



# Evolution of Human Resource Management in Digital Era

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## Abstract

Digital technology began significantly impacting HRM in the late 20th century, particularly with the widespread adoption of computer systems and software for managing HR processes. Digital technology is a boon for HRM. In this paper, we discuss how digital technology leads to the shrinkage of Human Resource Management Systems due to advancements in Digital Technology. It became more efficient, advanced, and human-friendly for the Public and service providers. The 1990s saw further advancements, with the internet revolutionizing communication and information-sharing. This led to the development of web-based HRIS, making HR processes more accessible and efficient. Since the early 2000s, digital technology has continued to shape HRM practices with the advent of cloud computing, data analytics, artificial intelligence (AI), and machine learning. These technologies have enabled HR professionals to streamline recruitment, talent management, performance evaluation, and employee engagement processes. Additionally, the rise of social media platforms has influenced recruitment strategies and employer branding efforts. Digital technology has revolutionized HRM by providing tools and platforms to enhance efficiency, decision-making, and employee experiences which is confirmed by p- values for six opinions by Chi Square test are 0.02, 0.02, 0.02, 0.01, 0.01 and 1.05E04 . For statistical Analysis I have used ORIGIN 2019 Software. Its integration continues to evolve, driving ongoing transformation within HR departments and across organizations.

Keywords: Human Resource Management Systems, Artificial Intelligence, Chatbot, Enterprise Resource Planning

## 1. Introduction :

Today, people are addressed by rapid ongoing changes in every corner of life. Organizations are adapting functional countermeasures to be fast, reliable, and comprehensive in order to survive in this business environment. Meanwhile, change management is key to survival for many organizations in the technological age. Change management is a systematic activity to prepare an organization for ongoing environmental changes in a business and operation context (Ahn et al., n.d.). Identifying the need for change requires a thorough understanding of the current state of the operating environment of the organization and a clear picture of how things could be efficient (Rissanen, 2016). Achieveit's (2018) article defines change management as an approach to prepare someone or a group of people or organizations for a desired future state.

The late 20th century witnessed a pivotal juncture in the evolution of HRM, marked by the pervasive influence of digital technology. As computer systems and software gained widespread adoption, they began reshaping traditional HR processes, offering newfound efficiency and sophistication. In this paper, we delve into the transformative impact of digital technology on HRM, particularly focusing on its role in shrinking HRMS while simultaneously enhancing their capabilities and accessibility for both stakeholders and service providers.

Throughout the 1990s, the internet emerged as a game-changer, revolutionizing communication and information dissemination. This era saw the inception of web-based HRIS, which not only streamlined HR operations but also fostered greater collaboration within organizations. The subsequent advent of cloud computing, data analytics, AI, and machine learning in the early 2000s further propelled HRM into the digital age. These technologies empowered HR professionals to optimize recruitment, talent management, performance evaluation, and employee engagement processes by leveraging data-driven insights and automation.

Moreover, the proliferation of social media platforms in recruitment strategies and employer branding efforts exemplifies the multifaceted impact of digital technology on HRM. By harnessing the power of social media, HR departments expanded their reach, engage with prospective candidates, and cultivated their organization's image as an employer of choice.

In light of these advancements, it is evident that digital technology has not only revolutionized HRM but also paved the way for ongoing innovation and adaptation. As organizations continue to embrace digital transformation, HR departments must navigate evolving landscapes to meet the dynamic needs of the workforce and organizational objectives. This paper seeks to explore the myriad ways in which digital technology has reshaped HRM practices, driving efficiency, informed decision-making, and improved employee experiences

## CHAPTER 2

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*This chapter includes an overview of the existing literature that is relevant to the research. This includes an overview of the literature on management, change management, digitalization. An overview of the existing literature on digitalization in HRM is also presented in order to cover the already existing knowledge.*

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## 2. Literature review:

### 2.1 Pre-1990 era:

In the early 20th century and prior to World War II, the forerunner of human resources management was primarily involved in clerical record keeping of employee information; in as “caretaker”. At this point in history, there were very few government influences in employment relations; consequently, employment terms, practices, and conditions were left to the owners of the firm. As a result, abuses such as child labor and unsafe working conditions were common.

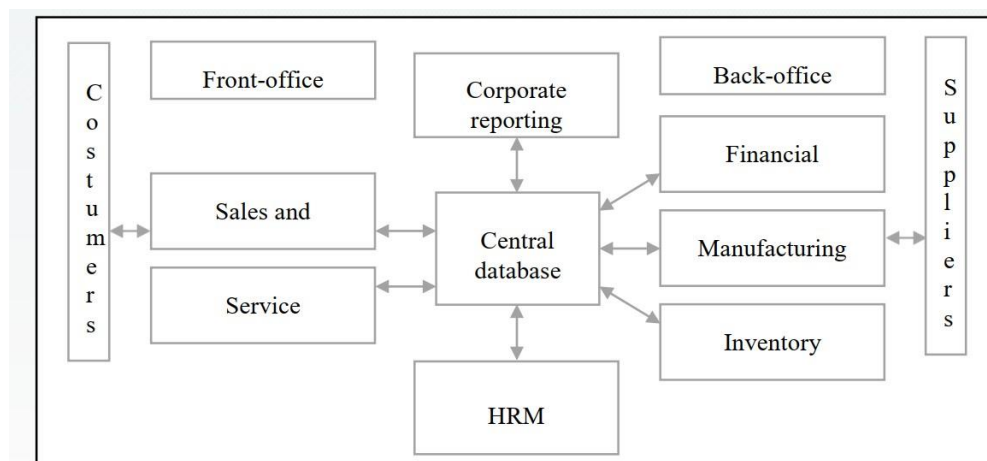
Some employers set up labor welfare and administration departments to look after the interests of workers by maintaining records on health and safety as well as recording hours worked and payroll. (Thite et al., 2011)

Human resources from its inception until the 1970s was primarily paper based. There were no enterprise resource planning (ERP) systems or employee databases to store information, and no way of automatically sharing information. To send documents up until this time we had only one option that was manually delivering it, either by courier or through the postal service. Unsurprisingly, this was a slow process. To save time, companies often sent the original document, compounding the time cost with the risk of losing the document along the way. At the very least, there wouldn't be any time to edit or review documents once they'd been sent, and the recipient wouldn't be able to react for days at a time. Although FAX machines had existed for decades, it wasn't until 1980 that they went mainstream, with the introduction of an international standard allowing for their success. After all, we can't send a FAX to someone without both of you having access to a machine.

Being able to send contracts to a director based in another office, for example, now took a fraction of the time it would have previously. HR departments could now also keep hold of the original documents, ensuring their safety and improving organisation by keeping all documents in one location.

### 2.1.1 Emergence of ERP in HRM :-

A key development in the world of ERP, 1987 saw the introduction of PeopleSoft as the first-ever purpose-built HR management system. An ERP system is an integrated computer application software utilized to effectively handle the whole set of resources and processes in an organization (Bighrissen *et al.*, 2012). Cotran *et al.* (2005) explain that all functional departments and processes, including warehousing, manufacturing and distribution, accounting, marketing, HR and strategic management are integrated into one system. All users can have access to all information since the authority moves to the front-line, and processes become visible and become standardized, users from multiple levels gain access to all relevant and required information (Hurbean 2008). The ultimate goal of implementing an ERP system was to manage and orchestrate all resources, information, and business processes from common data repositories (Devos *et al.* 2017).



**Figure 1-** Integration of all processes with ERP systems (Source: Hossain *et al.*, 2002)

## 2.2 1990s: World Wide Web based ERPs:

Now for the first time in the early 1990s. This wonderful network allowed computers all over the world to interact with each other, paving the way for globalisation and the digital landscape. Emails were no longer restricted to internal networks and websites could shout your message to the entire world.

In HR, websites changed the landscape of recruitment by expanding the available talent pool. Recruiters were no longer restricted to selecting from a narrow pool of applicants made aware of the role in the local newspaper. Instead, they could advertise a role to anyone with an internet connection, hoping to attract the most qualified candidates.

Web Services offer crucial advantages such as an ease of integration and cost reductions through the hosted application model in ERP System(Tarantilis et al., 2008). With the availability of Web Services, integration can be achieved with superior reliability, security, manageability, testing and effectiveness. Web Services use object oriented technology to mix data and programming elements in Web Service methods that can be accessed by different applications. Web Services enable proprietary applications to communicate over the Web. Proprietary ERP applications and Web Services can use integration or other tools— such as SAP’s Netweaver, HP’s E-Speak toolsets; IBM’s Dynamic e-business (infrastructure and software); and Sun ONE (Forte technology and iPlanet’s ECXpert)—all of which facilitate data flow and communication across diverse applications. Web-Services combined with ERP provide an integrated, multi-component application software platform ideal for performing multiple business functions.

### Some key dates

Years of evolution	Paradigm shifts
1991	The world wide web is released to the general public.
1993	The Mosaic web browser is developed by the National Center for Supercomputing Applications, allowing images to be displayed alongside text for the first time.
1994	Monster established the first-ever online job searching database.
1996	Frontier Technologies release Intranet Genie, a bundle of applications for creating intranets
1998	Applicant Tracking Systems (ATS) allow pre-determined criteria to be filtered
1999	The internet has 400 million users worldwide

## 2.3 2000s: Intranets and employee support

Internet is a great way to interact with external stakeholders, in the early 2000s it wasn't really used for internal communications. For internal communications, the intranet was born. An intranet mimicked the internet while limiting access to those within a specific organisation. This allowed more focused (and sometimes sensitive) information to be shared, such as company news, internal structural changes, and announcing employee departure. The more astute amongst us will recall that intranets had existed since before the internet. Indeed, they had. But the invention of the internet in the 1990s gave the old and dusty intranet a massive boost, making them more useful. The world wide web meant that intranets could now be accessed remotely, for example, extending their reach outside of the office's physical location. Use of an intranet goes further than the simplistic communication of emails, allowing for a more visual

presentation. They also serve as fantastic hubs for company information, allowing for the storage of useful documents which can be freely downloaded by employees when needed. Employees could also be identified and organised with individual accounts containing their personal information, a useful tool for HR departments responsible for large businesses.

New technologies, such as the internet, enable internal service providers, to supply their services to their internal customers with a capability and degree of interaction not previously possible (Alleyne, 2003). Thus, there was little constraint on time, place or service provider availability. The potential for customisation and flexibility allows managers to control the information and services they receive. The technology also enables the HR function to closely develop relationships with its constituencies (Tsui, 1987) and provides opportunities for greater effectiveness and satisfaction of both parties. However, whilst internal customer satisfaction and user satisfaction is identified as important to both external customer satisfaction (Bowen and Schneider, 1988; Heskett et al., 1994)

and IS success respectively (Ives and Olson, 1984; DeLone and McLean, 1992), the HR function has lagged behind other internal functions in its adoption of IT innovations (Dunivan, 1991; Martinsons, 1997). The HR function has not been proactive in its use of internet technology in order to provide integrated services or to communicate more effectively with its customers to elicit and fulfil their changing expectations (Elliott and Tevavichulada, 1999). Changes in the sophistication and availability of information technologies (IT) are also gaining increasing momentum. Whilst research on the impact of IT often suggests contradictory organisational consequences and user satisfaction outcomes (Robey and Boudreau, 1999), there is general agreement that its impact on the way we work is enormous and far-reaching. Scope has also increased as internet technology enables {Bibliography} thousands of individual computer networks all over the world to be linked, encompassing a range of capabilities not possible with previous business processes. Yet, whilst much has been written on the impact of the use of internet technology on businesses' external relationships, little has been said since Legge (1989) about its influence on the relationship between internal service-providing functions and their customers. Legge (1989), in particular, contemplated whether the HRM function should play a more proactive role in relation to new technologies.

Supporting the changing role of managers and Managers' involvement are one of the ice breaking findings centred on the nature of the managers' satisfaction, namely, the perceived level of HR intranet support for the changing role of managers, and managers involvement in the planning, marketing and feedback regarding quality of technology, quality of information and quality of service, of the HR intranet applications.

### **2.3.1. Supporting the changing role of managers:**

The roles of most of the managers in the study were reported as having changed substantially in response to developments in the company itself and to their own customers' expectations. The extensive downsizing that had taken place meant a wider job related remit for many, higher productivity requirements and considerable staffing variations. Line managers reported that they had greater "people type" responsibilities largely due to the greater devolution of



different HR activities. As well as the increased pressure this had brought, concerns were expressed over role ambiguity and an increased need for HR support and training to enable managers to perform these new activities satisfactorily.

### 2.3.2. Managers' involvement :

Participants' responses concerning quality of technology, quality of information and quality of service of the HR intranet applications, found that satisfaction (or no satisfaction) appeared to be considered only if one or more aspects were perceived to be either particularly outstanding or poor. On this basis, for some, satisfaction was declared only because there had been no negative experience to indicate otherwise. The most vivid responses, however, came from extremes of experience.

### 2.4 2010s: HR portals, live chat, and first steps towards chatbots

Chatbot can be considered as the fundamental advanced technologies in the field of natural language processing (NLP). It has been used by the business organizations mainly for the communication purpose. In the organization, Chatbot can help HR by providing more prompt respond with the candidates, employees and existing team (Nawaz & Gomes, 2019). The real human will take some time for communication, however chatbots can provide reply promptly within a fraction of seconds, at any time. The technology can give more feedback for ideas, complaints etc. The process becomes easier to a bot than to a human. It can take a huge load of work from HR regarding questions, scheduling etc. There are some advantages by using chatbot in HR, which is discussed in the following sections. Figure 2 depicts the functionality of HR-bots in an organization. Candidates are sometimes nervous of the judges, to think about how they will perceive, which grows much tension and anxiety within them. Even the most confident candidate can be confused by this reaction and lost their chances to crack their interviews. Meanwhile, chat-bot is very much user-friendly which asks questions and does not make judgment. Candidate could face the interview at home and based on that employers can review the answers (Brandtzaeg & Følstad, 2017). This process helps to reduce the work loads of HR professionals, they can just observe and decide to whom they will be calling without taking hundreds of interviews through sitting for a long time.

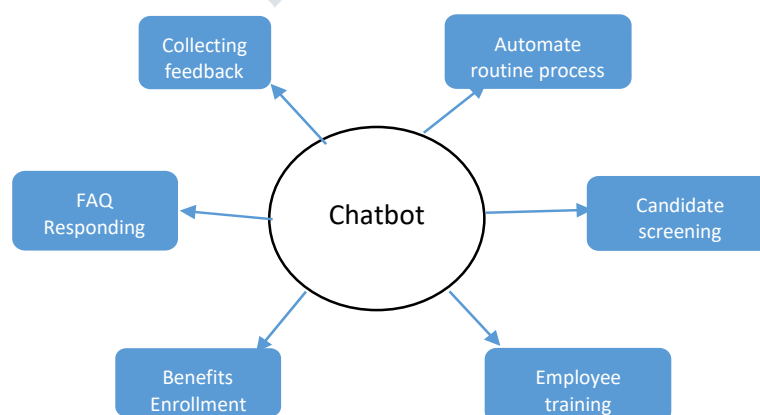


Fig. 2 functionality of chatbots in HRM

## 2.5 2020s: chatbots scale the HR function

Enhancement of human resource functions through chatbots for stimulating human conversations, a chatbot has been made and implemented in the workplace. Chatbot makes every business function smooth and easy. It has a great impact in the field of human resource. It acts as a virtual assistant and it is used to communicate with employees through various online media. The HR people in the business can be able to enhance the human resource functions through chatbots.

### 2.5.1 Strategy of HR operations through chatbots

The ways that are used by HR at work changes slowly by chatbots. In modern days of business, HR(s) have to perform very challenging jobs with conflicting goals. The HR teams are formulating the strategic goals of business now a days. They are also dealing with brand, employee experience, communication channels, change management etc. (Proctor & Doukakis, 2003). With the help of AI tool, people management can be handled in an easy and effectively way. In this scenario, several HRs give effort to finish the job that chatbot can do alone. The total communication system can be based on automation. If any employee of the company wants to know the company policy or the employee wants to apply for leave, they can directly make it through bot. A bot can work as information provider in any company. In this way, the company can save more time and effort of the HR for other important responsibilities.

### 2.5.2 Automate HR routine processes

As discussed earlier, chatbot automates the routine process in the company. The end to end recruitment cycle can be done by using chatbot technology in the company. When new employees join the workplace, they have so many queries to the HR department. The bot makes the process smooth and helps the employee orientation programme easy. The other activities like tracking attendance, performance rating, tracking leaves, tracking the employees needs and surveys etc. are done by bots.

### 2.5.3 Employee engagement using HR-bots

The fundamental focus of HR teams is employee engagement and retention. It is proved by statistics that 88% of HR professionals consider about employee engagement for their organization (Shuck et al., 2011). The HR department needs to focus and analyse the needs of the employees. When they can provide all the facilities required by the employees that time, they can make the high engagement level from the employees. They also need to take care of emotional factors of the employees. When chatbots makes the other tasks easy, the HR teams can do the hard work on employees' engagement. It helps to maintain a positive work environment and improves the employee experience. If the right employee engagement system is implemented, 974 International Journal of Speech Technology (2021).

#### Objective:-

- To examine the impact of digital technology on Human Resource Management (HRM).
- To analyze how digital technology has enhanced the efficiency for both the public and service providers.
- To examine web-based HR Information Systems (HRIS) and making HR processes more accessible and efficient.
- To investigate the impact of cloud computing, data analytics, artificial intelligence (AI), and machine learning, and their impact on recruitment on Human Resource Management (HRM).

## CHAPTER 3

### Research Methodology

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*This chapter includes an overview of the research methodology adopted to achieve the objectives of the research. The chapter begins with the purpose of the study followed by objectives and the details research methodology used in the study*

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#### 3. Hypotheses Testing:

Acceptance or rejection of the hypothesis is determined by the significance value of the Tstatistics and the p-value. When the p-value is less than 0.05 and the T-statistics value is higher than 1.96 (5%) the hypothesis can be accepted.

$H_{a1}$  : Technology has greatly improved the HR process.

p-Value for opinion 1 is 0.02 and hence Null Hypothesis should be rejected.

$H_{a2}$ : I believe HR professionals should stay updated with technological advancements.

p-Value for opinion 2 is 0.02 and hence Null Hypothesis should be rejected.

$H_{a3}$  : HR professionals should continuously improve their digital skills.

p-Value is 0.02 and hence Null Hypothesis should be rejected.

$H_{a4}$  : Digital platform enhance employee engagement and collaboration.

p-Value is 0.01 and hence Null Hypothesis should be rejected.

$H_{a5}$  : Social media has made recruitment more efficient.

p-Value is 0.01 and hence Null Hypothesis should be rejected.

$H_{a6}$  : There is a need for further research in HRM related to digitalization.

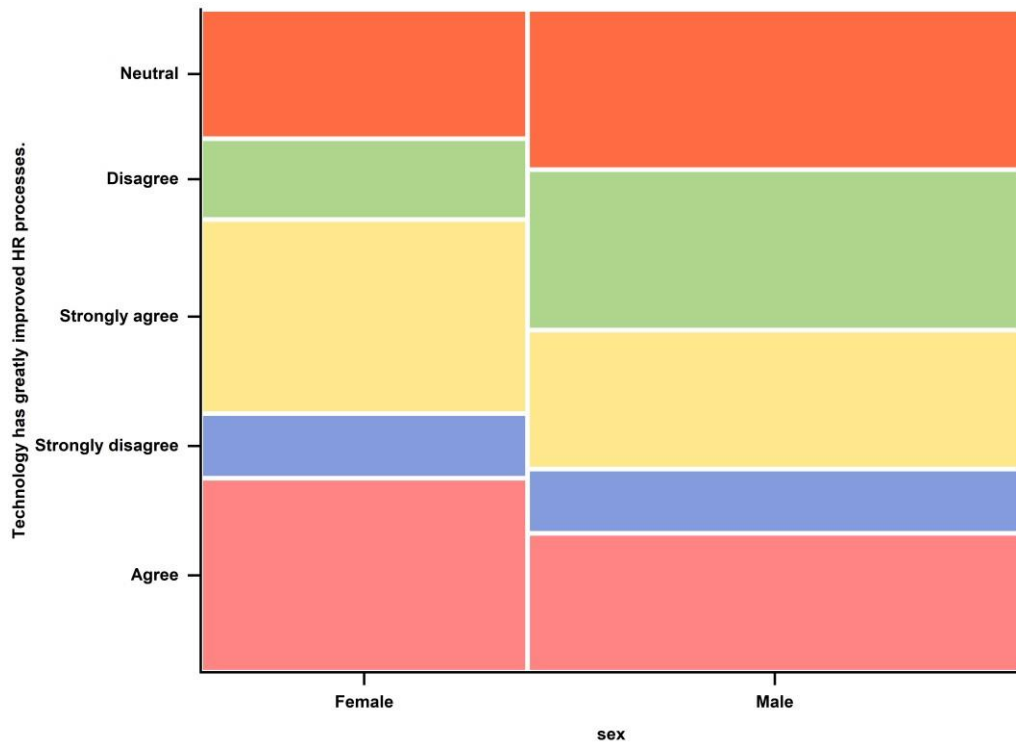
p-value is 0.01 and hence Null Hypothesis should be rejected.

#### 4. Results and Discussions :-

Drawing from the findings of surveys distributed via google forms, 100 responses were collected. After performing Statistical Analysis all 6 p-values reject the Null Hypothesis. Therefore we can conclude that  $H_{a1}$ ,  $H_{a2}$ ,  $H_{a3}$ ,  $H_{a4}$ ,  $H_{a5}$  and  $H_{a6}$  should be accepted. Among the respondents who agree, 62% were men and 38% were women, and most of the respondents were aged between 20-24, which is 64.6%. 60% of the respondents purchase more often agreed from digitalization of HRM.



4.1.1 Mosaic plot :-



4.1.2 Contingency table:-

		Technology has greatly improved HR processes.						
		Agree	Strongly disagree	Strongly agree	Disagree	Neutral	Total	
sex	Female	Row%	29.26829	9.7561	29.26829	12.19512	19.5122	100
		Col%	48	40	48	25	34.78261	39.80583
		Total%	11.65049	3.8835	11.65049	4.85437	7.76699	39.80583
	Male	Row%	20.96774	9.67742	20.96774	24.19355	24.19355	100
		Col%	52	60	52	75	65.21739	60.19417
		Total%	12.62136	5.82524	12.62136	14.56311	14.56311	60.19417
Total	Row%	24.27184	9.70874	24.27184	19.41748	22.3301	100	
	Col%	100	100	100	100	100	100	
	Total%	24.27184	9.70874	24.27184	19.41748	22.3301	100	

4.1.3 Chi square test:-

	ChiSquare	DF	Prob > ChiSq
Pearson Chi-Square	3.47326	4	0.48196
Likelihood Ratio	3.5681	4	0.4676

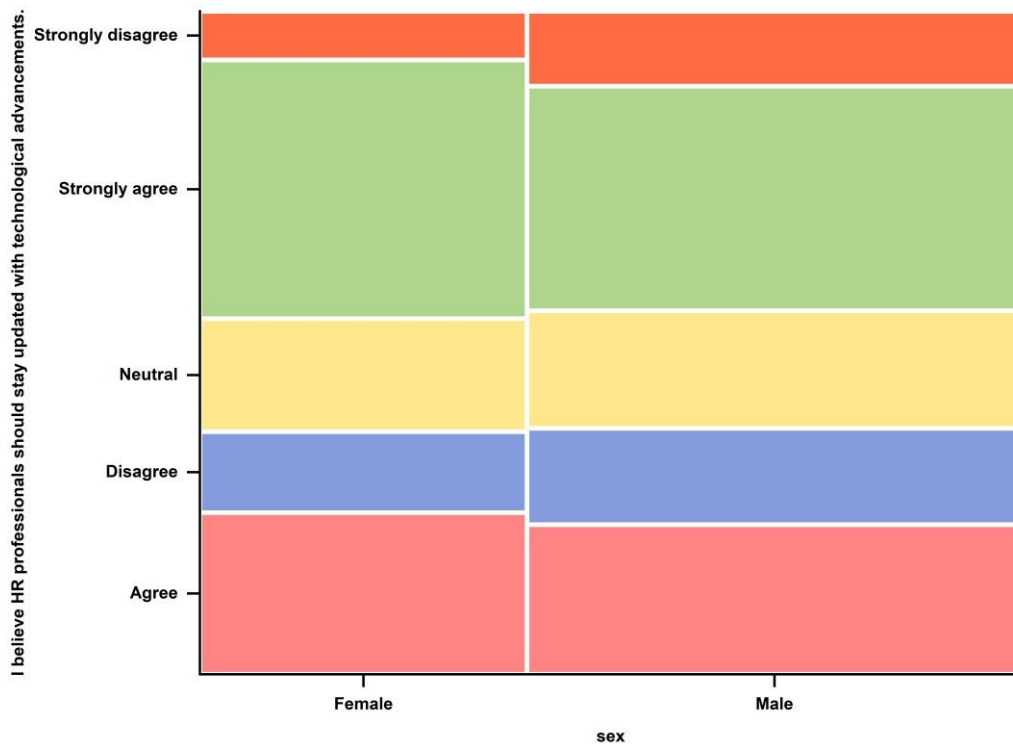
According to Pearson Chi-Square test:

**At the 0.05 level, there is NOT significant evidence of association between two variables.**

4.1.4 Measure of association :-

		Value	SE	LCL	UCL
Phi		0.18363			
Cramer's V		0.18363			
Contingency Coefficient		0.18061			
Lambda	C R	0.02564	0.06696	0	0.15689
	R C	0	0	0	0
	Symmetric	0.01681	0.0441	0	0.10325
Uncertainty Coefficient	C R	0.01106	0.01146	0	0.03351
	R C	0.02577	0.02667	0	0.07804
	Symmetric	0.01547	0.01603	0	0.04688

4.2 I believe HR professionals should stay updated with technological advancements. 4.2.1 Mosaic plot



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#### 4.2.2 Contingency table:-

			I believe HR professionals should stay updated with technological advancements.					
			Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Total
sex	Female	Row%	24.39024	12.19512	17.07317	39.02439	7.31707	100
		Col%	41.66667	35.71429	38.88889	43.24324	30	39.80583
		Total%	9.70874	4.85437	6.79612	15.53398	2.91262	39.80583
	Male	Row%	22.58065	14.51613	17.74194	33.87097	11.29032	100
		Col%	58.33333	64.28571	61.11111	56.75676	70	60.19417
		Total%	13.59223	8.73786	10.67961	20.38835	6.79612	60.19417
	Total	Row%	23.30097	13.59223	17.47573	35.92233	9.70874	100
		Col%	100	100	100	100	100	100
		Total%	23.30097	13.59223	17.47573	35.92233	9.70874	100

#### 4.2.3 Chi square test:-

	ChiSquare	DF	Prob > ChiSq
Pearson Chi-Square	0.72257	4	0.94852
Likelihood Ratio	0.73676	4	0.94672

According to Pearson Chi-Square test:

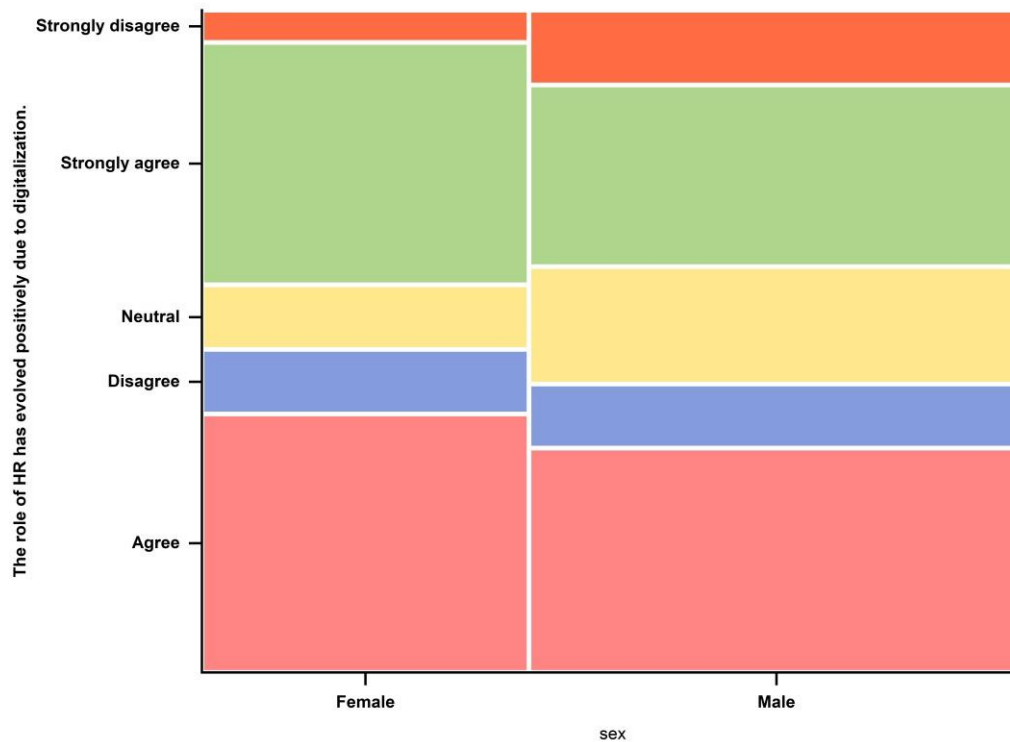
**At the 0.05 level, there is NOT significant evidence of association between two variables.**

#### 4.2.4 Measure of association :-

		Value	SE	LCL	UCL
Phi		0.08376			
Cramer's V		0.08376			
Contingency Coefficient		0.08346			
Lambda	C R	0	0	0	0
	R C	0	0	0	0
	Symmetric	0	0	0	0
Uncertainty Coefficient	C R	0.00237	0.00545	0	0.01305
	R C	0.00532	0.01225	0	0.02932
	Symmetric	0.00328	0.00754	0	0.01806

### 4.3 The role of HR has evolved positively due to digitalization

#### 4.3.1 Mosaic plot :-



#### 4.3.2 Contingency table:-

			The role of HR has evolved positively due to digitalization.					
			Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Total
sex	Female	Row%	39.02439	9.7561	9.7561	36.58537	4.87805	100
		Col%	43.24324	40	26.66667	46.875	22.22222	39.80583
		Total%	15.53398	3.8835	3.8835	14.56311	1.94175	39.80583
	Male	Row%	33.87097	9.67742	17.74194	27.41935	11.29032	100
		Col%	56.75676	60	73.33333	53.125	77.77778	60.19417
		Total%	20.38835	5.82524	10.67961	16.50485	6.79612	60.19417
	Total	Row%	35.92233	9.70874	14.56311	31.06796	8.73786	100
		Col%	100	100	100	100	100	100
		Total%	35.92233	9.70874	14.56311	31.06796	8.73786	100

#### 4.3.3 Chi square test:-

	ChiSquare	DF	Prob > ChiSq
Pearson Chi-Square	3.0921	4	0.54253
Likelihood Ratio	3.23272	4	0.51966

According to Pearson Chi-Square test:

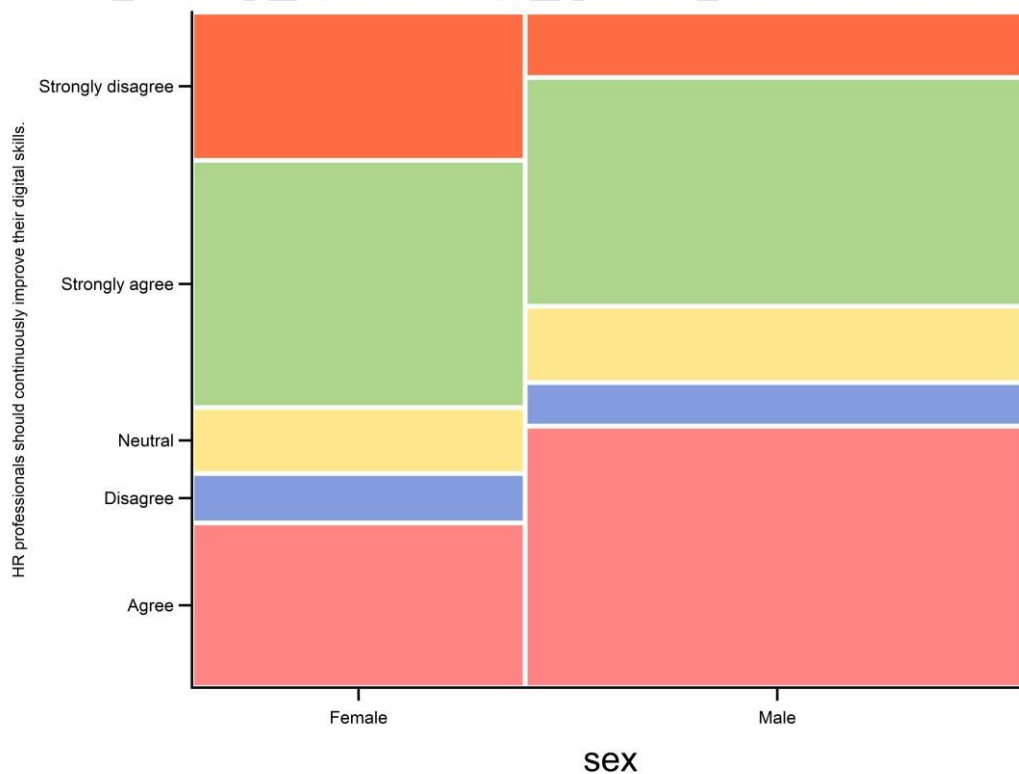
**At the 0.05 level, there is NOT significant evidence of association between two variables.**

4.3.4 Measure of association :-

		Value	SE	LCL	UCL
	Phi	0.17326			
	Cramer's V	0.17326			
	Contingency Coefficient	0.17072			
Lambda	C R	0	0	0	0
	R C	0	0	0	0
	Symmetric	0	0	0	0
Uncertainty Coefficient	C R	0.01082	0.01163	0	0.03361
	R C	0.02334	0.02513	0	0.07261
	Symmetric	0.01478	0.0159	0	0.04594

4.4 HR professionals should continuously improve their digital skills. 4.4.1 Mosaic plot

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4.4.2 Contingency table:-

			HR professionals should continuously improve their digital skills.					
			Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Total
sex	Female	Row%	24.39024	7.31707	9.7561	36.58537	21.95122	100
		Col%	29.41176	42.85714	36.36364	41.66667	60	39.80583
		Total%	9.70874	2.91262	3.8835	14.56311	8.73786	39.80583
	Male	Row%	38.70968	6.45161	11.29032	33.87097	9.67742	100
		Col%	70.58824	57.14286	63.63636	58.33333	40	60.19417
		Total%	23.30097	3.8835	6.79612	20.38835	5.82524	60.19417
	Total	Row%	33.00971	6.79612	10.67961	34.95146	14.56311	100
		Col%	100	100	100	100	100	100
		Total%	33.00971	6.79612	10.67961	34.95146	14.56311	100

4.4.3 Chi square test:-

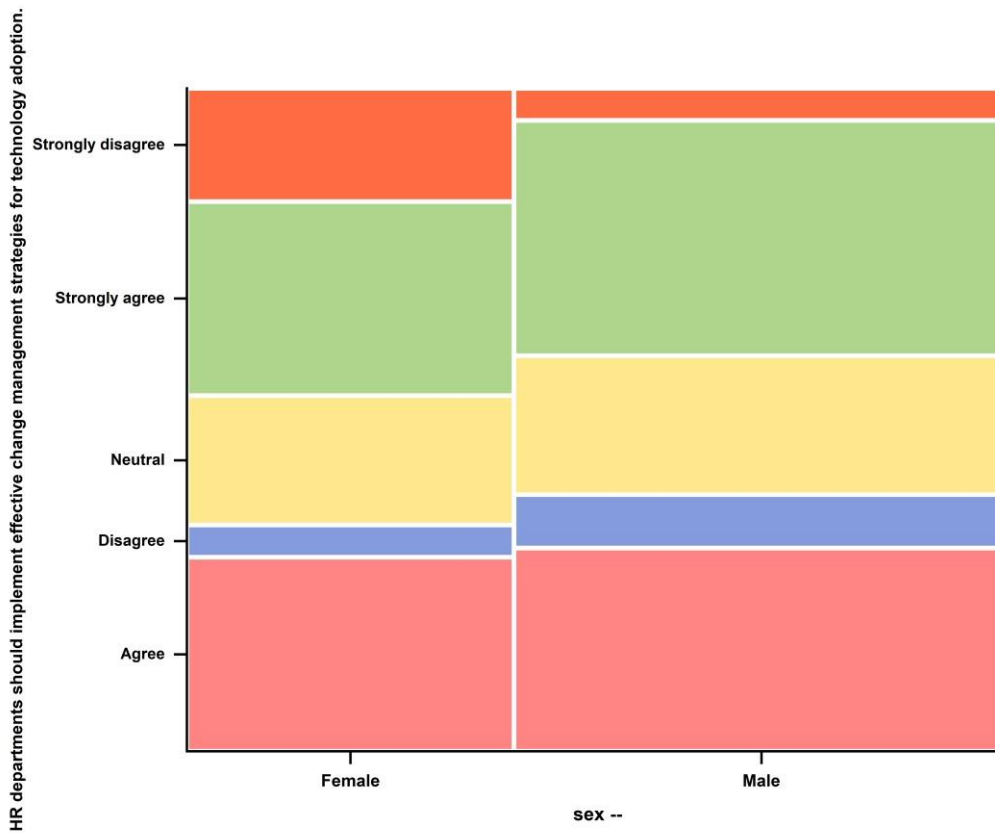
	ChiSquare	DF	Prob > ChiSq
Pearson Chi-Square	4.21959	4	0.3771
Likelihood Ratio	4.20879	4	0.37849

According to Pearson Chi-Square test:  
**At the 0.05 level, there is NOT significant evidence of association between two variables.**

4.4.4 Measure of association :-

		Value	SE	LCL	UCL
Phi		0.2024			
Cramer's V		0.2024			
Contingency Coefficient		0.19838			
Lambda	C R	0.04478	0.09786	0	0.23657
	R C	0.07317	0.09094	0	0.25141
	Symmetric	0.05556	0.06959	0	0.19196
Uncertainty Coefficient	C R	0.01423	0.01374	0	0.04117
	R C	0.03039	0.02934	0	0.0879
	Symmetric	0.01939	0.01871	0	0.05606

4.5 HR departments should implement effective change management strategies for technology adoption. 4.5.1 Mosaic plot :-



4.5.2 Contingency table:-

		HR departments should implement effective change management strategies for technology adoption.						
		Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Total	
sex	Female	Row%	29.26829	4.87805	19.5122	29.26829	17.07317	100
		Col%	38.70968	28.57143	38.09524	35.29412	70	39.80583
		Total%	11.65049	1.94175	7.76699	11.65049	6.79612	39.80583
	Male	Row%	30.64516	8.06452	20.96774	35.48387	4.83871	100
		Col%	61.29032	71.42857	61.90476	64.70588	30	60.19417
		Total%	18.4466	4.85437	12.62136	21.35922	2.91262	60.19417
Total	Row%	30.09709	6.79612	20.38835	33.00971	9.70874	100	
	Col%	100	100	100	100	100	100	
	Total%	30.09709	6.79612	20.38835	33.00971	9.70874	100	

4.5.3 Chi square test:-

	ChiSquare	DF	Prob > ChiSq
Pearson Chi-Square	4.50367	4	0.34211
Likelihood Ratio	4.44369	4	0.34928

According to Pearson Chi-Square test:

**At the 0.05 level, there is NOT significant evidence of association between two variables.**

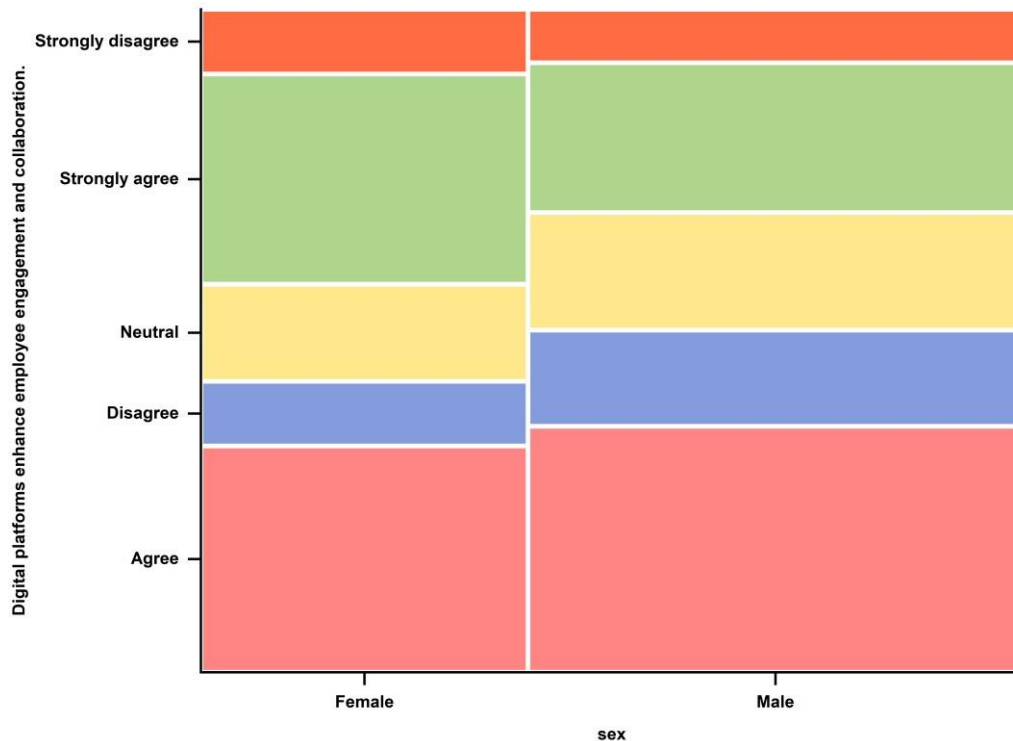
4.5.4 Measure of association :-

		Value	SE	LCL	UCL
	Phi	0.20911			
	Cramer's V	0.20911			
	Contingency Coefficient	0.20468			
Lambda	C R	0	0.071	0	0.13916
	R C	0.09756	0.07327	0	0.24117
	Symmetric	0.03636	0.05187	0	0.13802
Uncertainty Coefficient	C R	0.01477	0.01376	0	0.04174
	R C	0.03209	0.03006	0	0.091
	Symmetric	0.02023	0.01887	0	0.05722



4.6 Digital platforms enhance employee engagement and collaboration

4.6.1 Mosaic plot :-



4.6.2 Contingency table:-

			Digital platforms enhance employee engagement and collaboration.					
			Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Total
sex	Female	Row%	34.14634	9.7561	14.63415	31.70732	9.7561	100
		Col%	37.83784	30.76923	35.29412	48.14815	44.44444	39.80583
		Total%	13.59223	3.8835	5.82524	12.62136	3.8835	39.80583
	Male	Row%	37.09677	14.51613	17.74194	22.58065	8.06452	100
		Col%	62.16216	69.23077	64.70588	51.85185	55.55556	60.19417
		Total%	22.3301	8.73786	10.67961	13.59223	4.85437	60.19417
	Total	Row%	35.92233	12.62136	16.50485	26.21359	8.73786	100
		Col%	100	100	100	100	100	100
		Total%	35.92233	12.62136	16.50485	26.21359	8.73786	100

4.6.3 Chi square test:-

	ChiSquare	DF	Prob > ChiSq
Pearson Chi-Square	1.51231	4	0.82446
Likelihood Ratio	1.51407	4	0.82415

According to Pearson Chi-Square test:

**At the 0.05 level, there is NOT significant evidence of association between two variables.**

4.6.4 Measure of association :-

		Value	SE	LCL	UCL
Phi		0.12117			
Cramer's V		0.12117			
Contingency Coefficient		0.12029			
Lambda	C R	0	0	0	0
	R C	0	0	0	0
	Symmetric	0	0	0	0
Uncertainty Coefficient	C R	0.00493	0.00798	0	0.02058
	R C	0.01093	0.0177	0	0.04563
	Symmetric	0.0068	0.011	0	0.02836

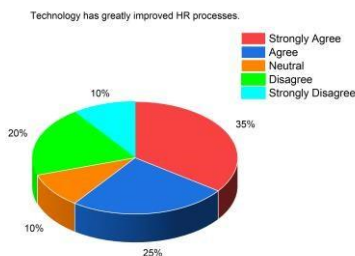


Fig 3.

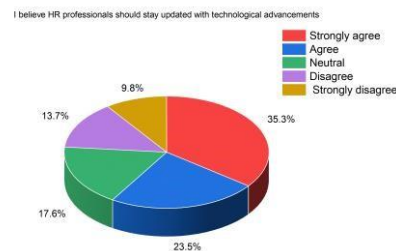


Fig 4.



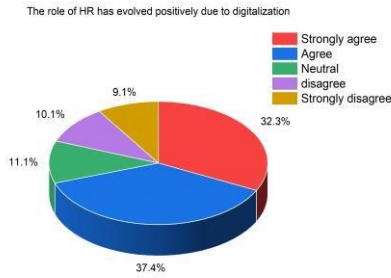


Fig 4.

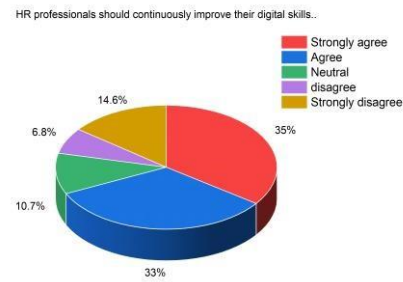


Fig 6.

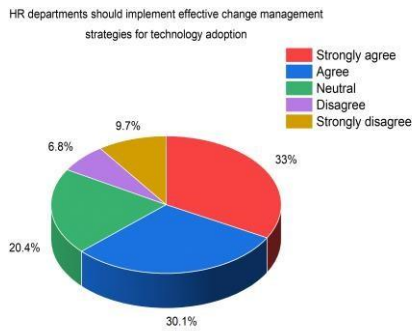


Fig 7.

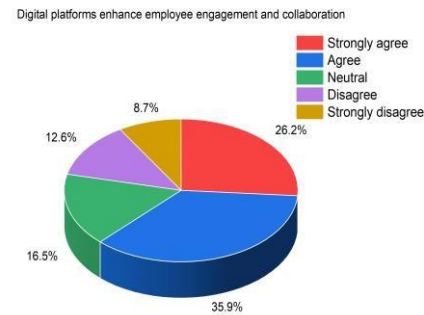


Fig 8.

## CHAPTER 4

### Recommendation for future research, Limitation and conclusion

*This chapter presents the conclusions that were made in this research. This conclusion was made based upon the survey data and the analysis of it in relation to the already existing literature and to itself.*

#### 5. Recommendation for future research:-

Future research on the digital era of human resources management could explore several avenues to enhance understanding and effectiveness in this rapidly evolving field. Here are some recommendations for future research topics:

##### 1. Impact of Artificial Intelligence (AI) and Machine Learning (ML) in HR:

- Investigate how AI and ML technologies are transforming various HR functions such as recruitment, employee performance evaluation, talent management, and employee engagement.
- Explore the ethical implications and potential biases associated with AI-driven decision-making in HR processes.



**2. Digital HR Tools and Platforms:**

- Evaluate the adoption and effectiveness of digital HR tools and platforms (e.g., HRIS, ATS, LMS, performance management systems) in streamlining HR processes and enhancing employee experiences.
- Examine the integration challenges and best practices for implementing and managing digital HR systems within organizations of different sizes and industries.

**3. Remote Work and Virtual Collaboration:**

- Investigate the impact of remote work arrangements on HR practices, including recruitment strategies, employee onboarding, performance management, and organizational culture.
- Explore the role of virtual collaboration tools and technologies in supporting remote teams and maintaining employee engagement and productivity.

**4. Employee Well-being and Work-Life Balance:**

- Examine how digital HR initiatives and technologies contribute to promoting employee well-being, mental health support, and work-life balance in the digital workplace.
- Identify effective strategies for managing remote employee wellness programs and fostering a positive work environment in distributed teams.

**5. Data Analytics and HR Metrics:**

- Explore the use of data analytics and HR metrics to measure the impact of digital HR initiatives on organizational performance, employee productivity, retention rates, and talent acquisition outcomes.
- Investigate the challenges and opportunities in leveraging HR data for predictive analytics and workforce planning in the digital era.

**6. Digital Skills Development and Training:**

- Examine the role of digital learning platforms and online training programs in upskilling and reskilling employees for the digital workforce.
- Investigate effective strategies for integrating digital skills development into talent management and succession planning initiatives.

**7. Diversity, Equity, and Inclusion (DEI) in the Digital Workplace:**

- Assess the effectiveness of digital HR practices in promoting diversity, equity, and inclusion within organizations, particularly in remote and virtual work environments.
- Explore innovative approaches for addressing unconscious biases in AI-driven recruitment and performance management systems.

**8. Legal and Regulatory Considerations:**

- Investigate the legal and regulatory challenges associated with digital HR practices, including data privacy compliance, cybersecurity risks, and regulatory requirements for remote work arrangements.
- Examine emerging legal frameworks and guidelines for ensuring ethical and responsible use of digital HR technologies.

**9. Cross-Cultural HR Management in a Digital Context:**

- Explore the cultural implications of digital HR initiatives in multinational organizations and diverse workforces.
- Identify cultural differences in the adoption and acceptance of digital HR technologies and develop strategies for promoting cross-cultural collaboration and communication.

#### 10. Sustainability and Corporate Social Responsibility (CSR) in HR:

- Investigate the role of digital HR in supporting sustainability initiatives, environmental conservation efforts, and corporate social responsibility practices within organizations.
- Examine how digital HR tools and platforms can facilitate remote work arrangements and reduce carbon footprints through telecommuting and virtual collaboration.

#### 6. Limitations:-

While the digital era has brought numerous advancements and opportunities to human resource management (HRM), it also presents several limitations and challenges. With the proliferation of digital HR technologies and the collection of vast amounts of employee data, organizations face significant challenges related to data privacy and security. Ensuring compliance with data protection regulations (e.g., GDPR, CCPA) and safeguarding sensitive employee information from cyber threats and breaches is paramount but can be complex and resource-intensive.

While digital HR technologies offer efficiency gains and automation capabilities, there is a risk of overreliance on technology at the expense of human interaction and empathy. Dependence on algorithms and AI-driven decision-making may overlook the nuanced complexities of human behavior and emotions, leading to impersonal or dehumanized HR practices.

The rapid pace of technological innovation requires HR professionals to continuously update their skills and competencies to effectively leverage digital tools and platforms. However, skill gaps and digital literacy deficiencies among HR practitioners and employees can impede the successful implementation and utilization of digital HR initiatives, limiting their potential impact on organizational performance.

Digitalization of HR processes, particularly in remote work environments, may inadvertently diminish the quality of human connections and interpersonal relationships within the workforce. Reduced face-to-face interactions, reliance on digital communication channels, and virtual work arrangements can lead to feelings of isolation, disengagement, and decreased employee morale.

There is last but not the least Cost and Resource Constraints will be also limitation. Implementing and maintaining digital HR technologies requires significant financial investments, as well as dedicated resources for training, support, and system integration. Small and medium-sized enterprises (SMEs) or organizations with limited budgets may face challenges in adopting and scaling digital HR solutions, constraining their ability to compete with larger counterparts.

#### 7. Conclusions:-

Technology has developed at a rapid pace over the last few decades. Businesses that adopt new technologies early often reap the long term benefits. Remaining on the cusp of new technology is primordial to maintaining an edge over our competitors. If they beat us to the punch it could seem like we're just playing catch-up when we implement the same technology at a later date. It pays to stay on top of things, solidify your organisation's reputation as an industry leader and reap the rewards when they're at their greatest. Digital technology has revolutionized HRM by providing tools and platforms to enhance efficiency, decision-making, and employee experiences which is confirmed from p-

values for six opinions by Chi Square test are 0.02, 0.02, 0.02, 0.01, 0.01 and 1.05E04 performed on ORIGIN 2019 Software.

## Chapter 6

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## 8. QUESTIONNAIRE

Name:

Email:

Gender :        Male    ....        Female    ...        Other    ....

Age :        20-24    ....        25-29    .....        30-34    ....        35-39    ...

**Directions:** For each statement in the survey, please indicate how much you **agree** or **disagree** with the statement by **putting a check in the box** on the right side of each statement.

### Scale:

- 1- Strongly disagree.
- 2- Disagree
- 3- Neutral
- 4- Agree
- 5- Strongly agree.

S NO:		5	4	3	2	1
1	Technology has greatly improved HR processes.					
2	I believe HR professionals should stay updated with technological advancements					

3	The role of HR has evolved positively due to digitalization					
4	HR professionals should continuously improve their digital skills					
5	HR departments should implement effective change management strategies for technology adoption.					
6	Digital platforms enhance employee engagement and collaboration					

