Management (Montevideo). 2025; 3:143
doi: 10.62486/agma2025143
ISSN: 3046-4048

ORIGINAL

Unleashing ChatGPT: Revolutionizing Business Strategies in Saudi Arabia's Financial Landscape

Desatando ChatGPT: Revolucionando las estrategias empresariales en el panorama financiero de Arabia Saudí

Hashem Ali Almashaqbeh[1]

[1]American University of Emirates, United Arab Emirates.

Cite as: Almashaqbeh HA. Unleashing ChatGPT: Revolutionizing Business Strategies in Saudi Arabia's Financial Landscape. Management (Montevideo). 2025; 3:143. https://doi.org/10.62486/agma2025143

Submitted: 07-02-2024 **Revised:** 17-06-2024 **Accepted:** 06-12-2024 **Published:** 01-01-2025

Editor: Misael Ron

Corresponding author: Hashem Ali Almashaqbeh

ABSTRACT

Introduction: ChatGPT in Saudi Arabia's financial sector revolutionizes business strategies, enhancing innovation, streamlining decision-making, and empowering organizations to thrive in a competitive, rapidly evolving economic landscape with Artificial Intelligence AI-driven insights.
Objective: the main objective of this study is to determine the interplay between training data bias, AI model fine-tuning, metrics, assessment methodologies, and AI usage in the financial markets of Saudi Arabia.
Method: participants are from banking industry of Saudi Arabia. The data gathered from Jeddah, Riyadh, Makkah, and Madina region of Saudi Arabia. The data collected through an online survey via questionnaires. The research used a random sampling procedure, selecting a sample size of 323 participants. This research chose reliability analysis, factor analysis, correlation analysis and regression analysis.
Results: the reliability analysis shows that the constructs are highly consistent with one another. Regression shows that ChatGPT, Training Data & Bias, and Metrics and Evaluation have a positive significant effect on business strategies in the financial markets of Saudi Arabia (P<0,05). While Metrics and Evaluation are not statistically significant on business strategies in the financial markets of Saudi Arabia (P>0,05).

Keywords: ChatGPT; Business Strategies; Financial Markets; Artificial Intelligence; Fine Tuning; Metrics.

RESUMEN

Introducción: ChatGPT en el sector financiero de Arabia Saudí revoluciona las estrategias empresariales, mejorando la innovación, agilizando la toma de decisiones y capacitando a las organizaciones para prosperar en un panorama económico competitivo y en rápida evolución con conocimientos impulsados por la Inteligencia Artificial AI.
Objetivo: el objetivo principal de este estudio es determinar la interacción entre el sesgo de los datos de entrenamiento, el ajuste fino del modelo de IA, las métricas, las metodologías de evaluación y el uso de la IA en los mercados financieros de Arabia Saudí.
Método: los participantes proceden del sector bancario de Arabia Saudí. Los datos se recopilaron en las regiones de Jeddah, Riad, La Meca y Medina de Arabia Saudí. Los datos se recogieron mediante una encuesta en línea a través de cuestionarios. La investigación utilizó un procedimiento de muestreo aleatorio, seleccionando una muestra de 323 participantes. La investigación optó por el análisis de fiabilidad, el análisis factorial, el análisis de correlación y el análisis de regresión.
Resultados: el análisis de fiabilidad muestra que los constructos son altamente consistentes entre sí. La regresión muestra que ChatGPT, Datos de formación y sesgo, y Métrica y evaluación tienen un efecto positivo

significativo sobre las estrategias empresariales en los mercados financieros de Arabia Saudí (P<0,05). Mientras que Métricas y Evaluación no son estadísticamente significativas en las estrategias de negocio en los mercados financieros de Arabia Saudí (P>0,05).

Palabras clave: ChatGPT; Estrategias Empresariales; Mercados Financieros; Inteligencia Artificial; Ajuste Fino; Métricas.

INTRODUCTION

ChatGPT is the origins of AI can be traced back to ancient myths, stories, and rumors about man-made beings endowed with intelligence or consciousness by craftsmen.[1] Philosophers' attempts to characterize human thought as a mechanical manipulation of symbols laid the foundation for modern AI. That work led to the programmable digital computer in the 1940s, a device based on the abstract core of mathematical reasoning.[2] Some scientists were motivated to start a serious discussion about the feasibility of creating an electric brain with this device. The concepts used to do it in the summer of 1956, a workshop on the campus of Dartmouth College in the United States laid the foundation for the study of artificial intelligence. The participants continued their research on AI for several years. Many of them predicted that a machine would be as intelligent as a human within a generation and received millions of dollars to make that vision a reality[3] ChatGPT enables companies to offer customers personalized and interactive experiences. It can assist with troubleshooting, comprehending, and responding to customer inquiries, and recommending products. The loyalty and satisfaction of customers are promoted by this level of engagement. It can quickly respond to them and provide all the information they need.[4] By automating repetitive tasks, ChatGPT frees up employees' time, allowing them to focus on more strategic and value-added activities. These can consist of actions such as answering a FAQ, booking an appointment or a low-level transaction. It helps businesses to operate more efficiently, which results in higher productivity. When businesses improve their operational efficiency they get their work done in the shortest time possible and also increase both working capability and qualities.[5] With ChatGPT you can be available 24/7 offering help and support to clients at their convenience. This will ensure that customers find help whenever they are in need thus increasing their satisfaction levels and customer retention. It offers that their customers to obtain data anytime instead of looking forward a report from the corporate.[6] ChatGPT obtains and examines substantial customer data, providing valuable insights into what customers want, need, and do. Businesses can also put this data to work by although customer profiles help in making decisions and enabling ideas on buildings new products while creating custom marketing plans, respectively.[7]

ChatGPT has an extensive use case in the financial markets as well. In the finance industry, ChatGPT could be beneficial as it can cut customer service costs and deliver customers with fast accuracy. Banks can save time in mundane tasks like anchoring simple questions or to verify account balances based on the automation of customer-service touchpoints, enabling customers to interact with company representatives.[8] They can then deploy their resources to questions that are either too difficult for an AI platform to read or those which require additional clarification from a different department elsewhere within the bank. Adding to this ChatGPT can respond to each user in a unique way based on the real-time interactions and archived information about the user through Natural Language Processing (NLP) techniques.[9] It must also recognize how different types of bias, including historical as well as sampling, labeling, contextual and algorithmic biases in data may affect the accuracy and ethical underpinnings of ChatGPT. That is something extra human components ought to be way greater careful on the time of knowledge engineering their records, so that they do not train an algorithm useless technique due to the biases that exist inside their statistical outputs.[10] Data bias can originate from various sources like computational and interpretation bias, reporting and selection bias. Concerning the issues that are most relevant to data bias in AI, it is possible to distinguish one of the primary questions where the issue comes from.[11] While it is generally possible to counteract a bias once you are aware of it, there are ways to try to resolve it, such as to gather additional data or to improve the process of annotation. Therefore, there is a need to be incredibly stringent when it comes to the size, content, and handling of any projects. Occasionally, this is far from the reality due to circumstances that compromise the integrity of assignments.[12] Fine-tuning in machine learning can be defined as the ability of a model to be trained on a new completely different data other than what it learnt from when it was initially trained and trained again on another data that is often different and is usually smaller than the previous one particularly in contexts of transfer learning, computer vision, as well as natural language processing.[13] As it has integrated into so many activities within a short span of time, ChatGPT is an automated conversational AI platform, which growing many questions about the business that has long-term strategic consequences. Currently, there is a growing literature that describes the advantages and disadvantages of ChatGPT implementation, but there is a limited, albeit accumulating,

number of studies that consider long-term strategic effects of implementing it. However, there is little research that focuses on this topic to identify the long-term sustainability of the changes that organizations make to address ChatGPT.

Some of the existing models that has been identified in NLP are skin choice model, chatbot model, discussion board model or topic model, word co-occurrence and quick text model while the other pre-built models are for example, chat generation through transformers called as chat GPT as well as Bidirectional Encoder Representatives from Transformers known as BERT.[14] Select a new task or extend the application of the model to a new topic such as the sentiment analysis section or applying the diagnosis of the text data in medical systems. Especially, for the new training sample of the new training set of the new task on the training set, a modified training dataset is formed through which new data is fed, loss is calculated, and the parameters are revised through backpropagation and gradient descent.[15] Evaluation metrics are also known as Criteria for assessment as it is a set of measures that are qualitative/quantitative descriptions of a model or system concerning their utilization in Machine Learning or Data Analysis to perform specific tasks. As a result, it will be relevant to formally define the following research objective:

- To determine how ChatGPT, training data and bias, fine tuning, evaluation metrics effects on business strategies in financial industry of Saudi Arabia.

Literature Review

After criticism from James Light Hill and congressional pressure, the US and UK discontinued sponsoring indirect AI research in 1974. The following years were nicknamed the "AI Winter." After seven years, the Japanese government boldly pushed governments and firms to spend billions on AI, but by the 1980s, investors lost hope and ceased donating.[16]

The first winter for AI, The First AI Experiment, the First AI project, in the 1970s was criticized and financially unsuccessful. These difficulties are more complex than AI researchers realize. When AI outcomes didn't meet expectations, their tremendous optimism, unrealistic expectations, and financing for AI dissipated. Marvin Minsky's book also showed perception's limits, halting research into simple single-layer artificial neural networks for a decade. New ideas in logic programming, common sense, and other domains are being studied despite public perceptions about AI in the late 1970s. Book by Marvin Minsky. The 1980s saw corporations worldwide embrace "expert systems" AI software, therefore knowledge-based AI research focused on this field. The Japanese government aggressively financed the fifth-generation computer project in those years.[17]

On November 30, 2022, OpenAI published a wonderful conversation based on ChatGPT, a language model. The chat can be edited and directed to the desired length, format, style, verbosity, and language. Rapid planning, or successive instructions and responses, informs each dialog phase. ChatGPT uses GPT-3.5 and GPT-4, two OpenAI models, and a unique family of generative pre-training transformer (GPT) models based on Google's transformer architecture. ChatGPT is set for chat applications employing supervised and reinforcement learning. Due to its popularity, OpenAI now sells ChatGPT as a subscription service after a free trial. Free users can use GPT 3.5. Instead, paid users receive an upgraded GPT-4-based version and early access to lesser features under the brand name "ChatGPT Plus.[18]

OpenAI's worth rose to US$29 billion in January 2023 as it reached 100 million users and became the fastest-growing consumer software program ever. Google, Baidu, and Meta quickly developed competitor products Bard, Ernie Bot, and Llama. Based on OpenAI's GPT-4, Microsoft launched Bing Chat. Some are worried that ChatGPT will enable plagiarism and transmit erroneous knowledge, replacing or degrading human intelligence.[19]

Evaluate ChatGPT in education, economics, and other sectors. He says ChatGPT helps education and business economics reply to people everywhere and keeps any educational or business institute's previous records. Based on his observations, ChatGPT can focus and respond to people, but it struggles with math and accounting.[20]

ChatGPT trains chatbots to be more engaging and informative using a broad language model. It learns to understand and write like humans from a massive text and code dataset. ChatGPT was released in November 2020 and its latest version, ChatGPT-3, in November 2022, indicating that this field has major research gaps that require pioneering work. an assessment of related studies to identify gaps that this study fills.[21]

Algorithmically generate chat responses to text inputs.[22] ChatGPT has provoked passionate debates regarding its unique features, pros, and cons since its late 2022 introduction. However, ChatGPT can improve consumer engagement, customer service, personalization and purchasing, social interaction and communication, cost efficiency, consumer behavior data, and marketing efforts. Concerns concerning consumers, bias, misinformation, context, privacy, ethics, and security are potential issues. Finally, the article suggests ChatGPT and consumer research priorities.[23] Said that ChatGPT can detect positive, negative, or neutral moods in consumer text. By using ChatGPT as an analytical tool, firms can discover important customer data insights. ChatGPT integration into consumer sentiment analysis requires several steps. Businesses must first gather and arrange consumer data. Data may include product reviews, social media feedback, customer satisfaction surveys, or customer service contacts.

Found that technological advances are accelerating and transforming how people communicate and interact, even in SMEs. This study examines how ChatGPT improves SMEs' customer service. ChatGPT technology should help SMEs improve customer service. This research is qualitative. Careful observation and careful notes are approaches for acquiring information, followed by data reduction, visualization, and conclusions. According to this study, ChatGPT can help SMEs improve customer service and operational efficiency. SMEs must consider various aspects when using this technology.[24]

Stated that ChatGPT uses a transformer-layered deep neural network. These transformers handle sequential data like natural language text to produce coherent, human-like outcomes. The model learns patterns and relationships between words, phrases, and sentences by being fed a lot of text data. Training is iterative and the model evolves. improves with more data ChatGPT can be customized for language translation or content production after training. The ChatGPT process has numerous steps. Users enter invitations or questions into the system first.[25] A model employs linguistic patterns and relationships to solve this challenge. The user can continue the chat or ask another question after receiving the answer. This approach is fully trained utilizing human suggestions and reinforcement learning.[26] Found that AI technologies are now a major focus in corporate settings. According to top consultancies, Krishna technical enterprises, and white papers, this enthusiasm originates from promise. High expectations characterize the corporate competitive climate. Thus, strategic AI use for competitive advantage research is growing. Their research helps explain how firm strategy and AI technology adoption interact, providing a theoretical foundation for future research. However,[27] seeks to explain the pros and cons of using generative AI (GAI) in business. The research focused on ChatGPT to construct a conceptual framework that addresses GAI development weaknesses in management and economics. After a thorough investigation of academic literature, professional press, and Internet portals, they uncovered various GAI disputes, dangers, and flaws, especially ChatGPT. They then listed the top seven perceived dangers. This is our opinion: AI market regulation is urgently needed due to poor quality, lack of quality control, misinformation, deep false content, algorithmic bias, job loss due to automation, personal data violations, social surveillance and privacy violations, social manipulation, ethics, and business value, increasing socioeconomic inequality, and AI technostress.[28] Addressed the business process parallelism calculation issue. A synthetic metric to assess process parallelism can help evaluate process complexity and make design recommendations. They address the pros and cons of two literature-discussed metrics and two novel metrics that leverage instance graphs in this paper. Typical operational business process use cases are analyzed. The provided metrics provide a practical way to evaluate a process mode's parallel complexity.[29] Investigated business process parallelism. An artificial assessment of a process's parallelism helps determine its complexity and influence design decisions. The pros and cons of two literature-based measures and two instance graph-based metrics are addressed in this paper. Use examples from real-world company activities are analyzed. A process mode's overall parallel complexity can be usefully assessed using the provided metrics. Based on the above literature review we have prepared Figure 1 which reflects the hypothesized model of this study.

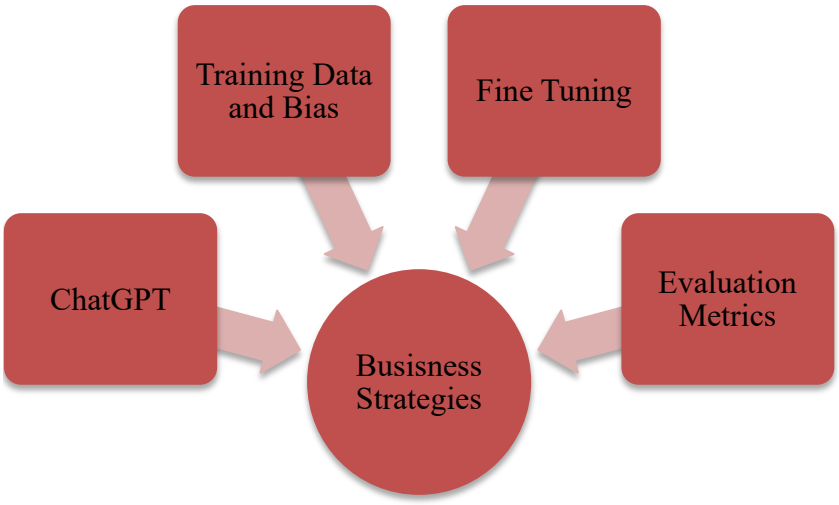

Figure 1. Hypothesized model

METHOD

Primary data and secondary data are the two main categories of information. During an investigation, you will collect primary data, which are the original pieces of information.[30] You can generate secondary data from your source data. In many cases, it is difficult to tell primary data from secondary sources. Both types of study data will be generated and collected by you when you conduct your research. Due to the lack of literature on

the subject, this study uses primary data to analyze the impact of ChatGPT on company strategies.

Using a basic random sampling method that ensures equitable participation and selection for all members. To determine the appropriate sample size for our research,[31] used a sample size formula. Only 1680 company owners have joined our expanding trend of using the new practice. Probability sampling, rather than systematic random sampling, was employed to carry out statistical analysis with an unknown population size.

$n= N / 1+Ne^2$
where n= sample size, N= Population size, e= desired level of population 5 %
$n= 1680/ 1 +1680 * (0,05)^2$
$n= 1680/ 1 + 1680 * (0,0025)$
$n= 1680/ 1 + 1,5$
$n= 1680/ 5,2$
$n=323$

To acquire personal information about the answer, including their age, gender, and level of education, we have various demographic equations. To measure independent variables and business strategies, we have utilized the Likert scale, to measure business strategies, we adopted a scale from Agyapong and Boamah[32] that contains eight items. ChatGPT measurement has been done through the ChatGPT scale adopted by Agyapong and Boamah[32] which contains nine items. Training and Data Bias scale adopted from Xue and Hauskrecht[33] which contains five items. The fine-tuning scale adopted by Tay, Dehghani Rao, Fedus, Abnar, Chung, Narang, Yogatama, Vaswani and Metzler[34] which contains five items. Evaluation Metrics measurement has been done by scale adopted by South, Saffo, Vitek, Dunne, and Borkin.[35] Data has been collected from 1st January 2024 till 1st April 2024 through an online Survey (Google Forms) from Saudi Arabia National Bank (SNB) commonly known as (Al-Ahli Bank), Riyad Bank, Samba Bank, Al Rajhi Bank, Salama Insurance, Bupa Arabia Insurance, Gulf Insurance Group, Malath insurance, Saudi Riyal money market fund, SNB capital international trade fund, Derayah Saudi equity fund, and Saudi stock exchange (Tadawul). Geographically data has been gathered from Jeddah, Riyadh, Makkah, and Madina.

RESULTS

Based on our findings, we drew up some tables to prove our point. Table 1 presents the participants from different Saudi Arabian financial markets are presented in the demographic analysis table, which includes details about their gender, age, qualification, and the type of financial institution they work for. With 191 men and 132 ladies, the gender distribution shows that men are more numerous than females. This gender gap is reflective of the general trend of men holding more positions in Saudi Arabia's financial markets. There are 153 people (47 % of the total) in the age bracket of 31–50, according to the distribution of ages. The next largest age group is those between the ages of 18 and 30, followed by those between the ages of 51 and 60, with 50 people making up that age group (15 %). This breakdown of ages indicates that the Saudi Arabian financial markets employ a staff that is mainly in their prime working years, with many younger professionals, which could reflect an industry that is always changing and adapting.

Table 1. Demographic Analysis

		Frequency	Percentages
Gender	Male	191	60 %
	Female	132	40 %
Age	18-30	120	37 %
	31-50	153	47 %
	51-60+	50	15 %
Qualification	Intermediate	78	24 %
	Bachelors	145	44 %
	Masters	90	27 %
	PhD	10	3 %
Financial Institution	Bank	150	46 %
	Insurance Companies	100	30 %
	Mutual Funds	12	3 %
	Securities markets	61	18 %

When broken down by degree level, 145 people (or 44 % of the total) have a bachelor's degree, while 90 people (or 27 % of the total) have a master's degree. There are 78 participants (or 24 % of the total) with an intermediate degree of education, while the smallest group, consisting of 10 people (or 3 % of the total), has

a doctorate. The complicated and specialized nature of financial services likely explains why Saudi Arabia's financial markets appreciate advanced education, as evidenced by this high level of educational attainment. Among the many forms of financial organizations, banks stand out as the most common employers, accounting for 150 individuals (46 % of the total). One hundred people work for insurance businesses (30 %), sixty-one people for securities markets (18 %), and twelve people for mutual funds (3 %). While other financial services industries are present in Saudi Arabia's economy, they play a smaller role than banking and insurance, as seen by this distribution.

Table 2 provides the descriptive analysis of ChatGPT, Training Data & Bias, Fine Tuning, Metrics and Evaluation, and Business Strategies. The most common number, or median, is 4,11 for ChatGPT and 4,00 for Metrics and Evaluation, indicating that these topics were evaluated quite highly. The lowest mean, at 3,25, for Business Strategies indicates a modest assessment, in comparison. The degree of dispersion around the mean is shown by the variance values. The highest variance for ChatGPT is ,402, while the lowest for Business Strategies is 187. This suggests that opinions on ChatGPT are more diverse than on Business Strategies, which is more consistent.

Table 2. Descriptive Analysis

	ChatGPT	Training Data & Bias	Fine Tuning	Metrics and Evaluation	Business Strategies
Mode	4,11	3,20	3,60	4,00	3,25
Variance	,402	,304	,334	,298	,187
Skewness	-1,500	,455	-,324	,083	,150
Std. Error of Skewness	,136	,136	,136	,136	,136
Kurtosis	3,636	,044	1,135	,807	-,152
Std. Error of Kurtosis	,271	,271	,271	,271	,271

A data set's skewness indicates how skewed its distribution is. There is a noticeable negative skew in ChatGPT's distribution (-1,500), which means that higher values are more prevalent and that the left tail is longer. The distributions of Training Data & Bias (,455), Metrics and Evaluation (,083), and Business Strategies (,150) are positively skewed, meaning they have larger right-hand tails, but Fine Tuning displays a little negative skew (-,324). The skewness values for ChatGPT and Training Data & Bias are more pronounced, as seen by the standard error of skewness (,136 for all variables), which helps measure the skewness relative to the sample size. This distribution's "tailedness" can be quantified by its kurtosis. A leptokurtic distribution with heavier tails, suggesting more extreme values, is shown by ChatGPT's high kurtosis (3,636). Metrics and Evaluation (,807) and Fine Tuning (1,135) also exhibit positive kurtosis, but to a lesser extent, indicating relatively heavy tails. Kurtosis values close to zero for Training Data & Bias (,044) and Business Strategies (-,152) suggest that these datasets are more normally distributed. It is possible to evaluate these kurtosis values using the standard error of kurtosis, which is 271 for all variables. All things considered, the descriptive statistics show how answers differ in terms of central tendency, variability, and distribution shapes across various areas of ChatGPT.

Table 3 presents the correlation analysis of ChatGPT, Training Data & Bias, Fine Tuning, Metrics & Evaluation, and Business Strategies, which are connected in the Pearson correlation table. Since all the correlations are positive, it follows that an increase in one variable usually increases the others. Between 0,600 and 0,660, the correlation coefficients show that there is a moderately positive association between the variables. Improvements in ChatGPT are marginally associated with advancements in Training Data & Bias (r=0,600), Fine Tuning (r=0,600), Metrics and Evaluation (r=0,654), and Business Strategies (r=0,617). Fine Tuning (0,660), Metrics and Evaluation (0,654), and Business Strategies (0,617) all have moderate correlations with Training Data & Bias. These connections highlight how ChatGPT research and development are inherently linked; progress in one field will almost certainly lead to advancements in other areas as well. These variables are related, but not completely dependent on each other, as indicated by the moderate correlation values. This highlights the complex nature of ChatGPT optimization and deployment tactics.

Table 3. Pearson Correlation

	ChatGPT	Training Data & Bias	Fine Tuning	Metrics and Evaluation	Business Strategies
ChatGPT	1,00				
Training Data & Bias	0,600	1,00			
Fine Tuning	0,660	0,522	1,00		
Metrics and Evaluation	0,654	0,725	0,782	1,00	
Business Strategies	0,617	0,799	0,569	0,966	1,00

Cronbach's Alpha coefficients for different AI and business strategy-related constructs in Saudi Arabia's

financial markets in the reliability analysis table 4. The items successfully measure the idea, as indicated by ChatGPT's good internal consistency (coefficient = 0,896). Furthermore, both Metrics and Evaluation and Fine Tuning demonstrate a high level of reliability, with scores of 0,835 and 0,816, respectively. On the other hand, Training Data & Bias's internal consistency is 0,641, which is slightly lower and indicates that the measurement items may have some variability. Although it shows somewhat less consistency than other constructs, the coefficient of 0,755 for business strategies is within an acceptable range. To ensure strong research results and well-informed decision-making, these results stress the significance of employing trustworthy measuring scales to evaluate various aspects of AI and corporate strategy in the financial industry.

Table 4. Reliability analysis

	Cronbach Alpha	No. of items
ChatGPT	0,896	9
Training Data & Bias	0,641	5
Fine Tuning	0,835	5
Metrics and Evaluation	0,816	5
Business Strategies	0,755	8

The factor analysis table 5 presents the factor loadings of items linked to various aspects of the financial industry AI adoption and business strategies. The loadings of the underlying factors indicate the strength and direction of the relationship between each item and its respective component. ChatGPT's utilization and its efficacy in the workplace are fundamental factors, and items associated with it often exhibit considerable factor loadings, indicating significant correlations. Furthermore, the elements of Training Data & Bias, Fine Tuning, Metrics and Evaluation, and Business Strategies have significant relationships, as seen by their substantial factor loadings. These results can provide valuable insights into the structure of the variables being studied, which can help inform decisions on the deployment of AI and strategic planning in the financial industry.

Table 6 presents the Kaiser-Meyer-Olkin (KMO) analysis to evaluate sample adequacy to assess if variables are suitable for factor analysis. Due to their high correlation and large sample size, the variables are suitable for factor analysis, as shown by the high KMO measure of sampling adequacy of 0,896. Bartlett's Test of Sphericity shows that the variables' correlations are significantly different from zero (approximate chi-square value: 5255,448, p-value: 0,000), supporting a factor analysis. These findings show that the dataset is suitable for studying underlying components or characteristics of the researched variables, laying the groundwork for future statistical studies or modeling.

Table 5. Factor analysis

Items	Item Coding	Factor Loadings
I use ChatGPT frequently for my work tasks	CG1	,664
Using The ChatGPT enhance my effectiveness at work	CG2	,690
Using The ChatGPT makes it easier to do my Job	CG3	,678
I find ChatGPT easy to use	CG4	,717
I have the resources necessary to use ChatGPT	CG5	,704
I Have the Knowledge necessary to use ChatGPT	CG6	,659
I Would Use ChatGPT More if it was more reliable	CG7	,629
I Would Use more ChatGPT if it was more secure	CG8	,601
I Enjoy using ChatGPT for my work tasks	CG9	,747
I believe that training and data can contain biases	TDB1	,571
The usage of training and data can affect on employee performance	TDB2	,683
Usage of training and data is necessary for the organization	TDB3	,764
I use training and data methods to understand the new work tasks	TDB4	,706
Using the training method is more reliable	TDB5	,739
I use fine-tuning frequently for work assessment	FT1	,646
Using the fine-tuning enhances my work performance	FT2	,726
Fine-tuning makes it easy to do an assessment	FT3	,702
Fine-tuning finds easy-to-use	FT4	,668
I would use more Fine-tuning if it would be more secure and more reliable	FT5	,662
The use of Metric evolution is easy to understand and interpret	EM1	,720
Metrics evolution helps to decision making	EM2	,734
Usage of Metric evolution reliable and consistent in progress measurement	EM3	,547

I use Metrics evolution easily for work assessment	EM4	,738
I believe that Metric evolution is easy and reliable for assessment	EM5	,702
The organization has a well-defined and communicated strategic plan	BS1	,562
The strategic planning process includes a thorough analysis of internal and external factors	BS2	,690
Employees are actively involved in the development of strategic goals.	BS3	,398
The organization regularly monitors financial metrics like revenue growth and profit margins.	BS4	,780
Customer satisfaction and retention are considered crucial indicators of business performance.	BS5	,771
Operational metrics are consistently tracked to ensure efficiency.	BS6	,656
Internal processes are continuously improved to align with strategic objectives.	BS7	,717
Resources (financial, human, technological) are effectively allocated based on strategic priorities.	BS8	,697

Table 6. KMO analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0,896	
Bartlett's Test of Sphericity	Approx. Chi-Square	5255,448
	df	496
	Sig.	0,000

Within the financial markets, the regression analysis table 7 provides insight into the regression between ChatGPT, Training Data & Bias, Fine Tuning, Metrics and Evaluation, and the dependent variable, Business Strategies. The unstandardized coefficients demonstrate the magnitude and direction of the impact that each predictor has on company strategies. ChatGPT has a positive impact on business strategies, as evidenced by its coefficient of 0,116, t-statistic of 2,950, and p-value of 0,003. Hence, it supports H_1. Similarly, the study on Training Data & Bias shows a positive effect, making a substantial contribution (p=0,001) with a coefficient of 0,067 and a t-statistic of 1,404, among other findings; Hence, it supports H_2. The t-statistic of -1,272 and the p-value of 0,790 suggest a non-significant negative relationship between Fine Tuning and Business Strategies Hence, it rejects H_3. The correlation coefficient for this association is 0,163. In contrast, the impact of Metrics and Evaluation is statistically significant, as indicated by its small positive effect of 0,163, t-statistic of 0,266, and p-value of 0,004. Hence, it supports $H_{4.}$

The model's independent variables explain approximately 68,8 % of the variation in company strategies, as indicated by an R-squared value of 0,688. The model's robustness is supported by the Adjusted R-Square score of 0,677, even after considering the number of predictors.

Table 7. Regression analysis

	Unstandardized Coefficients	**Std. Error**	**t-statistics**	**P-Values**
ChatGPT	,116	,227	2,950	,003
Training Data & Bias	,067	,039	1,404	,001
Fine Tuning	-,075	,048	-1,272	,790
Metrics and Evaluation	,163	,059	,266	,004
Constant	0,651	,060	2,666	0,000
R-Square	0,688	Adjusted R^2	0,677	

Note: Dependent Variable: Business Strategies

DISCUSSION

In this section, we analyzed the outcomes of our study and examined the significance levels. We reinforced our findings by referencing earlier studies and provided an interpretation of our results considering these studies.

Our research focuses on how well ChatGPT works for companies' strategies, and the tables show how it helps businesses and how satisfied customers are with ChatGPT. The results show that employing ChatGPT increases employee satisfaction. According to research by[36], adopting ChatGPT helps both customers and workers get more precise responses. Specifically, he looked at micro, small, and medium-sized enterprises in India. Our findings are supported by[37] survey on the performance of ChatGPT in customer satisfaction and service quality of employees. He found that ChatGPT has a significant impact on factors and that ChatGPT service quality influences productivity within the organization. According to[38], ChatGPT is an essential component of business communication strategies in Indonesian companies. The study demonstrates that ChatGPT is a powerful tool for

enhancing the effectiveness of business communication, providing strategic support, and satisfying clients. It also offers numerous benefits to organizations in different areas. Organizations can't function without training and data. Our research shows that training helps workers learn the ropes and understand the rules of the job, which in turn has a major influence on company strategies. Companies rely on training to ensure that their employees are productive, accurate, and punctual, which in turn contributes to their success. Training is crucial for a company, according to an empirical study on the Egyptian private markets conducted by[39], which centered on the topics of employee work performance and job satisfaction. Findings from this study lend credence to our earlier findings that training is an integral part of successful company strategies involving training development, employee happiness, and corporate communication. Training allows the implementation of business plans by objectives, which is a key component of improving firm performance.[40] Training significantly affects company strategies and success, according to our research and the two studies cited above.

A fine-tuning with business strategies has negative and non-significant relations. The report by[41] across Brazil shows that fine-tuning is an essential component of businesses and organizations in general for accomplishing their goals. It involves an analytical framework and revisiting data for confirmation and validation. Additionally, it is a mindset shift towards change within organizations, allowing employees more autonomy, better decision-making abilities, and the ability to learn how to learn. According to our research, fine-tuning is the key to happy customers who can fix their problems with little tweaks to any kind of service. In Pakistan, research by[42] on signature verification systems demonstrates that fine-tuned. However, in Saudi Arabian financial markets, it doesn't have an effect.

Our research shows that metric evolution is an important part of measuring an organization's success. Because it helps them to monitor their performance precisely and on time, metric evaluation is crucial for any firm. Research from the Netherlands and Germany by[43] supports our findings that evolution metrics are helpful for companies and strategy development. A few examples of the many uses for these metrics include data collection and process modeling in the corporate world.[44] In agreement with[45], a group of American researchers discovered that evolution metrics help with business framework development, process and service design, and performance measurement. The study's real-world implications show how immensely promising it is to integrate ChatGPT into business processes. The strategic implementation of ChatGPT can improve customer help by reducing response times and increasing the efficacy of problem resolution. As a result, tailored education programs for support workers are essential. Internally, businesses can use ChatGPT to boost communication and decision-making. Maximizing its effectiveness will necessitate focused training initiatives. Online businesses now have a way to easily interact with customers thanks to ChatGPT, which enables personalized marketing engagements. Using ChatGPT can lead to cost savings and increased productivity by optimizing resources, automating repetitive operations, and improving client communications. The key to a smooth rollout, though, is an effective integration design. It is critical to openly address ethical problems to successfully manage potential reputational risks associated with AI. To ensure the effective utilization of ChatGPT, comprehensive employee training programs are necessary. The key to maintaining satisfaction is constantly adjusting based on client feedback. It is critical to include real-time data into strategic decision-making and establish metrics to monitor ChatGPT's impact on performance. Organizations can adapt their integration of ChatGPT to accommodate changing requirements and maximize its benefits in many areas of operations by regularly assessing key success indicators highlighted in the report, such as worker happiness and effective training. Due to the dearth of available data and the tiny number of firms in our community, our study is limited by its small sample size. Because of our limited resources, we were unable to adequately recruit participants for our study and made a plethora of data entry mistakes. We overcame these challenges by collecting 323 replies from financial markets using Google Forms. Using this strategy, we were able to collect data efficiently without making frequent trips to Saudi cities like Riyadh and Jeddah. The findings of our investigation were subsequently derived from a meticulous analysis of the acquired data. The effect of ChatGPT on business tactics and factors is the focus of this research. It should be mentioned that this study brings up concerns regarding the small sample size and insufficient accuracy of the data collected. The relationship between ChatGPT and other factors including user input, incremental improvement, advertising, training, and context memory needs more investigation. As a result, business strategies should also benefit from a better grasp of how ChatGPT relates to company plans.

CONCLUSIONS

This work was conducted to ascertain how ChatGPT, training data and bias, fine-tuning, and evaluation metrics effects business strategies in Saudi Arabia's financial industry. From these, it can be ascertained that with ChatGPT integration, business strategies are positively influenced, with $\beta = 0{,}116$, $p = 0{,}003$, which therefore means that those firms using this technology could result in better strategic performance. Similarly, the quality and bias of training data significantly have a positive effect on $\beta = 0{,}067$ at $p = 0{,}001$, reflecting changes in practice toward mitigating biases and enhancing data quality to effectively implement AI. Similarly, the evaluation metrics have a positive effect on business strategies, $\beta = 0{,}163$, at $p = 0{,}004$, suggesting that

sound assessment frameworks align the efforts of AI with business objectives. However, the fine tuning yielded a negative but non-significant coefficient at β = -0,075, p = 0,790, implying that major benefits can only be realized when further refinement is attained. With the R-Square value of 0,688, the model explains around 68 % of the variation in the business strategies and supports integrative importance of AI, data quality, and the evaluation towards the enhancement of strategic outcomes in the financial industry.

REFERENCES

1. Govender K. Age of Agency: Rise with AI. CRC Press; 2023 Dec 21.

2. Oliveira AL, Figueiredo MA. Artificial Intelligence: Historical Context and State of the Art. Multidisciplinary Perspectives on Artificial Intelligence and the Law. 2023 Dec 27:3-24.

3. Barrat J. Our final invention: Artificial intelligence and the end of the human era. Hachette UK; 2023 Jul 20.

4. Cheng K, Li Z, He Y, Guo Q, Lu Y, Gu S, Wu H. Potential use of artificial intelligence in infectious disease: take ChatGPT as an example. Annals of Biomedical Engineering. 2023 Jun;51(6):1130-5.

5. George AS, George AH. A review of ChatGPT AI's impact on several business sectors. Partners universal international innovation journal. 2023 Feb 18;1(1):9-23.

6. Salvagno M, Taccone FS, Gerli AG. Can artificial intelligence help for scientific writing?. Critical care. 2023 Feb 25;27(1):75.

7. Javaid M, Haleem A, Singh RP, Khan S, Khan IH. Unlocking the opportunities through ChatGPT Tool towards ameliorating the education system. BenchCouncil Transactions on Benchmarks, Standards and Evaluations. 2023 Jun 1;3(2):100115.

8. Limna P, Kraiwanit T, Jangjarat K, Klayklung P, Chocksathaporn P. The use of ChatGPT in the digital era: Perspectives on chatbot implementation. Journal of Applied Learning and Teaching. 2023 Jun;6(1):64-74.

9. Wu T, He S, Liu J, Sun S, Liu K, Han QL, Tang Y. A brief overview of ChatGPT: The history, status quo and potential future development. IEEE/CAA Journal of Automatica Sinica. 2023 May 1;10(5):1122-36.

10. Bhattacharjee A, Liu H. Fighting fire with fire: can ChatGPT detect AI-generated text?. ACM SIGKDD Explorations Newsletter. 2024 Mar 28;25(2):14-21.

11. Fuchs K. Exploring the opportunities and challenges of NLP models in higher education: is Chat GPT a blessing or a curse?. InFrontiers in Education 2023 May 17 (Vol. 8, p. 1166682). Frontiers Media SA.

12. Zhong Q, Ding L, Liu J, Du B, Tao D. Can chatgpt understand too? a comparative study on chatgpt and fine-tuned bert. arXiv preprint arXiv:2302.10198. 2023 Feb 19.

13. Frosolini A, Gennaro P, Cascino F, Gabriele G. In reference to "Role of Chat GPT in public health", to highlight the AI's incorrect reference generation. Annals of biomedical engineering. 2023 Oct;51(10):2120-2.

14. Luo Z, Xie Q, Ananiadou S. Chatgpt as a factual inconsistency evaluator for text summarization. arXiv preprint arXiv:2303.15621. 2023 Mar 27.

15. Shen Y, Song K, Tan X, Li D, Lu W, Zhuang Y. Hugginggpt: Solving ai tasks with chatgpt and its friends in hugging face. Advances in Neural Information Processing Systems. 2024 Feb 13;36.

16. Frana PL, Klein MJ, editors. Encyclopedia of artificial intelligence: the past, present, and future of AI. Bloomsbury Publishing USA; 2021 Apr 7.

17. Häuselmann AN. EU Privacy and Data Pro-tection Law Applied to AI: Unveiling the Legal Prob-lems for Individuals (Doctoral dissertation, Leiden University).

18. Abdullah, M., Madain, A., & Jararweh, Y. (2022, November). ChatGPT: Fundamentals, applications and

social impacts. In 2022 Ninth International Conference on Social Networks Analysis, Management and Security (SNAMS) (pp. 1-8). Ieee.

19. Filippo C, Vito G, Irene S, Simone B, Gualtiero F. Future applications of generative large language models: A data-driven case study on ChatGPT. Technovation. 2024 May 1;133:103002.

20. Gill SS, Xu M, Patros P, Wu H, Kaur R, Kaur K, Fuller S, Singh M, Arora P, Parlikad AK, Stankovski V. Transformative effects of ChatGPT on modern education: Emerging Era of AI Chatbots. Internet of Things and Cyber-Physical Systems. 2024 Jan 1;4:19-23.

21. Teubner T, Flath CM, Weinhardt C, van der Aalst W, Hinz O. Welcome to the era of chatgpt et al. the prospects of large language models. Business & Information Systems Engineering. 2023 Apr;65(2):95-101.

22. Silva Í, Marinho L, Said A, Willemsen MC. Leveraging ChatGPT for Automated Human-centered Explanations in Recommender Systems. InProceedings of the 29th International Conference on Intelligent User Interfaces 2024 Mar 18 (pp. 597-608).

23. Sudirjo F, Diantoro K, Al-Gasawneh JA, Azzaakiyyah HK, Ausat AM. Application of ChatGPT in Improving Customer Sentiment Analysis for Businesses. Jurnal Teknologi Dan Sistem Informasi Bisnis. 2023 Jul 10;5(3):283-8.

24. Skare M, de Obesso MD, Ribeiro-Navarrete S. Digital transformation and European small and medium enterprises (SMEs): A comparative study using digital economy and society index data. International journal of information management. 2023 Feb 1;68:102594.

25. Sawant A, Phadol S, Mehere S, Divekar P, Khedekar S, Dound R. ChatWhiz: Chatbot Built Using Transformers and Gradio Framework. In2024 5th International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV) 2024 Mar 11 (pp. 454-461). IEEE.

26. Vial G, Cameron AF, Giannelia T, Jiang J. Managing artificial intelligence projects: Key insights from an AI consulting firm. Information Systems Journal. 2023 May;33(3):669-91.

27. Wach K, Duong CD, Ejdys J, Kazlauskaitė R, Korzynski P, Mazurek G, Paliszkiewicz J, Ziemba E. The dark side of generative artificial intelligence: A critical analysis of controversies and risks of ChatGPT. Entrepreneurial Business and Economics Review. 2023 Jun 30;11(2):7-30.

28. Camargo M, Báron D, Dumas M, González-Rojas O. Learning business process simulation models: A Hybrid process mining and deep learning approach. Information Systems. 2023 Jul 1;117:102248.

29. Represa JG, Larrinaga F, Varga P, Ochoa W, Perez A, Kozma D, Delsing J. Investigation of microservice-based workflow management solutions for industrial automation. Applied Sciences. 2023 Jan 31;13(3):1835.

30. Mansor M, Shaikh AU, Raza A. DESCRIPTIVE MODEL BASED STUDIES ON TQM PRACTICES & PERFORMANCE MANAGEMENT PRACTICES IN BUSINESS MODELS: A STUDY OF TURKISH SME'S. Grassroots (17260396). 2022 Jan 1;56(1).

31. Raza A, Alavi AB, Memon Y, Memon M. Tik-Tok Usage During Third Wave of COVID-19 and Its Impacts on Personal, Academic, and Social Life of Teenagers and Youngsters in Turkey. Management. 2023 Jan;11(1):31-43.

32. Agyapong A, Boamah RB. Business strategies and competitive advantage of family hotel businesses in Ghana: The role of strategic leadership. Journal of Applied Business Research (JABR). 2013 Feb 13;29(2):531-44.

33. Xue Y, Hauskrecht M. Active learning of classification models with likert-scale feedback. InProceedings of the 2017 SIAM International Conference on Data Mining 2017 Jun 30 (pp. 28-35). Society for Industrial and Applied Mathematics.

34. Tay Y, Dehghani M, Rao J, Fedus W, Abnar S, Chung HW, Narang S, Yogatama D, Vaswani A, Metzler D. Scale efficiently: Insights from pre-training and fine-tuning transformers. arXiv preprint arXiv:2109.10686. 2021 Sep 22.

35. South L, Saffo D, Vitek O, Dunne C, Borkin MA. Effective use of Likert scales in visualization evaluations: A systematic review. InComputer Graphics Forum 2022 Jun (Vol. 41, No. 3, pp. 43-55).

36. Subagja AD, Ausat AM, Sari AR, Wanof MI, Suherlan S. Improving customer service quality in MSMEs through the use of ChatGPT. Jurnal Minfo Polgan. 2023 May 1;12(1):380-6.

37. Caro MC, Huang HY, Cerezo M, Sharma K, Sornborger A, Cincio L, Coles PJ. Generalization in quantum machine learning from few training data. Nature communications. 2022 Aug 22;13(1):4919.

38. Nugroho S, Sitorus AT, Habibi M, Wihardjo E, Iswahyudi MS. The role of ChatGPT in improving the efficiency of business communication in management science. Jurnal Minfo Polgan. 2023 Aug 7;12(1):1482-91.

39. Elsafty A, Oraby M. The impact of training on employee retention: An empirical research on the private sector in Egypt. International Journal of Business and Management. 2022;17(5):58-74.

40. Almuayad KM, Chen Y. Effect of Knowledge Management on Employee Job Performance in Yemeni Banking Sector: The Mediating Role of Job Satisfaction. Journal of the Knowledge Economy. 2024 Feb 7:1-30.

41. Brasil TR, Freire-de-Lima CG, Morrot A, Vetö Arnholdt AC. Host-Toxoplasma gondii coadaptation leads to fine tuning of the immune response. Frontiers in immunology. 2017 Sep 13;8:1080.

42. Hussain A, Kofinas A, Win S. Intention to purchase counterfeit luxury products: A comparative study between Pakistani and the UK consumers. Journal of International Consumer Marketing. 2017 Oct 20;29(5):331-46.

43. Erum N, Musa K, Tufail S, Said J, Zakaria NB. Impact of the circular economy on human development: evidence from Germany. Environment, Development and Sustainability. 2024 May 2:1-26.

44. Székely F, Knirsch M. Responsible leadership and corporate social responsibility:: Metrics for sustainable performance. European Management Journal. 2005 Dec 1;23(6):628-47.

45. Gilson A, Safranek CW, Huang T, Socrates V, Chi L, Taylor RA, Chartash D. How does ChatGPT perform on the United States Medical Licensing Examination (USMLE)? The implications of large language models for medical education and knowledge assessment. JMIR medical education. 2023 Feb 8;9(1):e45312.

FINANCING

The author doesn't receive any funding for this research.

CONFLICT OF INTEREST

The author declares that there is no any conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Hashem Ali Almashaqbeh.
Data Curation: Hashem Ali Almashaqbeh.
Formal Analysis: Hashem Ali Almashaqbeh.
Research: Hashem Ali Almashaqbeh.
Methodology: Hashem Ali Almashaqbeh.
Project management: Hashem Ali Almashaqbeh.
Resources: Hashem Ali Almashaqbeh.
Software: Hashem Ali Almashaqbeh.
Supervision: Hashem Ali Almashaqbeh.
Validation: Hashem Ali Almashaqbeh.
Visualization: Hashem Ali Almashaqbeh.
Writing-Original draft: Hashem Ali Almashaqbeh.
Writing-proof reading and Editing: Hashem Ali Almashaqbeh.