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Artificial intelligence aided customer service and operational efficiency in BPO company

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Abstract

This study is an assessment of use of AI in Customer Service in BPO Industry. It aimed to determine the extent of the use of artificial intelligence in customer service industry in terms of self-service automation, personalized interactions, and predictive analytics; describe the impact of artificial intelligence to operational efficiency in terms of process optimization, resource management, and employee productivity. Also, the study tested the significant relationship of the extent of the use of Artificial Intelligence and the level of operational efficiency of the BPO company. Lastly, a proposed program was tabled to provide inputs to sustain the level of customer service using AI and the overall operational efficiency of the BPO company. A descriptive method of research was utilized. Respondents were the call center agents of 3 sites (Site A, Site B, Site and Site C of one of BPO Company samples of one hundred twenty-seven (378)/ Respondents were randomly selected. The results revealed that majority of the respondents are Millennials, mostly females, singles, and have been working in BPO for 1 to 5 years. As assessed by call center agents the Artificial Intelligence in Customer Service in BPO Industry is at Moderate Extent in terms of Self-Service Automation, Personalized Interactions, and Predictive Analysis. As to the impact of the Artificial Intelligence to the Operational Efficiency, the respondents Agreed about the impact of the AI to the Operational Efficiency in terms of Process Optimization, Resource Management, and Employee Productivity. All of the key areas in the use of Artificial Intelligence in Customer Service are Highly Significantly related to the impacts of the Operational Efficiency of the BPO Industry. This reveals how the utilization of AI in customer service would bring a positive impact on the operational efficiency of the BPO industry. Finally, the management of the BPO shall spend time of monitoring and evaluating the operational efficiency. This is to ensure the effective utilization of AI and maintaining the operational efficiency of the BPO. They are also encouraged to benchmark the Proposed Action Plan to improve the use of Artificial Intelligence and operational efficiency in BPO Company.

Keywords: artificial intelligence, utilization, customer service, operational efficiency

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1. Introduction

Intertwined with the evolution of the technology is the goal of the companies to constantly searching for the next new creative endeavor. The development of an independent program which would enhance the recognitive abilities as part of the economy's modernization and automation are expected to alter the fundamental principles of the business management as well as the customer service and BPO (Business Process Outsourcing).

Artificial Intelligence has been a major concern discussed all over the world. It is a product of Human Mind conducted in machines and undeniably, it continues to attract considerable publicity. By creating computer programs to make computers smarter, it is an effort to integrate computer technology with human physiology. Several businesses that focus on customer relations include going more in-depth with using AI to improve customer service. Artificial intelligence has shown to be advantageous for a number of industries worldwide. Further, it is imperative to acknowledge that advancements in artificial intelligence give rise to both favorable and unfavorable perspectives. The development of technology made it possible to replace human labor in routine manual and cognitive tasks (Petropoulos, 2018). Humanity is continuously working to modernize and overcome obstacles, but as computers become more intelligent and artificial intelligence takes over, our society must carefully assess how these developments might or might not impact jobs across a range of industries in the future.

The BPO sector has advanced significantly since its founding and is presently going through a change that will highlight its significance. Intelligent Automation (IA) is the driving force behind this revolution in the BPO sector. According to Zinnov (2020) through AI, BPO companies are being transformed from simple handlers of processes to actual owners of those processes. When AI is successfully implemented and scaled, BPO companies gain a competitive advantage and are better positioned in comparison to their peers. Further, every part of the BPO value chain has been impacted by AI, including industry-specific tasks like claims management under insurance and revenue cycle management under health care. It has also had an impact on horizontal functions like marketing, sales, and support, accounting, and human resources (HR). Businesses have been able to achieve unmatched cost savings, increased productivity, and better customer experiences by automating procedures related to these areas. Some of the BPO companies have adapted the AI as part of their innovation and as their prime move of getting into trends; serve their customers well, and for the improvement of the companies. These companies have observed the positive impacts of the AI to their operations and for continuous growth. They have witnessed how well these innovations helped them in various aspects. However, these have enabled the researcher to determine the extent of the use of Artificial Intelligence (AI) in the Customer Service as well as to identify its impact to the business efficiency of the BPO industry.

To provide prompt service and make the BPO competitive to the demands of the client, the researcher conceptualized this study. The researcher who has been working in the BPO for almost a decade have observed the evolution of the customer service as well as the operational proficiency of BPO which shall be responding to the needs and demands of the client and industry. The uses of the Artificial Intelligence has opened huge changes to the BPO industry and the call center agents. Issues concerning the gradual elimination of agents also arise which posted worries among the agents. AI has been considered as game changer in the BPO company since it offers features for effective customer service and to attain higher level of operational efficiency. Through this study, the researcher deems that it may offer sufficient ideas about the worth of AI, how it helps the BPO in terms of customer service and to determine how it brings impact to the operational efficiency.

Objectives of the Study - The study aimed to explore Artificial Intelligence Aided Customer Service and Operational Efficiency in BPO Company. Specifically, it sought to determine the extent of the utilization of

Artificial Intelligence (AI) in customer service in BPO industry in terms of self-service automation, personalized interactions, and predictive analytics; described the level of operational efficiency in terms of process optimization, resource management, and employee productivity; tested the significant relationship of the extent of the use of Artificial Intelligence and the level of operational efficiency of the BPO company; and, proposed an action plan to improve the utilization of AI in customer service and operational efficiency of BPO company based on the results of the study.

2. Methods

Research Design - The researcher utilized the descriptive method which involves data gathering to be able to answer the questions concerning the current status of the subject of the study. The descriptive method is a purposive process involving gathering, analyzing, classifying, and tabulating data about predominant conditions, practices, trends, and cause-and-effect relationships. It also deals on adequate and accurate interpretation about such data with or without the aid of statistical treatment.

Research Participants - The respondents of the study were the Call Center Agents of the three BPO sites of one of BPO companies, Site A (with 4510 agents), Site B (with 1963 agents), and Site C (with 3419 agents). A sample of three hundred seventy-three (373) call center agents involved that was based on random sampling using the Raosoft with 5% Margin of Error and confidence level of 95%. However, 378 responses were collected. It turned out that majority of the respondents, at 51%, are Millennials and only 1.9% of the respondents are Baby Boomers which implies that the millennial generation is more inclined to work in the BPO sectors and to render customer service which requires the ability to communicate and deal with the customers, be more equipped with the skills and knowledge in the new technology, use the computer, and connect with people. On the other hand, the BPO is less attractive to the Baby Boomers. The majority of the respondents are female as James (2021) explained that more females are now engaging themselves in BPO mostly in Asian countries. In addition, 74% of the respondents are single. As to their length of service in BPO Company, 38% of the respondents have been part of their BPO company for 1 to 5 years while 8% have been in the company for 15 years and above.

Data Gathering Instruments - The main instrument that was utilized in this study is a researcher-made instrument which is crafted to satisfy the objectives of the study. The researcher used three main data-gathering instruments: Part I, contained a researcher-made questionnaire about the personal profiles of the respondents. Part II comprises fifteen (15) questions that seek to determine the extent of the use of artificial intelligence in customer service in the BPO industry in terms of self-service automation; personalized interactions, and predictive analysis this is based on the report of unity communication, and was utilized by Lipata (2023). Part III, comprised the fifteen (15) questions on Operational Efficiency which is adapted and modified from Fastcall.com. The researcher used a four-point Likert scale, to measure the extent of the use of intelligence in customer service in BPO and the operational proficiency of BPO company. The following Likert Scale will be used in assessing the variables: 4 Point Likert Scale was utilized 1.00 – 1.49 Strongly Disagree, 1.50 – 2.49 Disagree, 2.50 – 3.49 Agre**e**, 3.50-4.00 Strongly Agree

Table A

Reliability Test Result using Cronbach Alpha and its Interpretation

INDICATORS	NO. OF ITEMS	CRONBACH ALPHA	REMARKS
Self Service Automation	5	0.933	Excellent
Personalized Interactions	5	0.929	Excellent
Predictive Analysis	5	0.927	Excellent
Process Automation	5	0.929	Excellent
Resource Management	5	0.929	Excellent
Employee Productivity	5	0.931	Excellent

George and Mallery (2003) provide the following rules of thumb: "_ > .9 – Excellent, _ > .8 – Good, _ > .7 – Acceptable, _ > .6 – Questionable, _ > .5 – Poor, and_ < .5 – Unacceptable"

The above table presents the results of the Reliability Test using the Cronbach Alpha. As presented in the table, the sub-variables under customer service such as the Self-Service Automation (0.933), Personalized Interactions (0.929) and Predictive Analysis (0.927) with their affixed Cronbach Alpha were interpreted Excellent. The sub-variables under Operational Efficiency such as the Process Automation (0.929) Resource Management (0.929), and Employee Productivity (0.931) with their attached Cronbach Alpha were also attained excellent remarks. The results of the reliability test shows that the instrument to be used are valid and reliable. It has enabled the researcher to seek the permission from the adviser to proceed into the administration of the survey-questionnaire as the main tool in this study

Data Gathering Procedure - The researcher sought approval from the Operation Management of the 3 sites, which allowed her to conduct her study. Upon approval, the researcher asked the help of the Operation Managers to distribute the research instrument (through Google form) which was forwarded to the Gmail account of the team managers or through a link handled by respective team managers to respondents. The researcher waited for the respondents to accomplish the research instruments consolidated and tallied.

Ethical Consideration - Due to protocol, researcher sought permission to collect data from relevant authorities before conducted the research. None of the respondents were forced to give information about whether he/she was not willing for personal and security reasons. Respondents were guaranteed of confidentiality in handling of any information provided and that all the information got from the respondents will be used for the sole purpose of this study.

Data Analysis - Several statistical tools were utilized to meet the objectives of this study. Frequency distribution and percentage were used to describe the profile of the respondents, whereas mean and ranking were also utilized to determine the extent of the use of artificial intelligence and the impact of the use of artificial intelligence on the overall operational efficiency of the business. In establishing the relationship between the two variables, the Pearson correlation coefficient was employed. To determine the level of Operational Proficiency, the following 4 Point Likert Scale was utilized 1.00 – 1.49 Strongly Disagree, 1.50 – 2.49 Disagree, 2.50 – 3.49 Agree, 3.50-4.00 Strongly Agree. In addition, all data were treated using a statistical software known as PASW version 26 to further interpret the result of the study using an alpha level of 0.05.

3. Results and discussion

Table 1

Summary Table of Extent of Use of Artificial Intelligence in Customer Service in BPO Industry

	Mean	Interpretation	Rank
Self Service Automation	3.02	Agree	1.5
Personalized Interactions	3.99	Agree	3
Predictive Analysis	3.02	Agree	1.5
Composite Mean	***3.01***	***Agree***	

Legend:. 1.00 – 1.49 Strongly Disagree , 1.50 – 2.49 Disagree , 2.50 – 3.49 Agree , 3.50-4.00 Strongly Agree

Table 1 presents the summary table of the extent of use of Artificial Intelligence in Customer Service in BPO industry. As presented in the table, both Self-Service Automation and Predictive Analysis have received the same mean of 3.02 interpreted at Moderate Extent. Among the three areas, Personalized Interactions have attained the lowest mean of 2.99 but still interpreted at Moderate Extent. The three areas have generated a composite mean of 3.01 which means that the agents have agreed that AI has been utilized in Customer Service in BPO Industry at Moderate Extent.

The results imply that AI has been utilized in these three major areas of Customer Service in BPO. The highest level of utilization has been observed in terms of Self-Service Automation and Predictive Analysis. This means that as with the agents who have direct contact with their clients, the AI has been useful for making the usual transactions on the services offered. AI has been utilized to do sell-service transactions through directing

the customers on what to do with their accounts, and even to respond to the common questions with less or no human interventions. Also, it came out that the BPO utilizes the AI for Predictive Analysis which means that AI can gather the data and predict the history and respond immediately to the queries and other concerns of the customers. The AI improves the customer service of BPO through data collection and responding to the needs of the customers based on the data that have been collected and analyze their transactions. Among the three areas of customer service, Personalized Interaction has attained the lowest assessment which reflects the limitations of the AI that not all needed transactions can be done by the AI. There are still some problems which cannot be troubleshoot by the AI alone. This somewhat reflects how the agents give importance about human intervention in attending the needs and to provide quality services to the customers that the AI are not capable of.

Even the AI itself has been evolving, the features it offers to the possible client are also getting more advance to make it more relevant to the needs of the industry and how it would satisfy the demand of the customers and the main client. Thence, there is a need for the BPO to embrace the use of AI in their company, not to totally decline the human intervention but to provide them also support in achieving better customer service experiences toward the client they serve.The AI has been noted for faster transactions it can offer to the company, it can also boost up the abilities to respond to vast numbers of queries higher than what the human agents can do. However, it cannot be denied that the AI still have limitations. These AI cannot offer everything for the customers, they may be able to provide the services but they cannot truly deliver the services with genuine emotions which is adds flavor to the experiences of the customers and achieved their satisfaction. The customer services may be improved through the utilization of AI but still, this industry needs the human interventions.

Table 2

Summary Table of Level of Operational Efficiency of the BPO Company through the Utilization of AI

	Mean	Interpretation	Rank
Process Optimization	3.11	Agree	1
Resource Management	3.04	Agree	3
Employee Productivity	3.08	Agree	2
Composite Mean	***3.08***	***Agree***	

Legend:. 1.00 – 1.49 Strongly Disagree, 1.50 – 2.49 Disagree, 2.50 – 3.49 Agree, 3.50-4.00 Strongly Agree

Table 2 presents the summary assessment of the respondents in the level of Operational Efficiency of the BPO company through the utilization of AI. As presented in table, among the three areas of Operational Efficiency, it turned out that Process Optimization has attained the highest assessment of 3.11 follows by the Employee Productivity with 3.08 and Resource Management has obtained a mean of 3.04. Their assessment has generated a composite mean of 3.08 declaring their agreement to the level of operational efficiency of the BPO company through the utilization of AI. The result implies that the level of operational efficiency of the BPO can be improved through the utilization of AI. This has enabled the BPO to optimize the processes to serve the customers better, more concerns will be accommodated and resolved. Also, the AI may help the BPO to minimize the resources needed while keeping the quality of service it rendered to the customers. Also, if the employees are motivated and are supported by AI, the more they can perform their tasks needed by their customers and attain higher level of performance and to achieve better operational efficiency of the BPO company.

There are numbers of companies that have adapted the AI for their operational efficiency. More services are offered and have satisfied the customers. Also, the AI is a big help for the agents who could be able to entertain and deal with the more calls since AI can accommodate other customers. With their joined forces, the BPO company will be able to attain higher level of operational efficiency while ensuring that the needs of the employees have also been given appropriately.

Table 3

Relationship of Use of Artificial Intelligence in BPO Industry to Operational Efficiency of the Company

	Operational Efficiency							
	Process Optimization		Resource Management		Employee Productivity		OVERALL Operational Efficiency	
	R	p-value	R	p-value	r	p-value	r	p-value
Self Service Automation	.766	.000	.741	.000	.776	.000	.783	.000
Personalized Interactions	.774	.000	.751	.000	.782	.000	.792	.000
Predictive Analysis	.800	.000	.772	.000	.792	.000	.812	.000
Overall AI USE	**.805**	**.000**	**.780**	**.000**	**.809**	**.000**	**.822**	**.000**

Legend: Relationship is significant at 0.05 alpha level

The relationship between the extent of use of artificial intelligence in BPO industry and the operational efficiency of the company is presented in table 3. The extent of use of AI in each area of customer service such as the Self-Service Automation (0.000), Personalized Interactions (0.000) and Predictive Analysis (0.000) with their attached p-value at 0.05 level of significance were found to have high significance to each area of Operational Efficiency. Results show that all the dimensions of the two variables are highly correlated to each other in a positive direction. This means that as the ratings on one variable increase, the other also increases.

The result also shows the if the BPO company improves their extent of the utilization of AI on their customer service, the higher level of operational efficiency will be attained. Further, if the BPO company realizes the significance of AI as support to the agents to attain better customer services, more customers will be catered and be satisfied which may help the agents be motivated at work, the better operational efficiency will be achieved. Furthermore, the ability of the company to provide a highly-competitive AI will enable the employees to attain higher level of proficiency that contribute to the success of the BPO company. Artificial Intelligence prompted the industries to make major changes to the products they produce and the services they rendered to satisfy the customers. Most of the companies who have adapted the AI have shown remarkable increase on their development and have attained better level of operational efficiency. Furthermore, there are a lot of success among these companies that have utilized the AI as major support to their human resources. They have been able to save more and have become more efficient in various areas of the company. However, the companies need to realize that AI is not the total replacement of the human workforce. Still, despite the various tasks that can be performed by the AI, there are some of the activities and tasks in the BPO which cannot be performed by the AI, but human intervention.

Table 10

Proposed Action Plan to Improve the Use of Artificial Intelligence and Operational Efficiency in BPO Company

Key Result Area	Strategy/ Action	Objectives	Expected Outcomes	Persons/ Work Units to be involved
Customer Service *The BPO agents have agreed about the the extent use of utilization of AI to enhance customer service*	Acquire advance AI to improve utilization of AI in BPO	Ameliorate the utilization of Artificial Intelligence in Customer Service in BPO Company	Improve customer service of BPO through the utilization of advance of AI	AI Specialist Trainer Top Management
	Deterioration of the stimulus towards the total replacement of Human Agents in the BPO due to AI.	Improve the BPO agent's understanding on the worth of AI in ameliorating the overall performance of BPO in terms of Customer Service.	Extensive utilization of BPO towards Enhance Customer Service.	AI Specialist Trainer BPO Agents Top Management
	Provide training for the BPO agents zeroed- in to the tasks in customer service that can be performed by the AI.		Assist well trained BPO agents who are equipped with the knowledge and skills in providing customer service with or without customer service the AI support	AI Specialist Trainer BPO Agents

Customer Service *The BPO agents have agreed about the the extent use of utilization of AI to enhance customer service*	Continuous Monitoring and Evaluation of the Utilization of the AI in BPO Company.	Ensure smooth and satisfying customer service provided by BPO through utilization of the AI.	The customer service provided by the human agents and AI shall have been continuously monitored and evaluated	AI Specialist Trainer Top Management Clients Customers
	Embracing the possibilities and advancement of AI.	Embrace the continuous the improvements of the features that may be offered by the AI to the future of Customer Service than can be offered by BPO.	The BPO shall have been able to adapt the future advance features of that may continuously improve customers services it offers.	BPO Agents Trainer
Operational Efficiency *Safeguarding Operational efficiency through the fusion of Human Agents and BPO agents have agreed about the the extent use of utilization of AI to enhance customer service*	Develop a well- defined mechanism in sustaining the Operational Efficiency through enhanced- human agents- AI collaboration.	Intensive observation and technical assistance for the human agents to attain operational efficiency through the use of AI.	Well- collaborated Human Agents AI collaboration to sustain Operation Efficiency.	AI Experts Trainer Top Management
	Prioritizing the collection of data and harvest of feedback from the customers.	Immediate collection of data, harvest feedback and quick response to attain Operational Efficiency of the BPO Company.	Affirmative feedback to manifest the level of satisfaction from the customers and determine the level of operation efficiency of the BPO Company.	BPO Agents AI Experts
	Saving Resources through Effective and Proficient Operation.	Implement a continuous resources saving mechanism through operational proficiency.	Save the resources of the company. Allot the resources to other needs of the BPO agents that will be also contributory to the operation proficiency.	BPO Agents Top Management

4. Conclusion and recommendations

The following are the conclusions derived from salient findings of this study: The utilization of Artificial Intelligence is at Moderate Extent to improve the Customer Service in BPO Industry in terms of Self-Service Automation, Personalized Interactions, and Predictive Analysis. Artificial Intelligence improved the Operational Efficiency of BPO as to the Process Optimization, Resource Management, and Employee Productivity. 3.Utilization of AI in customer service is highly significant to the Operation Efficiency of the BPO Industry. A proposed Action Plan was crafted to improve the extent of the utilization of AI so as to improve the Operational Efficiency of BPO company. The Top Management may increase the budget allocation for the training in the utilization of AI in the customer service. The Top Management of the BPO shall spend time of monitoring and evaluating the operational efficiency. This is to ensure the effective utilization of AI and maintaining the operational efficiency of the BPO. The BPO may implement the feedback system or revise the content if there is one that would enable the customers to provide comments or suggestions as well as assess the services that they received. The proposed plan of action may be tabled for discussion for future implementation and evaluation thereafter.

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