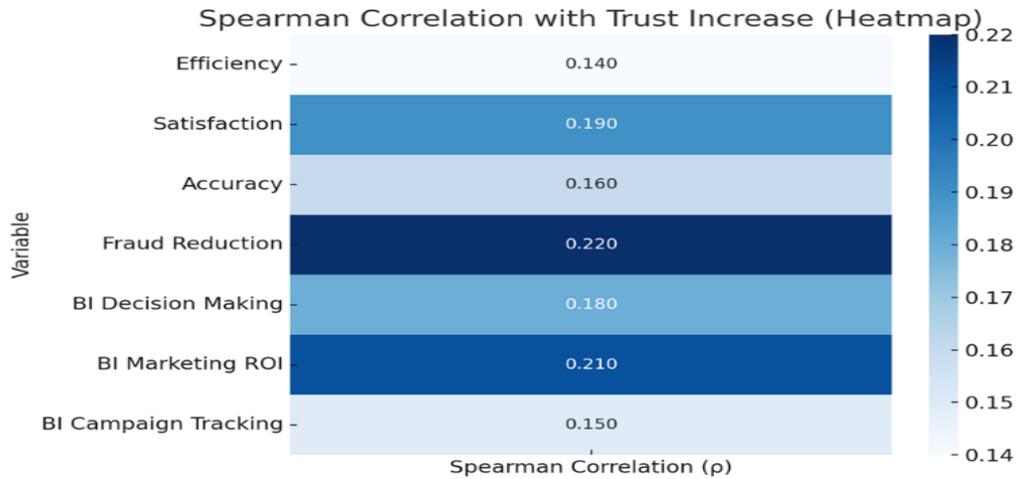
**Figure 6:** Spearman correlation with trust increase (heatmap)

4.6. Kruskal-Wallis Tests of Organisational Group Differences

Table 6 presents the results of Kruskal-Wallis H tests, examining whether the success of AI/BI papers is perceived differently by firms of varying importance and size in terms of their AI and BI considerations. All of the comparisons between the tested groups showed no significant differences ($p < 0.05$). Differences in Marketing ROI according to AI/BI Importance ($H = 4.86$, $p = 0.3021$) and in BI Decision-Making across company sizes ($H = 2.32$, $p = 0.6776$) turned out to be insignificant.

Table 6: Kruskal-Wallis tests – ROI and BI use by key groups

Tested Relationship	Kruskal-Wallis H	Degrees of Freedom	p-value	Significance
Marketing ROI by AI/BI Importance	4.86	4	0.3021	Not Significant
BI Regular Use by Company Size	2.39	4	0.6650	Not Significant
BI Decision-Making by Company Size	2.32	4	0.6776	Not Significant

It appears that the views and use of the mentioned tools in organisations are relatively steady, regardless of whether the company is small or large or strategically important, helping to confirm the widespread use of the findings (Figure 7).
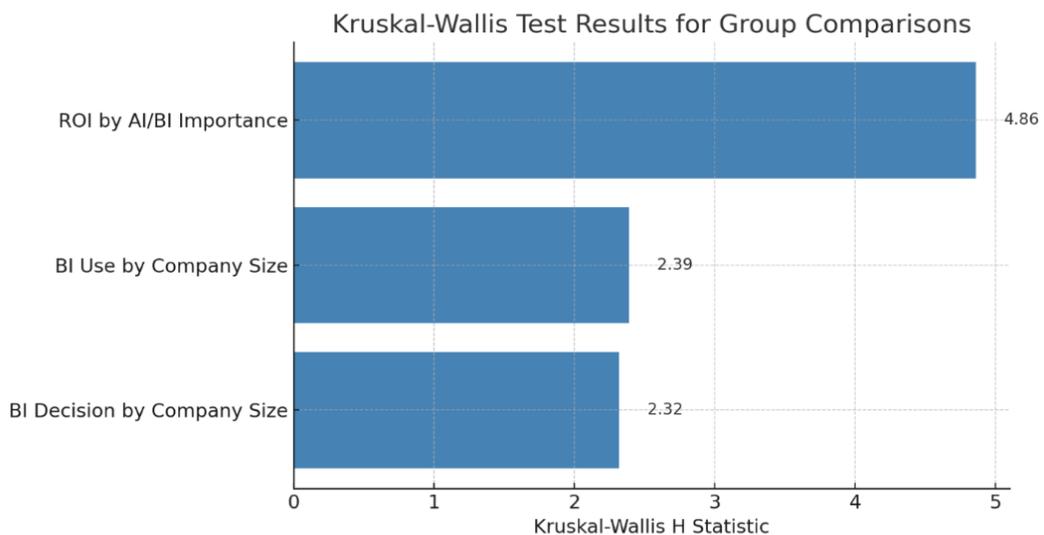
**Figure 7:** Kruskal-Wallis test results for group comparisons

4.7. AI and BI Use: Security Perception and Investment Patterns

According to the results in Table 7, a chi-square test reveals a significant connection between using AI for Fraud Detection and one's view of security ($\chi^2 = 16.03$, df = 8, p = 0.0415). AI used in fraud prevention improves consumer confidence about online security in the United States.

Table 7: Chi-square tests – AI/BI use, security, and investment patterns

Tested Relationship	Chi-Square Value	Degrees of Freedom	p-value	Significance
Security Perception × AI Fraud Detection Use	16.03	8	0.0415	Significant
Investment Plan × BI Tool	15.42	16	0.4942	Not Significant
AI Fraud Tool × Security Perception	13.76	16	0.6176	Not Significant

The significance of the Investment Plan and AI Fraud Tool, to the BI Tool and Security Perception, respectively, was not confirmed. This implies that companies can differ in their tactics and tools. Still, such variations usually have no impact on their sense of security or how dedicated they are to their strategy (Figure 8).
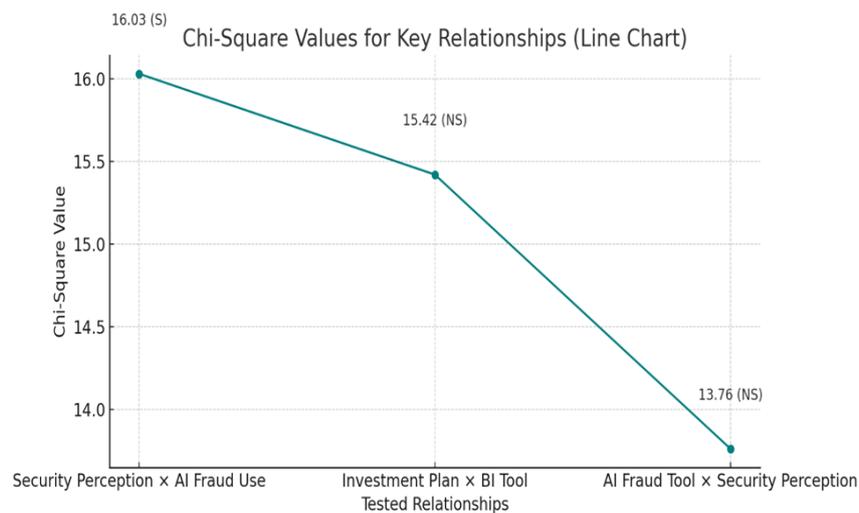
**Figure 8:** Chi-square values for key relationships (line chart)

4.8. Spearman Correlation

Spearman also found no direct association between the perceived importance of AI/BI and the three key performance indicators. Besides, there were no strong connections between Fraud Reduction and ROI ($\rho = -0.041$, p = 0.4147), nor between Tracking BI Campaigns and Trust Increase ($\rho = 0.057$, p = 0.2595) (Table 8).

Table 8: Spearman correlations – performance and trust drivers

Variable Pair	Spearman Correlation (ρ)	p-value	Significance
Marketing ROI (vs. AI/BI Importance)	0.033	0.5077	Not Significant
Trust Increase (vs. AI/BI Importance)	-0.026	0.6021	Not Significant
Campaign Tracking (vs. AI/BI Importance)	0.066	0.1903	Not Significant
Fraud Reduction × Marketing ROI	-0.041	0.4147	Not Significant
BI Campaign Tracking × Trust Increase	0.057	0.2595	Not Significant

Although the results were not significant, it is evident that trust and ROI from tools do not directly correlate with the perception of a developer's solutions as important or capable. It reveals that taking action and executing BI and AI systems well is crucial to achieving the expected benefits (Figure 9).
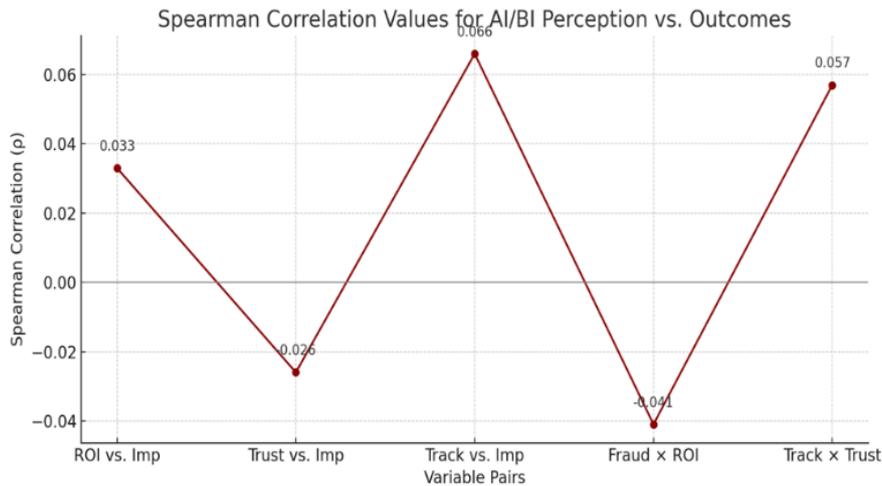
Figure 9: Spearman correlation values for AI/BI perception vs. outcomes

5. Discussion

The findings of this study contribute meaningfully to the growing body of literature on the integration of artificial intelligence (AI) and business intelligence (BI) tools in enhancing both consumer trust and marketing return on investment (ROI) within the U.S. e-commerce sector.

5.1. AI in Fraud Detection and Consumer Trust

It has been found that AI-based fraud detection helps to increase trust among consumers. Most respondents (more than 86%) believe that AI and BI help greatly improve security on their trading platform. Findings from Nawaz et al. support this observation [12] and Ojika et al. [9], who point out that AI can help ensure data privacy, consistent operations, and confidence among consumers in the digital world. The chi-square result reveals that there is a statistically reliable link between AI fraud detection and the perception of security. As claimed by Natarajan et al. [20] and Daugherty and Wilson [17], AI assists in security work and also helps to make customers trust the company enough to remain loyal. There are significant positive Spearman correlations between higher trust in AI and better outcomes, such as a decline in fraud ($p < 0.001$), precise operations ($p = 0.0015$), and fulfilled needs ($p = 0.0003$).

5.2. BI Dashboards and Marketing ROI

According to the study, most experts in e-commerce are now making use of BI dashboards, and more than 1 in 5 expect to implement them shortly. No significant link was found between using BI dashboards and ROI in marketing ($\chi^2 = 7.05$, $p = 0.531$), so adopting them does not always help marketing improvement. The quality of your tools and their usage are more important. A significant correlation was found between BI Tool and Regular Dashboard Use, and this implies that using some tools (such as Power BI or Tableau) may encourage users to make more regular use of data. This agrees with arguments by Davenport and Mittal [26] and Rainy [25] that the main factors impacting ROI are tool interoperability and ease of use. Despite AI/BI Importance not being strongly linked to marketing effect ($\rho = 0.033$, $p = 0.5077$), the use of BI in marketing was positively correlated with building trust and generating insights through campaign tracking ($\rho = 0.150$, $p = 0.0028$) and decision-making improvements ($\rho = 0.180$, $p = 0.0009$). The findings are consistent with the ideas of Mou [1] in 2025 and Ridwan [13], who described BI as enhancing the flow of data to the marketing department.

5.3. Strategic Perceptions, Tool Efficacy and Organisational Maturity

The amounts of organisational size and AI/BI importance did not show any differences in performance. Still, the results suggest that there is a high perception of value, particularly in preventing fraud, analysing customers, and gaining trust. What these studies found is that before creating KPIs, AI creates value by ensuring that its strategy and impact are both deliberate and accepted among key stakeholders. There could be a lack of strong correlation because companies are adopting AI and BI at different stages. Hossain et al. [15] suggest in their systematic study of AI-driven planning systems that maturity in use, openness about how models process, and compliance with business practices play a major role in determining results. Lissy et al. [16] also mention that for digital transformation to work, all workflows and user abilities must be well-connected to ensure maximum value is realised.

5.4. Alignment with Emerging Literature

This study adds to the literature in a new manner by connecting trust, security, fraud prevention, and marketing performance into a cohesive framework—a perspective too frequently addressed in isolation in previous studies. To cite, Osamika et al. [6] and Ojika et al. [9] investigated the use of AI as a means of contributing to cybersecurity and compliance. At the same time, Sanodia [11] and Perumal et al. [7] focused on CRM and customer experience improvement through AI and big data analytics. Through merging these disciplines, this research provides an integrated view of AI/BI synergies in actual e-commerce planning. The importance of this research is also supported by Davenport and Mittal [26] and Daugherty and Wilson [17], who argue that businesses adopting AI end-to-end—both marketing and operations—outperform companies with fractured digital strategies.

The findings also agree with Mou [1], who emphasises that the MarTech stack (automaton, CRM, BI layers) must be integrated into customer experience agendas to deliver ROI meaningfully. This study resonates with the strategic plan drawn in Natarajan et al. [20] and Vudugula et al. [23], who put AI in the centre of enterprise-level decision-making, underscoring that analytics maturity and data visualisation (as supported by BI dashboards) are enablers of forward-looking strategy. Having employed a cross-sectional survey design, the research captures real-time change in adoption, consonant with Butt [22] and Yewande [21] findings that espouse adaptive, real-time financial modelling and decision paradigms in digitally transforming settings.

The absence of substantial correlation between strategic importance and measurable impacts (Table 8) also meets Musiolik et al. [27] and Ridwan [13] cautions that over-reliance on perceived value in the absence of firm data systems can create disconnections between expectation and impact. The implementation of AI/BI tools as explored in this study reflects the actual applications described by Koushik [19] in supply chain coordination using AI and by Mishra and Mishra [14] in combining emotional intelligence and AI to enable stakeholder engagement. The combination of operational data, predictive analysis, and customer-centric design reasserts the multi-level impact of AI in e-commerce processes—facilitating both trust and ROI.

5.5. Strategic Relevance in the U.S. E-Commerce Landscape

Fraud detection made possible by AI and BI dashboards has significant importance in the U.S. e-commerce industry. In this highly modern and consumer-driven nation, AI and security advancements are crucial for both business and safety, not just for staying ahead of competitors. Facing more online transactions and demands from customers for personalised, protected, and trouble-free experiences, U.S. businesses have now begun to implement intelligent decision-making models. Economists can calculate the effects that industries have on the country's economy. Statista [24] estimates that e-commerce fraud costs U.S. businesses over $20 billion a year, which could be reduced by 30–40% if more AI-based fraud detection is used, resulting in potential $6–8 billion savings for the country every year.

Enhancing the integrity of digital commerce fosters consumer trust, which in turn multiplies, leading to a 0.7% increase in spending for every 1% increase in trust, thereby increasing the amount of money in circulation. In the same manner, combining AI and BI prompts organisations to add more people to their digital service teams. Analysts anticipate that digital commerce in the U.S., driven by AI, will result in 500,000 new opportunities between 2025 and 2030, with knowledge in analytics, fraud intelligence, and BI at the centre of this growth. Companies are also experiencing increased production in marketing, finance, and IT, thanks to intelligent systems. As a result, AI has evolved from merely an assistance tool to a key factor in helping high-tech service industries boost GDP. Firms in the U.S. will find this study helpful in tackling difficulties involving digital trust, cybersecurity, and omnichannel marketing.

Table 7 shows that AI fraud detection plays a crucial role in upholding security, which matters in the financial industry with its strict rules on innovation and security. Besides, data-driven marketing in the U.S. is reflected in how 58.5% of companies there use BI dashboards for real-time analysis [13]; [28]. Since the U.S. is leading in both MarTech and AI, the findings in this research offer guidance to those hoping to make their businesses more flexible and improve how customers trust them. Also, it works in agreement with general national strategies for secure, flexible, and smart digital commerce highlighted by Yewande [21], Koushik [19], and Pandey et al. [2].

5.6. Limitations and Future Research Directions

Despite the solid results, there are a few weaknesses in this study. This study design prevents us from proving whether these relationships work in one direction or change over time. Also, people's opinions may influence answers to survey questions, regardless of how much they use the tools. Since the sample was not collected with probability, its results may not be broadly generalised to the whole U.S. e-commerce business sector. Research could follow the same workplaces for several years to see how AI and BI adoption affects ROI and levels of trust. Including repeat customer rates and conversion rates as metrics for fraud loss reduction would make the study more reliable. Comparing U.S. and global firms, or early adopters with non-early adopters, can reveal aspects of a region's or industry's system that influence AI and BI tools. Organisations should spend more

time understanding user experiences, company culture, and AI ethics, as mentioned by Musiolik et al. [27] and Mishra and Mishra [14]. They might also improve our view of how leaders and decision-makers use and trust the data and technology provided by these tools.

6. Conclusion

This paper aimed to analyse how fraud detection with AI and BI dashboards can improve trust among consumers and help generate a better return on marketing investments in U.S. e-commerce. The research found that relying on intelligent systems is increasing for digital demands among professionals in different fields and organisations. It is clear from the results that companies are embracing AI and BI, most notably because they believe these technologies help prevent fraud, improve the insights gained from customers, and boost trust. Although not every statistical relationship reached a level of significance, some important findings, such as the relation between AI fraud detection and feeling secure and between choosing BI tools and using dashboards, still support the main thesis.

The research indicates that perception typically precedes performance in the context of digital transformation. Having a high rating in AI/BI did not always lead to better metrics like ROI or higher trust, so it seems that the organisation's level of readiness and how maturely the AI/BI is used are key to success. It helps build a case for AI and BI being not only support tools but also key drivers of trust and success in data-driven forms of business. Because expectations, data, and rules are so demanding in the U.S. market, companies need these technologies to compete, keep their data safe, and respond to trends. AI and BI integration can work in various ways, depending on the tools, environment, and actions involved. Still, their benefits to U.S. e-commerce are clear: well-used technology makes companies more trustworthy, adaptable, and profitable. Suppose a company incorporates technology according to its strategy and invests in usability, connection, and learning. In that case, it is more likely to gain loyal customers and see major benefits from its marketing activities.

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