

TITLE OF THE BUSINESS PROJECT
**“OPTIMIZING RETAIL OPERATIONS THROUGH AI: A COMPARATIVE
STUDY OF WALMART’S USE OF AI IN INVENTORY MANAGEMENT
AND RECOMMENDATIONS FOR KORZINKA IN UZBEKISTAN”**

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Abstract

This dissertation is aimed at exploring the role of artificial intelligence in the current and upcoming retail processes focusing on cross continental comparative studies of Wal-Mart USA, and Korzinka supermarket chain in Uzbekistan specifically. Wal-Mart, a retailing giant has adopted AI use across its operations, especially in stock control, supply chain management as well as in customer engagements. The primary purpose of this research is to identify how the dominant supermarket chain in Uzbekistan, Korzinka, can adapt Walmart’s AI practices to improve its functional performance in an emerging market. In its response, the investigation employs secondary and primary research, wielding Walmart public information and reports and case, besides interrogating top and all employees of Korzinka through interviews and surveys. Based on the general literature concerning the impact of AI on inventory, supply chain, and customer satisfaction, this dissertation adds further perspectives to understanding its various operational, technological, and consumer-related issues more specific to Uzbekistan. Finally, it brings specific recommendations on AI adoption at Korzinka and the outlook for further evolving strategies for sustainable use of IT solutions in the retail industry in Uzbekistan. The enhanced operational vulnerability and customer relations highlight the value of AI to communicate the need of technological readiness and consumer adaptability to establish robust AI solutions.

Keywords: Artificial Intelligence, Retail, Supply Chain Optimization, Emerging Markets

Background Information

Global growth of AI in Retail sector operations



Global retail industry has experienced a rapid shift resulting from application of Artificial Intelligence, particularly in issues to do with automation of stock, supply chain and customer experience. A new study shows that retailers are using AI to improve both operational efficacy and customer engagement and experience. According to a McKinsey's report on the status of the usage of AI in the world's retail industry in 2023, the implementation of AI across the global retail industry is currently growing where more than 75% of the world's retailers are using AI to drive solutions in inventory management and demand forecasting, supply chain management. Applying AI within the area of retail enables the organisation to automate regular processes, implement productive analytical mechanisms, and eliminate human mistakes.

Impact on customer experience

The use of artificial intelligence in the consumer experience sphere in retail has made the buying experience much more unique and interactive. Businesses are now applying Artificial Intelligence technology on retailing including; Chatbots, Recommendation systems, and Targeted marketing for increased customer satisfaction and loyalty. A recent global survey conducted by PwC showed that 72% retailers suggested that the AI has improved the customer experience by providing targeted recommendations and quicker replies.

Currently, Walmart apply artificial intelligence in understanding clients and offering recommendations on what product to buy based on the data that has been collected. Another application of AI at Walmart is where the firm recommends to its clients items that the client has bought before, making the shopping experience individualized. It has promoted sales and supplemented client patronage.

Summary of Past Research

AI Adoption in Retail: The Case of Walmart

That is why today the application of artificial intelligence in Walmart's retail operations can be considered setting a precedent. Several empirical research has been dedicated to analyzing the manner Walmart utilizes artificial intelligence to enhance productivity, reduce costs, and increase customers' satisfaction.

About the application of AI at Walmart namely for improved inventory, his records are exhaustive. This consumer electronics retailer employs the best algorithms and predictive analysis in stock management and consumer demand forecasting. These systems use past records of sales, trends of sales throughout the year and the impacts of external conditions as well as weather to ensure that certain stocks meet consumer needs in certain times while at the same time avoiding over stocking. Wang et al's, the study conducted in 2022, shows that Walmart has cut its stockout rate by 15%, and excess inventory by 30% using the AI-driven inventory control program that has

benefited the firm by saving on costs and improving the operations. This has helped Walmart cut the frequency of inventory checks apart from minimizing its labour costs.

Research gap – impact of AI in Retail sector of Uzbekistan

Consequently, although the general opportunities offered by AI in the retail sector are quite obvious, scientific research into its application and impact within Uzbekistan's retail sector is still sorely lacking. About AI, the majority of prior research has focused on the developed markets with the Walmart as samples of depictions of the successful implementation of AI in the retail industry. However, there has been a relative neglect of research on how AI should be adopted in the developing world particularly Central Asia.

The case of Uzbekistan in terms of retail market is a unique opportunity to investigate the implementation of AI in the rapidly developing economy with some peculiarities of socio-economic, infrastructural, technological challenges. The current literature has no information on the role of AI in this area, let alone the local market, which argues for an exploration of how AI can be adapted to fit a local market. These aspects have to be considered regarding the opportunities for the application of AI within the retail industry of the country.

Purpose of the Study:

The main purpose of this research is to conduct a comprehensive examination of the use of Artificial Intelligence (AI) by Walmart in its supply chain management specifically inventorial systems to augment retail operations and efficiency. The leading international retail company such as Walmart has considered the use of AI technology such as the machine learning, predictive analysis and real time data analyses to improve its inventory control. These technologies help Walmart to increase the accuracy of stock demand, avoid situations with stockouts or overstock across stores, and improve the availability of products in its stores.

Research Questions:

1. How does Walmart use AI to improve inventory management and supply chain efficiency?
2. What challenges does Walmart face with AI implementation, and how are they addressed?
3. How can Korzinka in Uzbekistan adopt similar AI strategies to enhance its retail operations?

Research Objectives:

- Discuss Walmart strategies for the implementation and application of artificial intelligence to control stock.
- Discuss pro's and con's of using AI in the retail processes.
- Indicate what specific recommendations of using AI solutions it might be beneficial for Korzinka to accept.

Literature Review

Scholars have covered the role of AI in retail and their impact on making the business more efficient in general; aspect of its employment such as Inventory management, Demand forecasting, and supply chain). The studies show that sensors, machine learning, and remote vision, and analytics have helped retailers such as Walmart to improve demand forecasting, inventory control, and supply chain. For instance, Hbr and Srivastava (2022) noted that Walmart's way of using me to predict the surge in the demand rate and also manage in-store inventory has significantly reduced cases of overstocking and stockouts that have, in turn, contributed to the reduction of operational costs.

Employing AI in shopping has generated a lot of talk of how it is effective, majorly revolving around how accurate the system is and the moral impact. AI has been argued to enhance the predictive analysis within operations thus enhancing efficiency, for example, Walmart's venture in AI based demand forecasting has significantly enhanced the minimization of stock out situations as well as amounts extra inventory (Chui & Manyika, 2023).

The literature on AI adoption in emerging markets provides further insights, with examples such as South Africa's Shoprite and India's BigBasket showing that emerging market retailers can benefit from tailored AI solutions that account for infrastructural limitations (Mishra & Mukherjee, 2023). However, these cases underscore unique challenges, including limited digital infrastructure and workforce readiness for AI technologies, a scenario that mirrors Uzbekistan's retail environment. Korzinka, a leading Uzbek retail chain, has yet to incorporate AI extensively, largely due to financial and technological constraints. Studies highlight the need for localized AI applications that are cost-effective and can function on simpler platforms (Rana, 2023). This presents a gap in research, as minimal studies have critically examined the specific hurdles faced by retailers in emerging markets when implementing AI.

In this paper we focus on the application of the AI methods implemented by Walmart to the case of Korzinka with attention to the local context and the potential for technology-based growth. This research builds up the fundamental understanding of how the AI practices that have surfaced globally might be implemented in developing economies, and the possibilities and issues that Korzinka may encounter in the course of any future AI adoption process.

Research Methodology

Description of the study area:

This research is done in the retail business domain, with a comparative review of Walmart's operations around the world to examine its correspondingly and Korzinka's current outlets in the Uzbekistan's retail sector. Walmart, a global retail titan has integrated complex artificial intelligence into its business process with a view

of improving on stock, supply chain and customer satisfaction. All these have been critical as the ability of Walmart to enhance the extensive logistical networks, respond quickly to the consumers demands, and at the same time enhance the store experience. An understanding by real world example of Walmart show how such hi-end retailing enhanced technology may work on a large scale basis towards improving profitability and operational sustainability for the firm, specifically in areas of dynamic pricing, product display and position as well as automated shelf replenishment results.

Sample and sample size:

The first source pool, therefore, consists of available Walmart data: annual reports, cases, and industry studies will provide the basis for understanding Walmart's successful use of AI technologies in inventory and supply chain management, as well as customer relations. These second-tier sources allow the research to offer reference points of ideal strategies that might be useful in the potential strategy by Korzinka.

Information collection for the main sample shall involve administering questionnaires to customers as well as administering an interview with the management of Korzinka. The management interviews aim at asking them about their perspectives in regards to AI integration, existing issues in operation and their openness to new technical solutions. Additionally, customers' surveys will focus on quantifiable data concerning customers' experiences working with Korzinka, the time spent waiting for services, quality of services received, and level of satisfaction. Structured questionnaires will be completed by 50 to 60 participants in population, who will be divided into groups, such as working adults between the ages 16-70, parents, working students and housewives. This demographic selection ensures that different perspectives on the potential impact of AI in the improvement of services at Korzinka are obtained.

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	26	140	103	340	181	1000	276	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is Population Size
"S" is Sample Size.

(pubs.sciepub.com, n.d.)

A 95% confidence level will be adopted regarding customer surveys to assess the right sample size with a reliability used in social science studies. For a population above 100000, Krejcie and Morgan sample size chart reached nearly the 384; but for practical

data collection, the study shall go with a definition of 50-60 participants. This approach of merging qualitative information from management with quantitative information from consumer surveys allows understanding the operation scenario at Korzinka and benefits that could be provided by AI.

Sampling technique:

Data Collection – tools and instruments

This research employs the concurrent mixed research approach to gather data about the integration of AI within retail operations of Walmart and Korzinka. Most of the secondary data collection will be from material available to the public regarding Walmart's adoption of AI. This involves the analysis of Walmart's annual reports that contain information about strategic direction more focused on AI integration within the organization, particularly the items of concern namely; inventory control and customer relations.

The main data collection will use two basic instruments: Semi structured interviews have been used coupled with internet surveys. Management of Korzinka will be interviewed through Telegram Messenger or in person concerning the company's basics, specific working challenges, unproductive outcomes, and openness to using AI technologies. From this qualitative data it will be possible to conduct elaborate talks which will provide a good understandings regarding management's perception of AI with a view to its potential benefits. Concurrently, an online poll using Google Forms for present and prospective members of Korzinka will also be administered. The poll will involve some closed questions and some other opened questions based on customer satisfaction, service delivery and perceiving the use of artificial intelligence.

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