

Enhancing Employee Productivity Through Cloud-Based Digital HRM Solutions

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Abstract: As digital workplaces evolve, organizations are venturing more into the domain of advanced technology to automate HR functions as well as improve the performance of employees. The aim of this paper is to explore the effects of digital HRM practices on employees' productivity through cloud based HR systems, mobile accessibility and automated AI driven HR processes. This paper also discusses the key factors, workflows, challenges, and risks associated with Cloud-based Human Resource Management (Cloud HRM). AMOS Confirmatory Factor Analysis (CFA) is used in this paper to verify reliability and assessment of convergent and discriminant validity, and confirms the robustness of the measurement model. Structural Equation Modeling (SEM) used to validate the relationship between the important variables and hypotheses testing. The findings indicate that the adoption of cloud based HRM and mobile accessibility positively influence the productivity of employees by improving employees access to HR services. Organizations that are looking to use AI automation to boost productivity, they might need to invest effort in better implementing strategies, training programs and employee engagement programs to increase its benefits. Robustness of the framework is confirmed by model fit indices, which indicate the main role of cloud HRM adoption and HR mobile accessibility systems in enhancing workplace efficiency. It also points out the importance of organization strategies in implementing Artificial Intelligence driven HR tools, while leveraging digital HRM solutions to improve the productivity of the employees.

Keywords: Cloud HRM, Digital HRM, Employee Productivity, AI Driven HR Automation, Mobile Accessibility, HR Technology Adoption, Workforce Efficiency, Digital Transformation

1. Introduction:

According to [1] in today's fast digital age, organizations are looking for innovative solutions on how to manage workforce and streamline HR operations through workforce optimization, and improve employee experience. With its ability to digitize the core functions related to management of the human capital, the Digital Human Resource Management (HRM) solutions based on the cloud is transforming the traditional HR practices of the business. Given the increasing demand for flexibility, automation, and real-time knowledge with relation to HR functions like payroll, employee engagement, Recruitment, Training, and so on cloud based HRM systems offer a smooth and scalable way of dealing with HR functions [2].

Organizational success is directly linked with employee productivity. An efficient operation requires the input of a highly productive workforce; the employees who engaged contribute to business growth, retention of employees and workplace satisfaction. Many of the traditional HRM systems tend to be limited by manual processing and outdated infrastructural support and cant fulfill the evolving employees demand. These challenges are addressed by cloud based HRM solutions which integrate Artificial Intelligence (AI), automation, on the move accessibility and data driven analytics to give all employees and HR professionals alike. In the digital age, the adoption of cloud based

HRM as it's not a luxury anymore but a requirement [3]. When used by organizations, the solutions provide for more collaborative, better decision making, and improved clarity in HR practices. That includes AI based chat bots the use of which facilitates for employee queries, self service HR portals and Intelligent Analytics for performance management to provide employees a more interactive and personalized agency [4]. In addition, cloud platforms enable remote accessibility that allows HR functions to be easily accessed by employees at any place and at any time, developing a more connected and responsive work environment. This paper examines the effects of the cloud based digital HRM solutions on employee productivity. With the shift to cloud-based HR technologies, organizations can positively impact the efficiency and engagement of its people while further building a sustainable and future industry ready HR ecosystem that nurtures its workers to anticipate these expectations.

1.1 Key Factors of Cloud-Based HRM to Improve Employee Productivity

Fig 1 shows the use of cloud-based HRM enhances the productivity of an employee in various ways like automating HR processes, reducing administrative burdens and minimizing human errors [5]. AI-driven performance management allows for real time feedback, personal development plan based on these feedbacks, and data driven decision making resulting in employees being motivated and aligned to organization's mission.

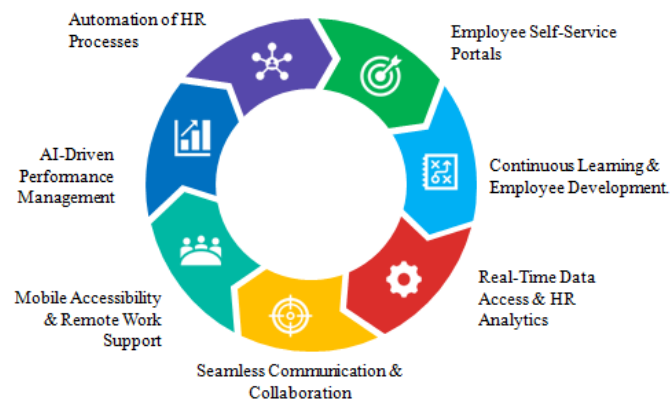


Fig. 1

Furthermore, the mobile accessibility and remote work support empower employees to manage the HR tasks from any device, and greatly contributes in enhancing the work life balance and ultimately improving the productivity. At the same time, real time HR analytics and predictive insights enable organizations to take the wise decisions in regards to workforce planning, absenteeism, and talent management [6]. An AI powered Learn Management System (LMS) provides continuous employee development through personalized training programs and create avenues of a career growth. By leveraging employee self service portals, HR admin workload is reduced and there's increased satisfaction of employees. With these key factors integrated, cloud based HRM brings forth an agile and data driven and an employee centric workspace leading to innovation, engagement and creating sustainable competitive advantage.

2. Objectives:

1. To evaluate how cloud based digital HRM has contributed to employee productivity.
2. To discuss the challenges, Risks and future trend in cloud computing based digital HRM.
3. To examine the advantages of the cloud computing based digital HRM

3. Literature Review:

3.1 How Cloud Based HRM works?

Cloud Based HRM (Human Resource Management) system works as a structured process and accommodates for secure access, role based functionalities and efficient data handling. The Fig 2 depicts that employees and HR are trying to log to the system using credentials as shown beneath. First the identity of the user is verified using the system by performing authentication. The user is given access if credentials are valid, and otherwise it's denied.

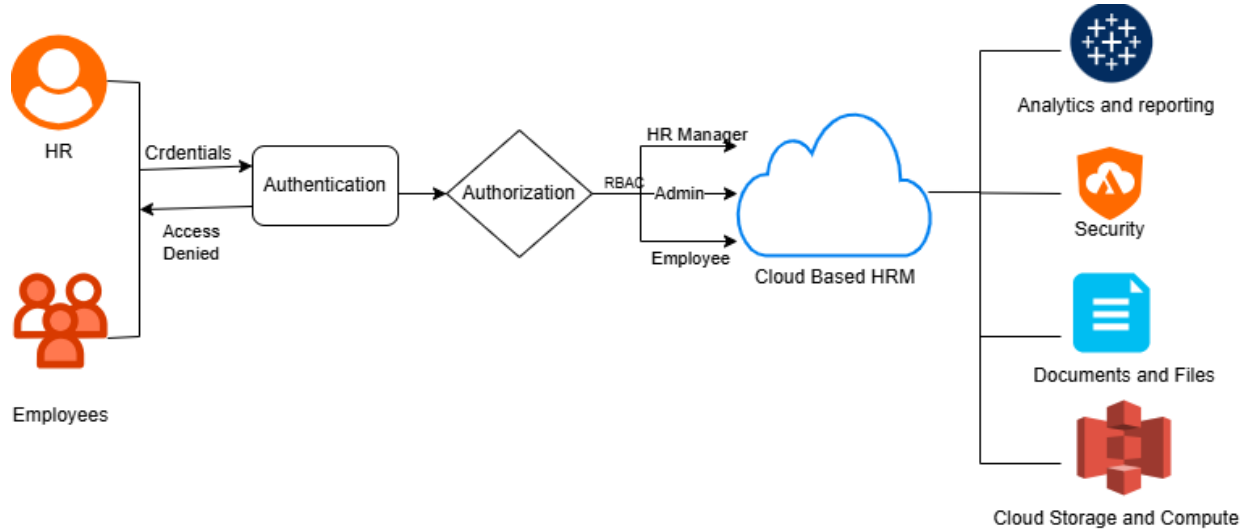


Fig. 2

Once employees are authenticated, the next phase is authorization, where the employee role determined using Role Based Access Control [7]. This prevents unauthorized personnel from accessing the HR functions. For example, employees only have access to their own profiles and leave request but HR managers can access all the employee records. They have a higher privilege to configure the system and manage the user roles. After the authorization is complete, the user gets connected to the Cloud-Based HRM system that offers a many important HR functions like Analytics and reporting give HR managers the ability to track an employee performance, productivity, and engagement levels using real time insights.

Since systems security is high in cloud HRM, it makes sure all user interactions and available data are protected using encryption and authentication mechanisms [8]. From centralized storage system employees and HR professional can access to documents and files like payslips, contracts, policies and leave applications. The HR data is stored securely, scalable and accessed remotely using the cloud storage and compute functionality. Integration of automation, data driven decision making and remote accessibility inside this cloud based infrastructure allow seamless HR operations with improvement of overall efficiency and employee engagement in the organization.

3.2 Risks and Challenges of Cloud Based Digital HRM:

Cloud based digital HRM systems have a lot of advantages and of course with several challenges and risks as shown in fig 3. According to [9], data security and privacy remain significant concerns as HR data contains sensitive employee information. [10] point out that it is necessary to observe the data protection regulations such as GDPR to reduce the risks. Other than this, system downtime and technical failures can also interrupt HR processes and result in inefficiencies [11].

Another challenge such as integration issues with existing enterprise systems that require extensive IT resources to operate seamlessly [12]. Also employees might not want to adopt the cloud based HRM because they do not have digital skills and perceived job insecurity [13]. There is a risk also includes vendor dependence where reliance on third party providers limits customization and extends the long run costs [14]. However, to address these challenges, we need strategic planning, strong security measures, and constant training of the employees regarding how to use cloud-based HRM solutions for productivity and engagement.



Fig. 3

4. Hypotheses Development:

- 1) There is a positive correlation between Cloud HRM System Adoption and employee productivity.
- 2) The relationship between AI Driven HR Automation and employee productivity is positively correlated.
- 3) There is significant relationship between Mobile Accessibility of HR Systems and employee productivity

5. Methodologies:

5.1 Design of Research

In order to obtain a thorough grasp of cloud based HRM and their effects on employee productivity. Taking a quantitative path, this research attempts to understand how Enhancing Employee Productivity through Cloud-Based Digital HRM Solutions. To evaluate how cloud based digital HRM enhance employee productivity, we used a structured questionnaire with a Likert scale. In the quantitative part of the study, the survey data is analyzed statistically.

5.2 Sampling Method

Reponses collected from HR professionals, managers, and employees from different fields like IT, manufacturing, and services who are very much aware of the DHRM processes. Specifically, we are choosing organizations that already have an established foundation in digitalization, which means this data we collect is being based in legitimate real data.

5.3 Sample Size

For the quantitative survey, we collected responses from 187 people including, HR managers, IT professionals and employees from different organizations. This number of participants would allow us to represent various roles and industries and make our study more valid and reliable.

5.4 Collection of Data

The primary data collected through online and offline mode from HR managers, professionals and employees using questionnaires. Perceptions of cloud based HRM and employee productivity are measured using a five-point Likert scale [15].

Secondary data are from publications, journals, industry reports white papers on cloud based HRM, digital transformation and employee productivity. To ensure a thorough investigation of cloud based HRM, the gathered data is subjected to regression for quantitative analysis.

4. Analysis and Discussion:

6.1 Confirmation Factor Analysis: AMOS software is used for executing confirmatory factor analysis. Reliability, convergent and discriminant validity is tested by using this model. The graphical representation of confirmatory factor analysis is shown in Fig 4.

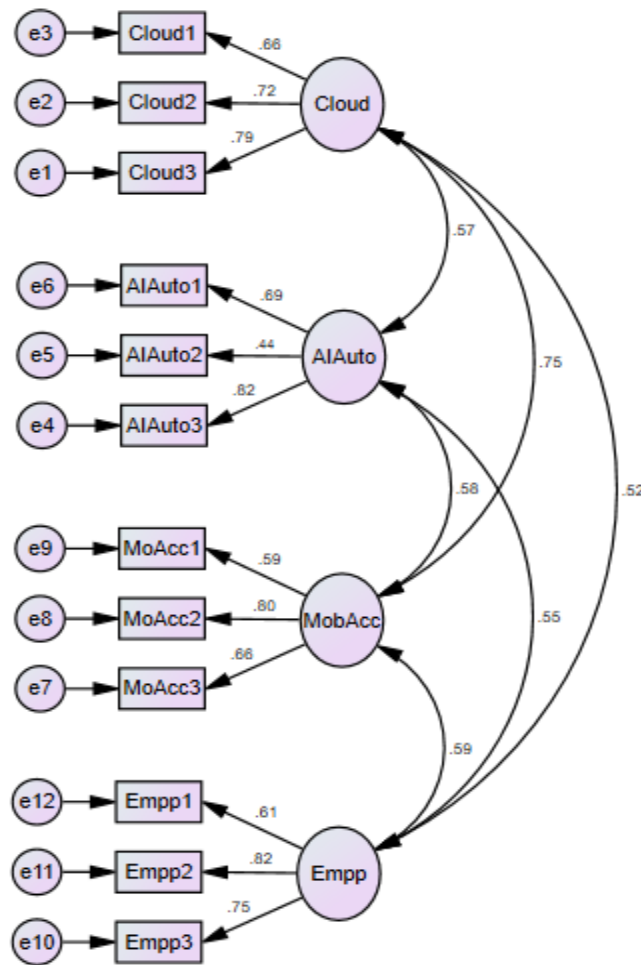


Fig. 4

Reliability and Convergent validity: The constructs in this study are well established as being reliable and valid and so providing strong evidence that the measurement model is stable and consistent. Cronbach's Alpha and Composite Reliability (CR) values from table 1 that all constructs have acceptable to excellent internal consistency, meaning the survey items effectively measure their intended concepts.

Table 1

Variables	Cronbach Alpha	Composite Reliability	Average Variance Extracted	Maximum Shared Variance

Mobile Accessibility of HR Systems	0.725	0.726	0.574	0.160
Cloud HRM System Adoption	0.771	0.771	0.530	0.260
AI-Driven HR Automation	0.897	0.897	0.649	0.338
Employee Productivity	0.772	0.773	0.535	0.274

AI-Driven HR Automation has the highest reliability (0.897), while the other constructs also show strong reliability. Convergent validity is confirmed as the Average Variance Extracted (AVE) values exceed 0.5, indicating that most of the variance in the indicators is captured by their respective constructs. Furthermore, it is discriminant valid ($MSV < AVE$) due to each construct being distinct, as MSV is less than AVE. This means Mobile Accessibility of HR Systems, Cloud HRM System Adoption, AI-Driven HR Automation, and Employee Productivity are separate and well-defined. The measurement model already has strong reliability and validity, which makes the measurement model well equipped to be analyzed with structural model though might need improvements in model fit to maximize predictive power.

Discriminant Validity: The discriminant validity tests if a constructs in a model is distinct and measures a different concept. This is established if the square root of the Average Variance Extracted (AVE) for every construct (diagonal values) is greater than its correlation with other constructs (off-diagonal values).

Table 2

Variables	Mobile Accessibility of HR Systems	Cloud HRM System Adoption	AI-Driven HR Automation	Employee Productivity
Mobile Accessibility of HR Systems	0.788			
Cloud HRM System Adoption	0.348	0.728		
AI-Driven HR Automation	0.581	0.369	0.670	
Employee Productivity	0.595	0.519	0.455	0.731

In this case, all constructs Mobile Accessibility of HR Systems, Cloud HRM System Adoption, AI-Driven HR Automation, and Employee Productivity from table 2 meet this criterion, confirming that they are distinct from each other. For example, the square root of AVE for Employee Productivity (0.731) is higher than its correlations with other constructs, ensuring that it measures a separate concept. Similarly, AI driven HR automation and mobile accessibility of HR systems are also well differentiated from other constructs but there is some sort of correlation between them. This suggests that despite the constructs being correlated, they capture the unique aspects associated with digital HRM and employee productivity, confirming the credibility and stability of the model for further investigation.

CFA Standardized Regression weights: The Confirmatory Factor Analysis standardized regression weights from table 3 indicate that how strongly each item is related to its respective factors like Cloud, AI Automation, Mobile Accessibility, and Employee Performance. An estimate value with a higher value implies a stronger relationship. The critical ratio (C.R.) values above 1.96 and the significance values (P ***) confirm that all relationships are statistically

significant. This validates the measurement model, thus proving that the chosen items are reasonably good representatives of their constructs. The model shows a good fit overall. The CMIN/DF value of 2.703 is within the acceptable range, indicating minimal discrepancy. A moderate fit but with some room for improvement is indicated by GFI of 0.887. RMSEA at 0.078 confirms a good model fit from table 4.

Table 3

Items			Estimate	S.E.	C.R.	P
Cloud3	<---	Cloud	1			
Cloud2	<---	Cloud	0.861	0.097	8.886	***
Cloud1	<---	Cloud	0.749	0.091	8.256	***
AIAuto3	<---	AIAuto	1			
AIAuto2	<---	AIAuto	0.819	0.158	5.185	***
AIAuto1	<---	AIAuto	1.106	0.148	7.486	***
MoAcc3	<---	MobAcc	1			
MoAcc2	<---	MobAcc	1.025	0.128	8.014	***
MoAcc1	<---	MobAcc	0.769	0.117	6.593	***
Empp3	<---	Empp	1			
Empp2	<---	Empp	1.243	0.14	8.887	***
Empp1	<---	Empp	0.877	0.118	7.441	***

Table 4

Fit Indices	Value	Acceptable Threshold	Interpretation
CMIN/DF	2.703	≤ 3 for good fit	Fit
GFI	0.887	≥ 0.90 for good fit	Moderate Fit
RMSEA	0.078	≤ 0.08 for good fit	Fit

6.2 Hypotheses Testing Through Structural Model:

To investigate the link among employee productivity, AI based HR automation, Cloud HRM System Adoption and mobile accessibility of HR systems, Structural equation modelling use the AMOS path analysis by imputing the factor score from CFA using AMOS. To test relationship of the variables we used regression weights as part of hypotheses testing. Structural model shown in fig 5 and its analysis shown below.

Structural model for hypotheses testing:

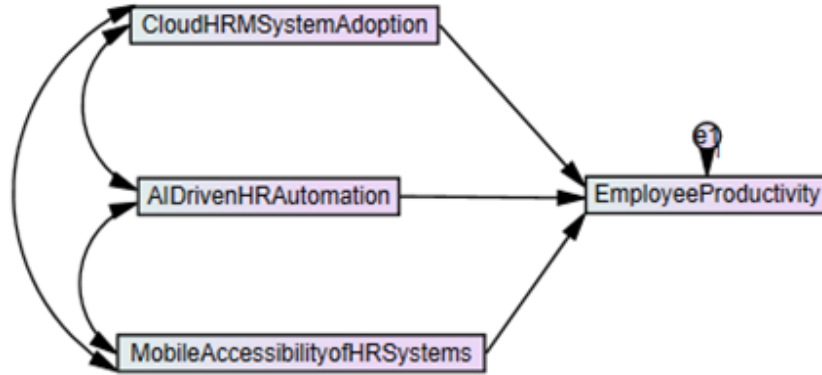


Fig. 5

Regression: Structural model results

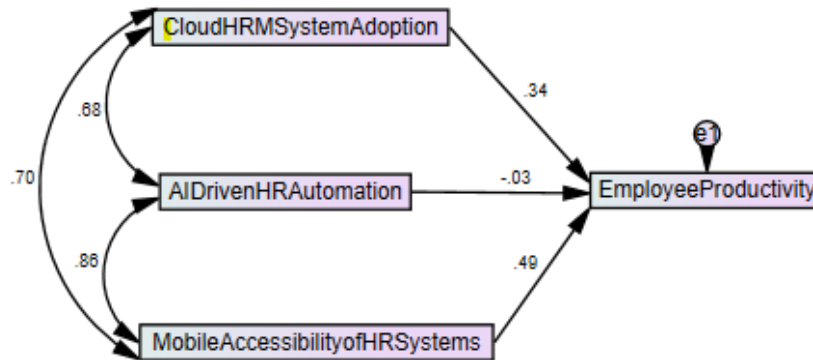


Fig. 6

Regression Weights:

Table 5

H.No	Path	Estimate	S.E.	C.R.	P	Label
H1	EmployeeProductivity <--- CloudHRMSystemAdoption	0.353	0.073	4.835	***	H1 Supported
H2	EmployeeProductivity <--- AIDrivenHRAutomation	-0.025	0.08	-0.32	0.549	H2 Not Supported
H3	EmployeeProductivity <--- MobileAccessibilityofHRSystems	0.373	0.077	4.866	***	H3 Supported

Table 6

Fit Indices	Value	Acceptable Threshold	Interpretation
CMIN/DF	2.012	≤ 3 for good fit	Fit
GFI	0.970	≥ 0.90 for good fit	Fit
RMSEA	0.048	≤ 0.08 for good fit	Fit

The analysis of the regression weights shown in fig 6 focuses on how various factors influence the level of employee productivity when it comes to the adoption of cloud based HRM, AI driven HR automation, and mobile accessibility of HR systems. Empirical findings from table 5 reveal that Cloud HRM System Adoption has a positive significant impact on employee productivity with a critical ratio of 4.835 and an estimate of (0.353) which is statistically significant at *** ($p < 0.001$). This implies that organizations that enable cloud adoption for HRM systems can see better employee efficiency, likely going to get better access to HR services, streamlined process as well as better data. Similarly, Mobile Accessibility of HR Systems also has a significant positive influence on employee productivity, with a coefficient of 0.373 and a C.R. of 4.866. This highlights that employee's flexibility, responsiveness and work efficiency improved are contributing to higher productivity, by enabling employees to access their HR tools as well as resources through mobile platform.

On the other hand, the result shows that AI Driven HR Automation is not significantly associated with employee productivity since the negative estimate equal to -0.025, C.R. equal to -0.32, and p-value equal to 0.549 are all not significant. This implies that while AI automation would increase HR operations, its effect on employee's productivity might be minimal or be dependent on factors such as employee adaptability, resistance to automation, or the need for human assistance in HR capabilities. This relationship is not significant so that AI-led HR tools may not be fully optimized or fully integrated. However, for organizations that are looking to use AI automation to boost productivity, they might need to invest effort in better implementing strategies, training programs and employee engagement programs to increase its benefits. Overall, the empirical findings show that cloud HRM adoption and the mobile accessibility facilitate the productivity of employees, while the productivity of employees is not improved by AI driven automation which requires further exploration and refinement. The model from table 6 shows a good fit overall. CMIN/DF (2.012) is within the acceptable range, GFI (0.970) exceeds the ideal threshold, and RMSEA (0.048) indicates minimal error. These results confirm the model is strong and reliable for analyzing the impact of cloud-based HRM on employee productivity.

6. Conclusion:

This paper intends to understand the impact of cloud based digital HRM on employee productivity. From the findings it was found that Cloud HRM System Adoption and Mobile Accessibility of HR Systems significantly contribute to improving employee productivity. Employees are benefited from smooth access to HR services, efficient workflows and real time information, which leads to better performance and responsiveness. However this study found that AI-Driven HR Automation is not having direct impact on employee productivity, irrespective of its growing trend in HR services. This shows that automation alone won't directly improve productivity without workflows are being integrated properly, employees successfully adapt and leverage it effectively. These findings underline the importance to take up cloud based HRM strategies, the well structured approach to manage HR functions through cloud based platforms facilitating automation, accessibility and data driven decisions making. These strategies aims at enabling a smooth access to HR services such as hiring, onboarding, training, and performance management, while encouraging system adoption among all the employees.

When comes to challenge and risk, this study suggests that lack of trainings, technological barrier and poor implementation could affect the benefits of AI tools. Despite that, cloud based digital HRM has a future, as the trend of emphasis on mobility, integration and user centric platform is rising. Finally, organizations that desire to increase their employees' productivity should prioritize the adoption of cloud HRM systems, increase mobile accessibility, and also it is necessary to invest in smarter AI integration strategies to harness its full potential.

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