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Role of Digitalization in Business Process to Reduce Manpower: A Case of Human Resource Management Process

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Abstract:

Purpose: *The research aims to understand the layoffs currently going on in the technology industry across the world. The study aims to understand the impact due to digitalization on the HRM process and the requirement of manpower (human).*
Design/methodology/approach: *The study used secondary data about layoffs and then tried to get insight and reasons from 63 industry experts. The regression modeling using Minitab is developing to understand the layoff reasons.*
Findings: *it has been identified that digitizing the HR processes helped in improving HR task execution. However, most have agreed that the Human element is needed within the HR department. This study is only based on convenience sampling from the author's network. Findings also suggest that manpower is needed in HRM but it will be reduced over a while in the future.*
Practical implementation: *Organizations are using and adopting newer technologies for transforming business processes. World-class organizations are continuously pouring investments in newer technologies for improving their supply chain management (SCM), customer relationship management (CRM), human resource management (HRM), etc. It helps organizations to achieve effectiveness, efficiency, and productivity and reduce dependency on manpower. Human resource function is going through lots of changes using technology and the old way of managing HR function is no longer an option for any organization regardless of the size of the organization.*
Originality value: *The research refers to digitalization as another reason for layoff where most of the experts think the economic slowdown is the reason. Therefore, digitalization should also be counted towards layoff reasons.*

Keywords: *Digitalization, Human Resource Management, layoffs, automation.*

JEL codes:

Paper type: *Research article.*

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1. Introduction

The current business environment is not very conducive for businesses to excel and keep growing. COVID-19 is still killing global economic activities. The global supply chain largely depends on China. However, China is not fully operational for manufacturing and other production activities because of strict rules and COVID policies.

That is causing a domino effect on the global economy. Second is the Russia-Ukraine war that is causing chaos in Europe and resulted in an energy crisis, and a food crisis. The third is the recession knocking on the door of the United States of America (USA) and resulting from lay layoffs across industries in the USA. Many argue that layoffs are due to an economic slowdown and economic recession.

However, researchers are ignoring digitalization as an important reason for layoffs. Big companies across the globe are using highly sophisticated technologies to get the work done instead of using manpower. As per the job layoff reporting website (https://layoffs.fyi/) around 155,000 jobs were cut in 2022. In the first 1 week of February 2023, already 97000 jobs are eliminated (Layoffs.fyi).

Figure 1 shows how the layoff journey started in Jan 2022 and will continue in 2023 and 2024. The main reason is the economic slowdown that forces businesses to cut costs and reduce manpower. The second reason is the use of technology and digitalization requires less workforce.

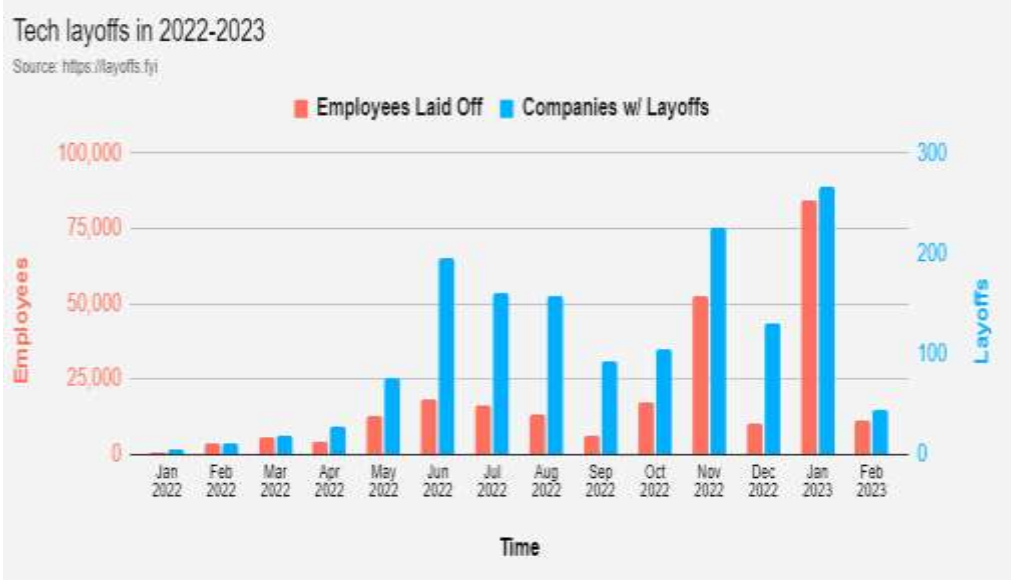
The list in Figure 1 shows the % of layoffs in big technology companies is not sudden and it started in Jan 2022. There are three reasons; the domino effects of COVID-19 and companies learning to work without humans during a lockdown or work-from-home period. The third reason is that companies are cutting their cost to invest in ambitious projects.

For example, google Alphabet is investing in ambitious projects like high-flying wi-fi balloons, smart contact lenses, and delivery drones. Facebook is investing in Metaverse to make the digital realm and that will be a big future.

Therefore, big companies are saving money from manpower by using technologies in their processes and operations. Also, investing money in future technologies and future projects can help them to remain competitive and provide new opportunities and experiences to the business.

For example, nowadays most customer-related inquiries are handled by intelligent agents, and automatic chat, and rarely does the inquiry goes to a human to resolve when it is beyond the process. Similarly, supply chain and marketing processes are highly streamlined and have the minimum requirement of human interface.

Figure 1. *Layoffs in Tech Industry from Jan 2022 to Feb 2023*



Source: *Layoffs.fyi.*

Since COVID-19, more digitalization is taking place in HR processes and all organizations are trying to align with the requirements of the situation post-COVID situations (Dwivedi *et al.*, 2022). All organizations are trying to take benefit of technology to improve their processes, execution, and delivery. This includes all departments and processes and human resources is not an exception. The usage of new technologies (Artificial Intelligence, Big Data Analytics, etc.) has increased within the HR department and most of the processes are now digitalized and automated.

This has resulted in less human intervention and involvement and heavy reliance on systems and technology. Many have agreed that the use of technology had a great positive impact on HR management as it has improved efficiency and lowered costs in many areas and reduced manpower to increase cost saving for organizations.

The research paper focused to assess how technological advancements impacted the change in HRM processes. The following research questions are addressed in the paper:

- How has technology helped to improve the HRM processes and task execution?
- Can technology fully replace humans in HRM processes?

Therefore, The paper is focused on the Human Resource Management (HRM) process that how technology will unhumanize the HR process.

2. Literature Review

The world is shifting and the use of technology has become a necessity to compete and sustain in a dynamic business environment. However, conservative thinkers are always convinced that technology is a double edge weapon and will always harm the workforce. Silva and Lima have stated that there is a significant relationship between Information technology and Human Resources Management process and it can not be segregated (Silva and Lima, 2018).

Using the technology, all needed information is available in real-time and can be accessed anywhere which facilitates the HRM processes to make them faster and more effective (Goel *et al.*, 2012a; 2012b; 2012c; Silva and Lima, 2018).

Traditionally, only work administration data were tracked like attendance, salaries, training etc., (Silva and Lima, 2018). However, now it has gone beyond that to include budgeting, appraisals, manpower planning, skills monitoring etc., (Silva and Lima, 2018). Also, it is no longer an automated record of the employees (Silva and Lima, 2018).

It is a big system with a huge database behind it that can provide data with complex analysis which helps in decision-making (Chopra *et al.*, 2013; Chopra *et al.*, 2015; Silva and Lima, 2018). The availability of these systems has shifted the job within the organization to focus more on business strategy and play a major role in management rather than running individual HR processes (Silva and Lima, 2018).

The same point has been agreed on in the research done by Sharon and Aggarwal (2017). As noted by them, all the aspects of HR should be focused on the organization's excellence to be a strategic partner and ensure that employees' goal is aligned with the organization's goals (Aggarwal and Sharon, 2017). It has also been pointed out that, current generations are digital natives as they are always connected to the internet and social media plays a huge part in their lives (Aggarwal and Sharon, 2017).

For that reason, organizations have to change and align the strategies in all functions including HR to integrate digital employees (Aggarwal and Sharon, 2017). This can only happen by using technology and having a digital HRM (Chauhan *et al.*, 2012a; 2012b; Aggarwal and Sharon, 2017).

Galgali has also highlighted that Digital HR helped to get rid of geographical limitations in terms of employees' training (Galgali, 2017). Now with the available platforms, employees are exposed to different experiences and knowledge from around the world (Galgali, 2017). This will help to boost the employees' knowledge, increase their efficiency and bring new ideas to the workforce (Galgali, 2017). Also, with the electronic payroll systems, there is no longer paperwork required and zero human errors (Galgali, 2017).

Using these systems has helped to reduce the effort required to complete HR jobs and tasks and made data available whenever any analysis is required (Galgali, 2017). Apart from HR internal processes, daily task management has helped employees to manage their work easily from any part of the world and keep track of what they have accomplished (Galgali, 2017).

Research conducted by Dr. A. Narasima Venkatesh has focused on a specific angle of new technology which is the "Internet of Things" (IoT) (Venkatesh, 2017). IoT is all about connected and smart devices (Venkatesh, 2017). The research has highlighted, how this technology can enable the organization in general and the HR in particular to manage the human capital (Venkatesh, 2017).

This technology has helped to decide how to design the organization in a way that will boost the employees' performance and productivity (Venkatesh, 2017). It has also allowed the HR to keep monitoring the employees' experiences based on their gestures, movements, and emotions which are captured as data that are used in decision-making and formulating the policies (Venkatesh, 2017). It can also go beyond that to track employees' health and GPS location which is required for certain jobs (Venkatesh, 2017).

Artificial Intelligence performs tasks based on habits and preferences. Artificial Intelligence is changing the experience of customers with new products. It is a very useful technology that Facebook reads customers' mindsets. The role of AI in human resource management is highly significant. For example, the required process in high-tech companies is AI-driven.

For example, the google recruitment process is technology-enabled and conducted through technology. For streamlining, the requirement is very crucial for the organization to build a strong and talented team. It must be efficient and effective. Candidates have been selected through Linkedin/different websites by AI-based applications, shortlisted, and called for an interview. The interview is also conducted without humans through agent-led video interview systems. From candidate sourcing to hiring and predicting new hire performance done through technology.

Therefore, the Recruitment process at a lower level in the organization does not require any manpower or require minimum manpower. Similarly, most of the HR processes in top organizations are done through technology.

Blockchain will bring radical changes in HRM processes (Dwivedi *et al.,* 2021). It will transform the HR function from benefits and payroll to sensitive employee data and the way HR transaction is carried out. Payroll can be streamlined by blockchain technologies and will be more secure. The majority of HR systems will be equipped with blockchain technology. The requirement process can keep candidates' privacy protected and personal information secure. Employee personal files and personal

data can be secured. Blockchain will also be enabled to have better contract management systems. There are unlimited uses of blockchain in the HRM processes.

3. Regression Model

To better understand the role of technology in human task reduction and manpower reduction, we carried out a survey with industry experts using the convenience sampling method. We asked simple 5 Questions from the experts on a 1 to 7-point Likert scale. Where 1 was least important and 7 was most important. We followed the research method described by Yoshikuni and Dwivedi (Almadia *et al.*, 2022; Yoshikuni and Dwivedi, 2022; Yoshikuni *et al.*, 2023). The five quandstions are listed below:

1. Will Digitalization and automation reduce overall manpower in HR and organization?
2. Will digitalization and automation improve effectiveness in HR and organization?
3. Will digitalization and automation improve efficiency in HR and organization?
4. Will digitalization and automation bring flexibility to HR and the organization?
5. Will digitalization and automation reduce costs in HR and Organizations?

Question 1 is the dependent variable that question 2, 3, 4, 5 are the independent variable. Manpower reduction is dependent on digitalization effectiveness, digitalization efficiency, digitalization flexibility, and digitalization cost reduction. Figure 2 can demonstrate the relationship. Based on the sample of 63 respondents, we run a partial least square regression model to understand the expert's opinions about future manpower reduction in organizations.

Figure 2. *The relation between digitalization elements: The research model*

Source: *Own study.*

Statistics:

Variable	Mean	SE Mean	StDev	Median
Manpower Reduction	4.172	0.271	2.062	4.500
HRM Processes Effectiveness	4.226	0.253	1.995	4.000
HRM Processes Efficiency	4.361	0.250	1.950	5.000
HRM Processes Flexibility	4.500	0.272	2.141	5.000
HRM Processes Cost Saving	4.459	0.261	2.038	5.000

Regression Equation:

Manpower Reduction = 0.120 + 0.362 HRM Processes Effectiveness
+ 0.570 HRM Processes Efficiency
+ 0.483 HRM Processes Flexibility
- 0.463 HRM Processes Cost Saving

Model Summary:

S	R-sq	R-sq(adj)	R-sq(pred)
0.670821	90.32%	89.53%	87.84%

Model Usefulness and validity:

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.120	0.227	0.53	0.599	
HRM Processes Effectiveness	0.362	0.112	3.23	0.002	6.17
HRM Processes Efficiency	0.570	0.106	5.38	0.000	5.34
HRM Processes Flexibility	0.483	0.109	4.41	0.000	6.41
HRM Processes Cost Saving	-0.463	0.110	-4.21	0.000	5.95

Model Analysis:

- Null Hypothesis: all constants zero (Useless).
- Alternative Hypothesis: At least one constant is not zero (Useful).

Based on the 63 respondents, the regression model is significant. This model shows that 90.3% of manpower reduction is based on effectiveness, efficiency, flexibility, and cost reduction. The only coefficient in the model is useless but rest four independent variables are useful in the model as their probability is less than 5%.

Therefore, it is going to less and fewer manpower requirements in business processing and work will be automated based on the industry experts having more than 10 years of experience in the high-tech industry,

4. Concluding Remarks

Technological innovations are man-made. Therefore, the human brain can not be replaced by a man. Human emotions, human thinking, and human empathy can not be replaced by machines or technologies. Mostly routine work and tasks will be automated but innovative work require manpower.

As per Mackenzie global institute analysis report, by 2030 about 400 Million workers could be displaced by automation. If automation happens at a fast pace this could 800 million workforce. It is also predicted that about half of the activities carried out by workers could be automated. it means that whatever activities workers are doing 50% will be reduced and half of the workload will be carried out by the worker. So, the next 10 years are very challenging and you will continuously see manpower reduction and layoffs in the organizations.

Limitations:

- The research is based on the opinion of 63 experts on 5 questions and based on convenience sampling.
- Adequate theoretical grounding is required.
- A more robust research instrument is required
- The paper is made for conference submission only.

Future Work:

- Grounding the theoretical work
- Collecting solid use cases
- Developing instrument
- Planning to get responses from different industries
- Sampling will be random instead of convenience

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Appendix:

List of Top Companies and layoffs (Source: https://layoffs.fyi/)

	Company	Location ...	# Laid Off	Date	%	Industry	Source	List of Employees Lai...	Stage
1	Google	SF Bay Area	12000	1/20/2023	6%	Consumer	https://www.nytimes.co...		Post-IPO
2	Meta	SF Bay Area	11000	11/9/2022	13%	Consumer	https://www.cnbc.com/...	https://docs.google.com...	Post-IPO
3	Amazon	Seattle	10000	11/16/2022	3%	Retail	https://www.nytimes.co...	https://docs.google.com...	Post-IPO
4	Microsoft	Seattle	10000	1/18/2023	5%	Other	https://www.usatoday.c...		Post-IPO
5	Salesforce	SF Bay Area	8000	1/4/2023	10%	Sales	https://www.nytimes.co...	https://docs.google.com...	Post-IPO
6	Amazon	Seattle	8000	1/4/2023	2%	Retail	https://www.vox.com/re...		Post-IPO
7	Dell	Austin	6650	2/6/2023	5%	Hardware	https://www.bloomberg...		Post-IPO
8	Philips	Amsterdam	6000	1/30/2023	13%	Healthcare	https://www.reuters.co...		Post-IPO
9	Booking.com	Amsterdam	4375	7/30/2020	25%	Travel	https://skift.com/2020/...		Acquired
10	Cisco	SF Bay Area	4100	11/16/2022	5%	Infrastruct...	https://www.bizjournals...		Post-IPO
11	Philips	Amsterdam	4000	10/24/2022	5%	Healthcare	https://www.reuters.co...		Post-IPO
12	IBM	New York ...	3900	1/25/2023	2%	Hardware	https://www.bloomberg...		Post-IPO
13	Uber	SF Bay Area	3700	5/6/2020	14%	Transporta...	https://layoffs.fyi/2020/...		Post-IPO
14	Twitter	SF Bay Area	3700	11/4/2022	50%	Consumer	https://www.nytimes.co...	https://docs.google.com...	Post-IPO
15	Uber	SF Bay Area	3000	5/18/2020	13%	Transporta...	https://layoffs.fyi/2020/...		Post-IPO
16	Better.com	New York ...	3000	3/8/2022	33%	Real Estate	https://www.nytimes.co...		Unknown
17	SAP	Walldorf	3000	1/26/2023	3%	Other	https://www.cnbc.com/...		Post-IPO
18	Groupon	Chicago	2800	4/13/2020	44%	Retail	https://layoffs.fyi/2020/...		Post-IPO
19	Peloton	New York ...	2800	2/8/2022	20%	Fitness	https://techcrunch.com...		Post-IPO
20	Carvana	Phoenix	2500	5/10/2022	12%	Transporta...	https://techcrunch.com...		Post-IPO
21	Byju's	Bengaluru	2500	10/12/2022	5%	Education	https://techcrunch.com...		Private ...

Industries and layoffs (Source: https://layoffs.fyi/)