

Role of Workplace Automation in Enhancing Performance and Efficiency: An Empirical Study of Emerging Organizations

1. Dr. Nasa Dhanraj

Assistant Professor,
School of Commerce,
Presidency University,
Itgalpura,Rajanukunte,Yelahanka, Bengaluru,India, pincode: 560064
drnasa2018@gmail.com

2. Dr. Roopa Shettigar

MBA HOD & Associate Professor
MBA Department
Soundarya Institute of Management and Science
Affiliated to BU

3. Dr. Venkata Harshavardhan Reddy Dornadula

Managing Director.
R&D, STNUP Private Limited

4. Dr Harvinder Kaur

Associate Professor
Management Department
Delhi Skill and Entrepreneurship University.

Abstract

Automation has changed the work of companies and helped them do their day-to-day tasks as easily as possible. The first changing technology has impacted people around the world and their need to select the right automation tool that fits best for their business and according to its needs. Automation is not a new concept, but the implementation of artificial intelligence has gained more attention in recent years. Automation has made a big improvement in the working of companies and their processes; it also helps to understand customer needs and helps in making accurate choices. The automation help organisation, in making their work smoother, does things more efficiently and quickly adjusts to the changing conditions in the market. The automation also helps in understanding the customer and making products better. There are ample automation tools available for companies working in various niches. Robotic process automation, intelligent automation, inventory automation, and audit automation are just a few examples that have made business processes as easy as possible. As ample of 227 was collected from people working in different organization. Four factors that determine the Role of Workplace Automation in Enhancing Performance and Efficiency are Reduced Human Errors, Cost Reduction, Faster Task Execution, and Competitive Advantage.

Keywords: Workplace Automation, Artificial Intelligence, Robotic Process Automation, Intelligent Automation, Audit Automation.

Introduction

Automation is a set of tools and ideas that help make work easier. With the use of different technologies, the process of automation is implemented. Automation does not mean that it will replace traditional methods, but alongside these two, they work together. It helps companies work more effectively and gives them a good return on their investment. It also

provides other necessary resources that are important for businesses. The concept of automation evolved during the Industrial Revolution in the 18th century. After that, the new ideas were implemented to make work easier and faster with the help of machines. Over time, the idea evolved and concepts like artificial intelligence and the internet of things took place, which made automation even better. This new technology has a big impact on how business works. Although mechanisation and industrial robots have been commonly used in manufacturing industries for several decades, the emergence of artificial intelligence has opened new possibilities for automation. The process of automation particularly helped non-manufacturing industries like healthcare, finance, and retail. Artificial intelligence-powered automations are widely used in industry 4.0. They are held in all dimensions of businesses, including manufacturing, marketing, customer resource management, housing operations, and human resource management (Elhajjar, Yacoub, & Yaacoub, 2023).

For a business to work efficiently, special attention is given to its management process. The process involves understanding and creating models, conducting audits and checking them, and most importantly, analysing the performance. Throughout the process, a business suffers from various problems, like when many departments in the business are not able to work together smoothly. Businesses sometimes face problems managing huge documents, and many times they spend too much time doing the same task. The main aim of the companies is to solve these small problems as quickly as possible. Companies that deal with huge amounts of data make sure everything runs smoothly. With the help of automation, the various processes involved in businesses can be made easier. By using machines, methods, and systems, many tasks can be done without the need for manpower. With the process of automation, one or many tasks can be done easily. It also helps in organizing the system of a company (Bataev & Davydov, 2020).

Automation is an important component in various industries, like manufacturing and operations. It is nearly impossible to imagine the functioning of a company effectively without the help of automation. Automation and robotics play a vital role in easing, enhancing safety, and speeding up the various tasks and processes of industries. Automation has become an indispensable tool that significantly improves the efficiency and productivity of a company. Industries are making substantial investments in business automation and the adoption of various automation technological tools that are important for business operations. The introduction of robotic automation has had a positive and strong influence on the development of business. Automation and technological advancements contribute to the improvement of efficiency and productivity in a company over the long term. It also leads to better outcomes in terms of product quality and quantity. When businesses adopt new technologies and integrate them with automation, it often reduces the costs associated with transportation and communication. It enhances the effectiveness and speed of the supply chain and logistics (Jadav, Gawande, 2020 and Zang, Liu, 2018).

Literature Review

Emerging organization establish their own procedures by adding extra processes that align with their organizational values and reinforce organization's features. The emerging organization build and strengthen the main characteristic to set themselves apart from rival companies (Perkmann, & Spicer, 2014).

Automation means monitoring and controlling any process with the help of new technologies like software, robotics, ERP systems, etc. It also means the use of control systems and information technologies to reduce the human load in the production of goods and services, which saves money on production and material costs and makes profit. In workflow automation, software is used to control various processes, which eliminates repetitive tasks, helps in gaining efficiency, minimises errors, and reduces cost. Despite the size of the business, automation increases productivity and efficiency. Automation positively impacts the productivity of a business as it increases production by avoiding manual delays, improves productivity by achieving the optimum efficiency of the machine, reduces reprocessing and saves power, and thus reduces the cost of production. It also provides useful data about the machine, which increases the possibility of analysing the causes of low productivity. Automation in emerging businesses provides various advantages. In a competitive market where quality, cost, and availability play an important role, automation makes the task easier for businesses to

analyse the opportunities for quality, cost, and availability of the product (Nimawat, Shriwastav, 2016 and Kromann, Malchow-Møller, Skaksen, & Sørensen, 2019).

Many companies are leveraging technology to improve precision, efficiency, and the speed of their processes. In the field of logistics, companies are also implementing various automation processes to enhance their performance. Automation helps eliminate manufacturing costs, reduces errors caused by humans, and streamlines the time-consuming aspects of the supply chain. It has also improved the effectiveness of employees and fostered better cooperation between departments and resources. As technology has advanced and e-commerce has become integral to businesses, the supply chain has evolved significantly in recent years. Today's supply chain is characterized by immense complexity. Increasing customer demands and expanding markets put pressure on businesses to figure out how to leverage new innovations and develop core competencies to meet consumer needs. The logistics process begins with the acquisition of raw materials and concludes with their distribution in warehouses. Automation plays a crucial role in this process by focusing on the exchange of data and contract details. This includes aspects such as manufacturing schedules, procurement rates, incentives for raw materials, payment methods, and distribution conditions (Andiyappillai, 2021 and Spencer, 2023).

Automation plays an important role, especially in inventory management, which ensures long-term competitiveness for businesses. In modern manufacturing, automated factory operations are economically justified for traders and business organizations. Automated decision support systems and factory automation play an important role in adopting robotic manufacturing systems. It provides flexibility in operations and makes the production process easier. Due to the advancement of modern computerised systems, the practice of automating inventory management systems has gained a lot of importance. A perpetual inventory system was introduced to track and update inventory quantities and ensure the availability of items for the smooth functioning of production units. The inventory policy of every company is to maintain a sufficient amount of finished products to meet market demand while minimising the cost of keeping the stocks or products. This can be done with the implementation of computerised inventory management techniques. Automation practices help reduce operational costs and improve customer service. The adoption of an automated and computerised inventory management system helps to maintain detailed, systematic records, which also enable to respond effectively to the demands of the market. The automation practice reduces the time required for tasks like stock verification and tracking of goods. It also makes it easier to generate reports quickly for various departments and according to their requirements (Panigrahi, Jena, & Mishra, 2022).

Robotic process automation is a kind of technology that uses software robots to perform tasks in computer systems in the same way as humans do. These robots follow a set of instructions and can do work in different software programmes without causing any problems. The technology is very useful as it can make business processes faster and more accurate, and it doesn't require any big changes in the existing computer setup of the company. Robotic process automation is a specific type of software that has predefined rules and a set of sequences of actions to carry out certain processes, tasks, and transactions in multiple software programs. The main objective of this system is to provide specific outcomes or services in situations where human intervention is needed. Robotic process automation is a digital assistant that follows a set of rules and performs tasks in computer programmes. Robotic process automation simply means performing business task by physical robots that are previously done by the humans. It is software based solution and specifically made to replace the human efforts. Robotic process automation has the potential to fulfil the requirements of business process. The requirements of governance, security, etc. It has the ability to respond according to the change in market condition (Afriliana, Ramadhan, 2022 and Dey, & Das 2019).

Technology is important to improve the performance of SMEs. The modern technologies like Artificial intelligence based accounting automation provides a way to complete the repetitive task through automation. The AI base automated accounting system is time saving and it also positively impacts the accounting process. This automated system does not indulge in many errors as it is evident that humans conduct errors or mistakes to some extent. Increase in efficiency motivates organization to favor more automated system. In the technologically developed Era the organisation are obtained for more intelligent technology is that are trending and innovative. These automated and intelligent system complements

highly flexible competitive and globalise business environment. It also helps in successful implementation of business operations which enhances the capability of organisation to maximize profits (Rawashdeh, Bakhit, & Abaalkhail, 2023 and Vishnoi, Tripathi, Bagga, 2019).

In various business processes, artificial intelligence is implemented wisely to solve the issues created by various systems. The automated process even make this more improved. It is important for the organisations to wisely invest in artificial intelligence and automated system because it greatly impact the economic development of an organisation. As the remote work forces are expanding, it is important for organisation to introduce new environment. Artificial intelligence automates various activities and covers the trends that are hidden and improves accuracy and efficiency. It also decreases workload of employees (Santos, 2022).

Objective

To identify the Role of Workplace Automation in Enhancing Performance and Efficiency.

Methodology

This study considered a sample of 227 people was collected from people working in different industries. “Random sampling method” was used to collect the data, and scrutinized by “Explanatory Factor Analysis” to get the results.

Findings

The table below shares respondents' general details in which it is found that 54.62% are male and 45.38% are female. Among them, 36.56% are between 25 to 30 years, 32.16% are between 30-35 years, and 31.28% are above 35 years. Regarding Type of Industries, Banking & Insurance are 34.81%, Manufacturing is 26.87%, and Telecom is 38.32%. Looking at the work experience, less than 2 years are 40.09%, 2 to 5 years are 29.51%, and more than 5 years are 30.40%.

General Details

Variables	Respondents	Percentage
Gender		
Male	124	54.62
Female	103	45.38
Total	227	100
Age (years)		
25 to 30	83	36.56
30 to 35	73	32.16
Above 35	71	31.28
Total	227	100
Industries		
Banking & Insurance	79	34.81

Manufacturing	61	26.87
Telecom	87	38.32
Total	227	100
Work Experience		
Less than 2 years	91	40.09
2 to 5 years	67	29.51
More than 5 years	69	30.40
Total	227	100

“Factor Analysis”

“KMO and Bartlett's Test”

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.806
Bartlett's Test of Sphericity	Approx. Chi-Square	3407.928
	df	91
	Sig.	.000

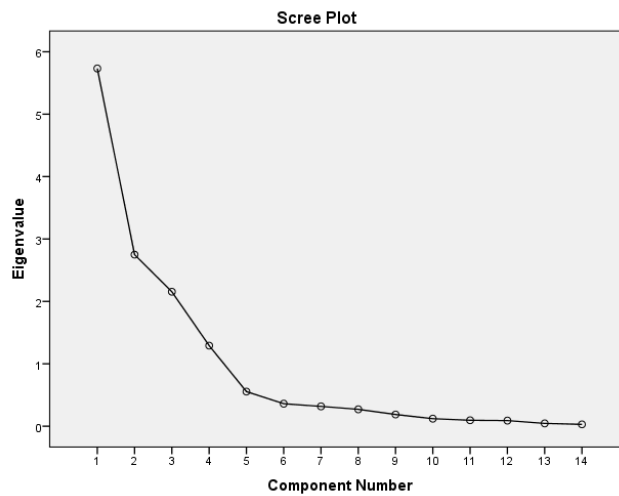
In table “KMO and Bartlett's Test” above, KMO value found is .806

“Total Variance Explained”

“Component”	“Initial Eigenvalues”			“Rotation Sums of Squared Loadings”		
	“Total”	“% Of Variance”	Cumulative %	“Total”	“% Of Variance”	Cumulative %
1	5.732	40.945	40.945	3.719	26.565	26.565
2	2.749	19.638	60.583	3.604	25.741	52.306
3	2.155	15.389	75.972	2.416	17.256	69.562
4	1.292	9.225	85.197	2.189	15.635	85.197
5	.555	3.962	89.160			
6	.361	2.579	91.738			
7	.318	2.268	94.007			

8	.271	1.935	95.942			
9	.188	1.341	97.283			
10	.121	.862	98.145			
11	.095	.681	98.826			
12	.090	.643	99.469			
13	.045	.323	99.791			
14	.029	.209	100.000			

All 4 factors contribute to explain total 85.197% of variance. The variance explained by Reduced Human Errors is 26.565%, Cost Reduction is 25.741%, Faster Task Execution is 17.256%, and Competitive Advantage is 15.635%.



Screeplot

Rotated Component Matrix

S. No.	Statements	Factor Loading	Factor Reliability
	Reduced Human Errors		.960
1.	Automation eliminates the risks of human errors	.950	
2.	Automated system is less prone to errors, making it more reliable	.946	
3.	It streamlines the process and reduces chances of errors in repetitive tasks	.936	

4.	Reduce risk of data inaccuracies due to human errors	.935	
	Cost Reduction		.974
1.	Automation reduces labour and operational cost of process	.969	
2.	Minimizes the requirement of physical space	.942	
3.	Reduces the cost of transportation and communication	.924	
4.	Automation reduces the cost re-processing of time-consuming process	.875	
	Faster Task Execution		.888
1.	Automated system works faster than humans, and easily completes tasks within strict deadlines	.891	
2.	Automating of system enables faster decision-making	.836	
3.	Difficult tasks become easier through automation of the process	.832	
	Competitive Advantage		.800
1.	Provides the ability of staying ahead of competitors in market	.874	
2.	Organization become more agile, and responsive compared to market competitors	.821	
3.	Extract valuable insights from data of competitors in market	.771	

Factors and associated variables

First factor in study is Reduced Human Errors that includes variables like, Automation eliminates the risks of human errors, Automated system is less prone to errors, making it more reliable, It streamlines the process and reduces chances of errors in repetitive tasks, and Reduce risk of data inaccuracies due to human errors. Second factor is the study is Cost Reduction, the variables included under this factor are, Automation reduces labour and operational cost of process, Minimizes the requirement of physical space, Reduces the cost of transportation and communication, and Automation reduces the cost re-processing of time-consuming process. Third factor is Faster Task Execution, variables under this factor are Automated system works faster than humans, and easily completes tasks within strict deadlines, automating of system enables faster decision-making, and automating of system enables faster decision-making. Fourth and last factor is Competitive Advantage, the variables under this factor are Provides the ability of staying ahead of competitors in market, Organization

become more agile, and responsive compared to market competitors, and extract valuable insights from data of competitors in market.

Reliability Statistics

Cronbach's Alpha	Number of Items
.883	14

Total reliability of 14 items including variables related to Role of Workplace Automation in Enhancing Performance and Efficiency is 0.883.

Conclusion

In the digital world, Industries grow with digitization and automation simultaneously. When technology and automation are used with proper combination of human skills and knowledge the proficiency of an organization to perform well also increases. It positively impacts the productivity of the organization. It also increases the efficiency of workers avoids hazards and risky task and helps to achieve organizational goal in timely manner. When modern technologies like artificial intelligence are integrated with accounting based automation system it significantly benefits the businesses. Such systems helps in completing the repetitive task which saves time and improves the overall efficiency of accounting system. Unlike humans such systems are less prone to errors which make them more reliable. The automation systems are also Integrated with the logistic and supply chain to reduce the manual task which is sometimes time consuming and prone to errors and mistakes. The automated system helps to track the inventory coming and going out from the warehouses.

Automation tools and software are specially designed to handle routine work repetitive tasks much faster with greater accuracy than human. The automation system reduces the risk of human errors. It reduces cost and complete the time consuming processes more effectively the humans. As the automated system have predefined rules and process, they produce more accurate results. The automation system provides real time data and insights which enables faster decision making which is important in today's fast-paced business environment. The workplace automation is a valuable tool for enhancing performance and efficiency of businesses. Four factors that determine the Role of Workplace Automation in Enhancing Performance and Efficiency are Reduced Human Errors, Cost Reduction, Faster Task Execution, and Competitive Advantage.

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