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Transforming Education with GenAI: Case Study on ChatGPT, Midjourney, and Policy Changes

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ABSTRACT

Generative Artificial Intelligence (GenAI) tools have become increasingly accessible and have impacted school education in many ways. However, most of the conversations happen in college. In schools, teachers' views are crucial to understanding innovative technologies. Therefore, this qualitative **research aims to** investigate how GenAI is changing our school education from the perspective of teachers and school leaders. This research uses four domains – learning, teaching, assessment, and administration – as an initial framework suggested in systematic literature studies on AI in education. The participants were 88 school teachers and leaders with diverse backgrounds. They filled out surveys and joined focus groups to share how ChatGPT and Midjounery are impacting GenAI on school education. Thematic analysis identified four main themes and 12 subthemes. **The findings provide** three practice suggestions: a know-it-all attitude, new prerequisite knowledge, interdisciplinary teaching, and three policy implications: new assessments, AI education, and professional standards. They also suggest six future research directions for GenAI in education.

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1. INTRODUCTION

In this digital era, businesses are faced with increasingly complex and dynamic challenges [1]. One of the key factors in remaining competitive is the ability to follow and understand ever-changing market trends [2]. Market trend analysis becomes critical in informing timely and effective business decisions. Additionally, more and more businesses are relying on data to support their decision making, reinforcing the urgency of having a strong data-driven strategy [3].

Despite its importance, not all businesses are able to harness the potential of market trend analysis and data effectively [4]. Many of them still face difficulties in integrating available data into valuable information

for decision making [5]. Additionally, other challenges include using appropriate artificial intelligence strategies to analyze large and complex data [6]. Therefore, this research aims to analyze how market trend analysis and data-based decision making can be used to increase business competitiveness [7].

This study will explore how proper data integration and intelligent use of artificial intelligence strategies can help businesses deal with rapidly changing market dynamics, as well as improve decision-making efficiency [8]. This research is expected to provide valuable insights for business practitioners and academics in understanding the importance of market trend analysis and data-based decision making [9]. It is hoped that the results of this research can become a basis for developing more effective and adaptive business strategies in facing increasingly complex market challenges and increasingly fierce competition [10].

2. LIBRARY REVIEW

2.1. Market Trend Analysis in Business Contex

In a business context, market trend analysis is an important process that allows companies to understand changes and patterns in consumer behavior, as well as market dynamics that affect their industry [11]. This analysis not only provides insight into customer needs and preferences, but also allows companies to respond proactively to market changes, creating more informed and adaptive business strategies [12]. By understanding market trends, companies can anticipate market demand, identify new opportunities, and reduce unexpected business risks [13].

There are various methods and techniques used in market trend analysis [14]. Starting from consumer surveys, sales data analysis, to the use of statistical analysis tools and special software, everything is part of the market trend analysis repertoire [15]. This method allows companies to collect, analyze and interpret data more effectively, thereby extracting valuable insights about market dynamics and consumer needs [16].

Case studies and related research are often used to illustrate the practical application of market trend analysis in improving business performance [17]. Through real-world examples, both from specific industries and specific companies, practitioners and academics can see how market trend analysis is used to inform smart business decisions [18]. These studies also help in understanding effective strategies to face rapid market changes and intense competition [19].

2.2. Data-Based Decision Making

Data-based decision making is an approach that integrates the use of data and data analysis in the decision-making process [20]. In the modern business context, where the amount of data available is increasingly large and complex, this approach becomes increasingly important [21]. Its relevance lies in its ability to generate deep insights into market trends, customer behavior and overall business performance, which can then be used to make more informed and effective decisions [22].

To support data-based decision making, various techniques and tools have been developed [23]. From data collection technologies such as sensors and Internet-of-Things (IoT) devices, to sophisticated data analysis software such as machine learning and data mining, they all play an important role in managing and analyzing data efficiently [24]. By using these techniques, companies can extract valuable insights from their data, which in turn allows them to make more informed decisions and be responsive to market changes [25]. The implications of data-based decision making are not only limited to increasing the effectiveness of decision making, but can also have a significant impact on overall business performance and operational strategy.

2.3. Artificial Intelligence Strategy in Business

Artificial Intelligence (AI) has become an inevitable topic of conversation in modern business [26]. As a rapidly growing field in computer science, AI promises the ability to transform the way companies operate and compete in global markets [27]. Its role in increasing business competitiveness cannot be ignored, because AI is able to provide deep insights from very large and complex data, which was previously difficult for humans to understand. One of the main applications of AI in business is in data analysis, market trend prediction and decision making [28]. By leveraging techniques such as machine learning and deep learning, companies can analyze their historical data to identify previously unseen patterns, predict future market behavior, and make smarter, more informed decisions [29]. Overall, the application of AI in various aspects of business allows companies to increase operational efficiency, improve product and service quality, and respond quickly to market changes [30].

However, despite the great potential of AI, there are still challenges to be faced in implementing artificial intelligence strategies in various industrial sectors [31]. From a technical perspective, there is a large investment in infrastructure and technology required to collect, store and analyze data efficiently [32]. In addition, there are also ethical and regulatory challenges, especially with regard to the use of consumer data and information security [33]. Nonetheless, the opportunities offered by AI in increasing business competitiveness and innovation are enormous, and companies that are able to overcome these challenges can gain a significant competitive advantage [34].

2.4. Integration of Market Trend Analysis, Data-Driven Decision Making, and Artificial Intelligence

An integrative approach that combines market trend analysis, data-driven decision making and artificial intelligence promises great potential in improving business performance [35]. By combining these three aspects, companies can have a more holistic understanding of their markets and consumers, and can make more accurate and timely decisions [36]. This integration allows companies to harness the deep data analysis power of AI to identify underlying market trends, predict consumer behavior, and optimize their business strategies [37]. Recent literature and research studies have consistently highlighted the benefits of integrating market trend analysis, data-driven decision making, and artificial intelligence in improving competitiveness and business performance [38]. Successful case examples show how companies that apply this approach are able to respond more quickly to market changes, optimize their supply chains, and improve customer experiences. Apart from that, the research results also show that this integration can help companies to increase their operational efficiency, reduce costs, and create significant added value for stakeholders.

However, there are several challenges that need to be overcome in effectively integrating and managing information from these three aspects in an organization. These challenges include difficulties in collecting and managing data coming from various sources, ensuring data security and compliance, and ensuring that decisions are based on accurate and relevant analysis. Nonetheless, with the right strategy and sufficient investment, the integration of market trend analysis, data-based decision making, and artificial intelligence can be a valuable asset for companies in facing increasingly complex market challenges.

3. RESEARCH METHOD

In this research, we adopt a quantitative approach to analyze the relationship between market trend analysis, data-driven decision making, artificial intelligence, and business competitiveness. The variables used in this research consist of four main constructs: Market Trend Analysis (ATP), Data-Based Decision Making (PKBD), Artificial Intelligence (KB), and Business Competitiveness (DSB). Each of these variables has sub-variables that represent certain dimensions or aspects of its structure.

To better understand the relationship between these constructs, this study examines various factors that contribute to market trend analysis, data-based decision making, artificial intelligence, and business competitiveness. Each construct is represented by several sub-variables that capture its essential aspects. These sub-variables help in defining how each factor influences business decision-making processes and overall competitiveness. By identifying these elements, the study provides a structured framework to analyze the impact of data-driven strategies in shaping competitive advantages. The following table 1 outlines the key constructs and their associated sub-variables.

Table 1. Market and Decision-Making Factors

Constriction	**Sub-Variabel**
Market Trend Analysis (ATP)	Product Sales Volume, Changes in Product Prices, Level of Competition in the Market
Data Based Decision Making (PKBD)	Investment Decisions, Marketing Decisions, Operational Decisions
Artificial Intelligence (KB)	Use of AI in Data Analysis, Market Trend Prediction, Decision Making
Business Competitive Data (DSB)	Market Share, Profit Rate, Brand Reputation

Data for this research will be collected through an online survey which will be distributed to respondents who are business practitioners or top-level managers involved in strategic decision making. After the data is collected, data analysis will be carried out using SmartPLS. Path analysis will be used to test the relationship

between construct variables, while structural equation modeling will be used to test the proposed conceptual model. The results of the analysis will help us understand to what extent market trend analysis, data-driven decision making and artificial intelligence influence business competitiveness. These findings will provide valuable insights for business practitioners in developing more effective and adaptive strategies. In addition, the results of this research can also provide significant theoretical contributions to the literature on market trend analysis, data-based decision making, and artificial intelligence in a business context.

The results of the analysis will be used to prove the formulation of hypotheses to test the relationship between the variables we studied. The formulation of hypotheses in this study is based on the theoretical framework and previous research findings related to market trend analysis, artificial intelligence, data-based decision making, and business competitiveness.

These hypotheses examine the direct and mediating effects among key variables to understand how businesses optimize decision-making and gain a competitive advantage. The study explores whether market trend analysis and artificial intelligence contribute significantly to data-based decision making, and whether this enhances business competitiveness. Furthermore, mediating effects are analyzed to determine the extent to which data-based decision making influences the relationship between market trend analysis, artificial intelligence, and business competitiveness. The following Table 2 presents the hypotheses tested in this research.

Table 2. Research Hypotheses

No	Hypothesis
1	H1: Market Trend Analysis (ATP) Has a Positive Influence on Data-Based Decision Making (PKBD)
2	H2: Market Trend Analysis (ATP) Has a Positive Influence on Business Competitiveness (DSB)
3	H3: Data-Based Decision Making (PKBD) Has a Positive Influence on Business Competitiveness (DSB)
4	H4: Artificial Intelligence (KB) has a positive influence on data-based decision making (PKBD)
5	H5: Artificial Intelligence (KB) Has a Positive Influence on Business Competitiveness (DSB)
6	H6: Market Trend Analysis (ATP) Mediates the Relationship Between Artificial Intelligence (KB) and Data-Based Decision Making (BKBD)
7	H7: Data-Based Decision Making (PKBD) Mediates the Relationship Between Market Trend Analysis (ATP) and Business Competitiveness (PKBD)
8	H8: Artificial Intelligence (KB) Mediates the Relationship Between Market Trend Analysis (ATP) and Business Competitiveness (DSB)

The findings from this study confirm a significant relationship between Market Trend Analysis (ATP), Artificial Intelligence (KB), Data-Based Decision Making (PKBD), and Business Competitiveness (DSB). Using SmartPLS, the analysis revealed that ATP positively influences PKBD (0.536), indicating that businesses that effectively analyze market trends can make more data-driven decisions. Additionally, AI has a significant impact on PKBD (0.409), suggesting that the integration of AI in data analysis enhances decision-making efficiency. Furthermore, PKBD strongly affects DSB (0.887), emphasizing that companies leveraging data-based decision-making can significantly boost their competitiveness. The construct validity tests also confirm the reliability of these variables, with Cronbach's Alpha, Composite Reliability (rho_a, rho_c), and Average Variance Extracted (AVE) values above the accepted threshold (0.5), ensuring the robustness of the study's measurements.

The implications of these results highlight the necessity for businesses to invest in data infrastructure and enhance their analytical capabilities to stay competitive. By integrating Market Trend Analysis and AI into decision-making processes, companies can respond more swiftly to market dynamics and gain a competitive edge. The study reinforces that businesses utilizing data-driven strategies will be better equipped to adapt to rapid changes in the industry. Thus, this research provides valuable insights for both business practitioners and academics, demonstrating how the synergy between market trend analysis, AI, and data-based decision-making can drive business growth and innovation in an increasingly competitive digital landscape.

4. RESULTS AND DISCUSSION

The results of the analysis using the SmartPLS method show a significant relationship between the key variables in our model, namely Market Trend Analysis (ATP), Artificial Intelligence (KB), Data-Based Decision Making (PKBD), and Business Competitiveness (DSB). The path coefficient between ATP and PKBD

is 0.536, while the path coefficient between KB and PKBD is 0.409. These findings confirm that ATP and KB have a significant positive influence on PKBD. Furthermore, the path coefficient between PKBD and DSB is 0.887, indicating that PKBD has a strong influence on DSB. The implication is that the use of data in making business decisions has a positive impact on business competitiveness.

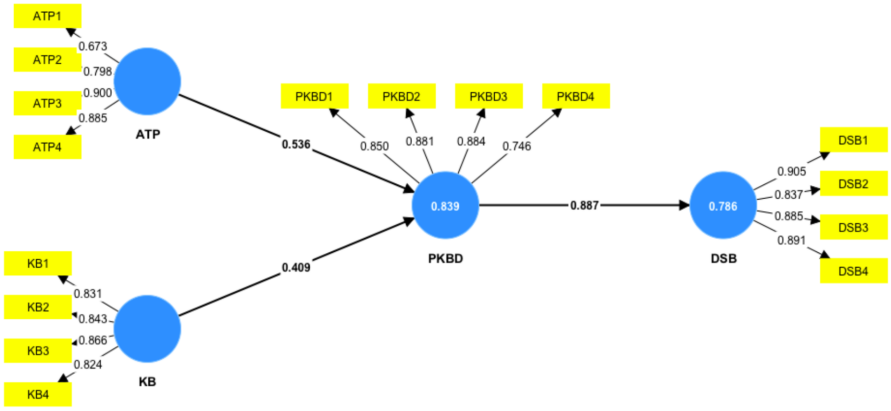

Figure 1. Structural Model Analysis Using SmartPLS

The construct validity test shows that all constructs have an adequate level of reliability and validity. Cronbach's alpha, Composite Reliability (rho_a), and Composite Reliability (rho_c) values that are above the accepted threshold indicate good internal consistency in the measurement of these variables. An Average Variance Extracted (AVE) value that reaches or exceeds 0.5 confirms adequate convergent validity. Table 3 below is the result of the construct validity test.

Table 3. Validity Test

	Cronbach Alpha	rho_a	rho_c	AVE
ATP	0.836	0.878	0.889	0.670
DSB	0.903	0.903	0.932	0.774
KB	0.862	0.864	0.906	0.708
PKBD	0.862	0.870	0.907	0.709

The results of hypothesis testing support the findings of our analysis. The proposed hypotheses, such as the positive relationship between ATP and PKBD, KB and PKBD, and PKBD and DSB, were all accepted with statistical significance (each with a p value < 0.05). These findings confirm that ATP and KB directly influence PKBD, which in turn contributes to DSB. The implication is that companies that are able to improve their market trend analysis and artificial intelligence capabilities can optimize data-based decision making, which in turn increases the competitiveness of their business in a dynamic and competitive market.

Thus, the results of our analysis provide a deep understanding of the importance of market trend analysis, artificial intelligence and data-driven decision making in the context of improving business performance. The practical implication of these findings is that it is important for companies to develop capabilities in managing and analyzing data effectively, as well as using the insights obtained from data analysis to support strategic decision making. This research also provides a basis for developing business strategies that are more adaptive and responsive to rapid and dynamic market changes.

5. MANAGERIAL IMPLICATIONS

The managerial implications of this study emphasize the critical need for businesses to invest in data infrastructure, enhance analytical capabilities, and integrate AI-driven decision-making processes to maintain a competitive edge. Managers should prioritize the adoption of Market Trend Analysis (ATP) and Artificial Intelligence (KB) as strategic tools to support Data-Based Decision Making (PKBD), which has been proven to significantly impact Business Competitiveness (DSB). By leveraging AI and data analytics, organizations can improve operational efficiency, optimize marketing and investment decisions, and respond more proactively to

dynamic market trends. Additionally, businesses should foster a data-driven culture by upskilling employees in analytics and decision science, ensuring that data insights are effectively translated into actionable strategies. Ultimately, companies that embrace data-centric strategies and AI-driven innovations will be better positioned to navigate uncertainties, enhance market positioning, and drive sustainable business growth in an increasingly digital economy.

6. CONCLUSION

In this research, we have investigated the role of market trend analysis, artificial intelligence and data-driven decision making in improving business competitiveness. Through the SmartPLS method, we found strong evidence to support the proposed hypothesis, showing that market trend analysis and artificial intelligence positively influence data-driven decision making, which in turn contributes significantly to business competitiveness. The implication of these findings is that companies that are able to utilize market trend analysis and artificial intelligence to support data-based decision making have a competitive advantage in facing rapidly changing market dynamics.

In addition, our findings also emphasize the importance of effective use of data in supporting strategic decision making in the modern business context. With increasing market complexity and the abundance of data available, companies that can optimize their use of data will have an advantage in responding to market changes quickly and effectively. Therefore, investing in data infrastructure and developing data analysis capabilities is key to improving business performance.

Overall, this research provides a deep understanding of the importance of integrating market trend analysis, artificial intelligence, and data-based decision making in achieving sustainable business competitiveness. The practical implication of these findings is that it is important for companies to continue to innovate in utilizing technology and data analysis to support their strategic decision making. Thus, it is hoped that this research can provide a meaningful contribution to business practitioners and academics in understanding the changing market dynamics and effective strategies in dealing with them.

7. DECLARATIONS

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7.2. Author Contributions

Conceptualization: AH; Methodology: HH; Software: SV; Validation: SV and RT; Formal Analysis: AH and HH; Investigation: SV; Resources: RT; Data Curation: RT; Writing Original Draft Preparation: AH and HH; Writing Review and Editing: SV and RT; Visualization: RT; All authors, AH, HH, SV, and RT, have read and agreed to the published version of the manuscript.

7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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