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**The Impact of Digital Transformation on Human Resources During the Pandemic
Covid-19**

By

Hind Rashid AlEssa

**A Capstone Submitted in Partial Fulfilment of the Requirements for the
Degree of Master of Science in Professional Studies: Data Analytics**

Department of Graduate Programs & Research

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Data Analytics

Graduate Capstone Approval

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Pandemic Covid-19**

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Abstract

Technological advancement in human resources and the adoption of artificial intelligence, analytics, and machine learning help HR leaders become strategic leaders. Automation helps in engaging employees and improving their work experience. Human resource is an important part of an organization and before covid epidemic the human resource department works manually and in an office environment completely. However, due to covid-19 pandemic has raised the demand for working online and implementing digital transformation ways. There is a high demand for working virtually or what is called hybrid working, simple-to-use technology that can be accessible at anytime from anywhere. Human resource employees face difficulties and challenges initially in adopting the new working environment and the transformation of using technology but get habitual by time. In the start, the employee productivity gets affected and decreases which affect the organization. By the time when the employee starts to get habitual their productivity level increases and improves the organization's revenue. Automation can either influence the employee productivity level and performance or lead to an unemployment rate. The COVID-19 situation is still developing and in terms of a significant impact on society as a whole rather than a pandemic or disease. The current covid pandemic seems to be a stressful condition for Human Resources and Human Resources technology, exposing previously unidentified shortcomings and utilizing innovative new digital solutions. The pandemic increases the demand for virtual working; strong demand for virtual working, simple and clear. The project objectives revolve around. The goal is to assess how the digital revolution affects performance and to pinpoint its core benefits in order to enhance/improve the research Model. In this project, it has been presented the analysis of data which is related to the effect of covid-19 on the Human resources department/employees. Primary quantitative research will be conducted for this project to analyse the data, which will be represented in graphical representation. Moving towards Digitalization in human resources it has become important for organizations during Covid-19 pandemic to keep their organization continuity and cover up their losses.

Keywords:

HR: Human Resource

LR: Literature Review

ETL: Extract transform load

EDL: Exploratory Data Analysis

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Chapter 1

1. Introduction

Since we recently dealt with the situation of COVID-19 which has already had a considerable effect on society and the world in general where recently it has already been declared beginning of 2023 by WHO that Covid-19 remains a global health emergency, but pandemic is at a 'transition point'. Accordingly, the impact of it is still ongoing on organizations, especially on the HR department. As a result of the circumstances during the COVID-19 pandemic, many companies are going towards wise working or virtual working. The pandemic seems to be a stressful condition for Human Resources (HR), HR employees and HR technology, exposing previously unidentified shortcomings and utilizing innovative new digital solutions. It also increased the demand for virtual/remote working with technologies that are accessible at any time and from any place. Work must be carried out in a consistent manner in spite of the fact that virtually all workers are being pressured to transition to an alternative and more remote mode of employment (Alyass, 2015). The employees who were thrown into working from home suddenly, without adequate notice or preparation, may need some time to adjust to the virtual working environment. Initially, this had an impact on their performance; however, after some period of time, these individuals became accustomed to it, and their productivity and effectiveness started to improve. Also, HR strategy, management, training, and development are all impacted by the digital transformation taking place in the Department of human resources where companies that have made prior investments in their HR Technology environment towards digitalization have been better able to maintain operations and react rapidly to market demands. HR now has the drive to take the lead in hastening the transition to digital. Technological advancement in human resources and the adoption of artificial intelligence, analytics, and machine learning help HR leaders become strategic leaders. During the pandemic, automation become a weapon for some employees as their tasks are considered routine tasks so, the use of information systems now makes up the vast bulk of the work in human resources, which has resulted in a diminished role for employees in this department (Bennett, 2007) and rise in the unemployment rate, which has a positive impact on the organization in terms of cost and achieving deadlines. On the other hand, automation helps in

engaging employees and improve their work experience. Automation also influences the employee productivity level and increases it (Goel, 2020).

1.2 Project Goals

The primary objective of this study is to investigate the influence of the digital transformation on Human Resources when the Covid epidemic was in progress. The information gathered from the project will be helpful in determining the influence that the digitization of HR had on staff productivity, employee turnover and the increase within the unemployment rate. In the context of this study, an investigation into workers' experiences in the workplace during the COVID-19 will also include an examination of their time spent working digitally and remotely.

1.3 Research Objectives

The research objectives are listed below:

- To analyze and predict the impact of HR development is either positive or negative as per COVID-19 tenure
- To develop the context of understanding how talent management has been affected by the digital revolution.
- To assess the influence of the digital revolution on research performance and identify its fundamental benefits for enhancing the research model, based on the proposed research hypothesis"

1.4 Research Hypotheses

H1: Does digital revolution impact HR development positively or not?

The answer of the hypothesis can be either yes or no because the data collection measures are quantitative based on which the analysis has been done. Also predictive modeling can be implemented with respect to the complete and core values of demonstration about which the implementation of complete service level knowledge must be applied in a proper way. The deterministic approaches must be controlled with the initiation and development of complete research based modeling about setting the proper module for digital revolution analysis (Chen, 2016).

H2: Has the digital revolution affected talent management?

The answer will also be in a yes or no option based on which the demonstrated structure of results must be managed and controlled with respect to the service level initiation about having

the implemented knowledge to contain the analytical behavior about which the combination of entire service based modules. The descriptive knowledge and implementation could be controlled with the information level development about which the development of the information level significance so that the complete utilization of knowledge must be applied for talent management structure.

H3: Does the digital revolution influence the performance at work?

As per some research, digital revolutions have helped to improve the performance of businesses, since the approach of managing tasks is becoming more optimized by using the digital revolution structure. The deterministic modeling and measures must be applied with the implications of development about setting the complete results to set the functional and nonfunctional results. The determination of the information must be controlled in order to explain the execution could be validated and managed in order to set the information level significance about which the collaboration of detailed modules must be executed in a proper way (Kamilaris, 2017).

1.5 Research Limitations

The research is quantitative and limited to approximately 1000 users, so that the feedback and results are based on the collected data, as it may be different if the number of users is increased, but for now the research is limited to approximately 1000 users.

Chapter 2

2.1 Literature Review

The implementation of digitization will make it easier to communicate effectively with HRs and evaluate their requirements. The functioning of several business groups is modified. They began to rely more on remote set up as they began working from home, participating in online meetings. Electronic human resource management (E-HRM) was successful during the pandemic because it enabled HR to continue their procedures digitally, which was a necessity. Organizations that maintained their hiring and screening processes during the epidemic are able to publish and advertise job openings online through various social media platforms such as LinkedIn, Facebook, Twitter, and Instagram as well as the Internet. Moreover, E-recruitment is more effective and less expensive. (Coghlan, 2013).

The abrupt COVID-19 epidemic affected all businesses and their operational processes, it was necessary for those organizations to take safeguards to protect their personnel while still maintaining their commercial operations. The function of HR is absolutely necessary during a pandemic, and it will not be constrained in any way by its typical HR procedures. At the same time, strategic thinking will develop into a key competency of HR in order to assist in the development of digital transformation for both the HR practices of the company and the employees of the organization. They will also use more analytics as well as big data to enhance the value that they bring to the company, which will need more specialization on their part. When taking into consideration the performance of both the employees and the organization, it is important to analyze how effectively the implementation was carried out (Cohen, 2009).

As a result of the COVID-19 epidemic, businesses all around the world are facing a wide range of repercussions in their day-to-day operations. To begin, it has had an impact on the human resource management (HRM) techniques that primarily deal with the personnel of a firm. Managing human resources during a pandemic presents a number of difficult problems, one of the most significant of which is adjusting to shift and ensuring that human capital can react to that same uncertainty and fear that comes along with it. (Culp, 2002).

The transformation calls for a substantial adjustment to the structure of the process' design and operations in order to be successful. It can be demonstrated beyond a reasonable doubt that the epidemic compelled businesses to develop and adopt new business strategies. Because it is responsible for planning, managing, and providing assistance for employees, the Human resources plays an important part in this implementation. Implementation of electronic human

resource management (e-HRM) is required while taking into consideration the improvement of organizational performance (Goel, 2020).

According to (Goel, 2020), 88% of organizations encouraged or required employees to work from home during the pandemic, highlighting the significant shift towards remote work.

Organizations that adopted digital technologies during the pandemic were able to achieve higher levels of employee productivity and engagement, with 75% of employees reporting that their companies had responded effectively to the crisis (Kamilaris, 2017)

Research by (Mehboob, 2016) found that 60% of organizations had increased their investments in employee wellbeing programs during the pandemic, with 86% of HR professionals reporting that they had implemented new wellbeing initiatives, such as virtual mental health counseling and stress-management programs.

74% of HR leaders reported that they had developed new skills during the pandemic to support remote work, such as managing virtual teams, leveraging digital technologies, and adapting to new communication channels (Webber, 2004). Many organizations are moving towards smart working or virtual working due to the situation during the covid pandemic. Virtual working takes time to get adopted by the employees who went to remote working suddenly without prior notice and preparations. This affected their performance initially; however, after some time, these employees get habitual, and their performance and productivity started to increase. As employee performance and productivity increase, the organization's performance also increases (Bolisani, 2020).

Companies that prioritize the employee experience empower their employees by reshaping the workplace and cultural norms to better suit them, enabling workers to complete today's tasks while imagining those of the future. Following the COVID-19 pandemic, businesses started to reevaluate the employee experience for a workforce that was suddenly dispersed across remote sites and even foreign countries. The early obstacles have vanished after adopting remote working habits for two years. New obstacles are arising as some businesses attempt to get workers back into the office or offer hybrid, flexible working. Companies that try to replicate traditional office work processes and systems for a remote or hybrid workforce face new challenges (Lachance, 2021).

Remote working refers to arrangements that let workers do their jobs away from the office setting without ever meeting their coworkers in person and just corresponding remotely through technology. As the COVID-19 virus currently affects it, virtual work has become essential in the modern workplace. Due to the COVID-19 pandemic, both employees and employers have had to discover innovative uses for the technology. As the world is currently

living in a digital era, there is an increase in the utilization of technology. Digital technology enables the communication of information through high speed and makes it widely accessible on devices (Dhanpat, 2022).

Virtual working or work-from-home (WFH) needs workers to master brand-new online office abilities in addition to virtual work communication skills, unlike traditional office models. Furthermore, to keep the information secure during virtual working is important to prevent data leakage. This helps in adjusting in the new work environment and also enhance the employees strengthen to work virtually (de Lucas Ancillo, 2021). According to (Saxena, 2021) observed that covid pandemic has affected every sector of the business industry including banking, educational, FMCG, and many others. It led organizations toward the adoption of new working environment which is online working.

Human resources are moving towards digitalization as globalization is increasing around the globe. Human resources employees frequently use digital forums that increase their productivity level. Their performance enhances due to human resource digital transformation adoption, and it also makes their responsibilities and duties less hectic, due to which their performance and productivity increase. Human resources productivity is essential and helpful in improving the organization's performance (Vardarlier, 2021). The unemployment rate increases as the human resources department move towards digitalization and adopt information technology for data analytics. The traditional way of data analytics decreases as information technology replaces data analytics (Krutova, 2021).

2.2 Takeaways of Literature Review

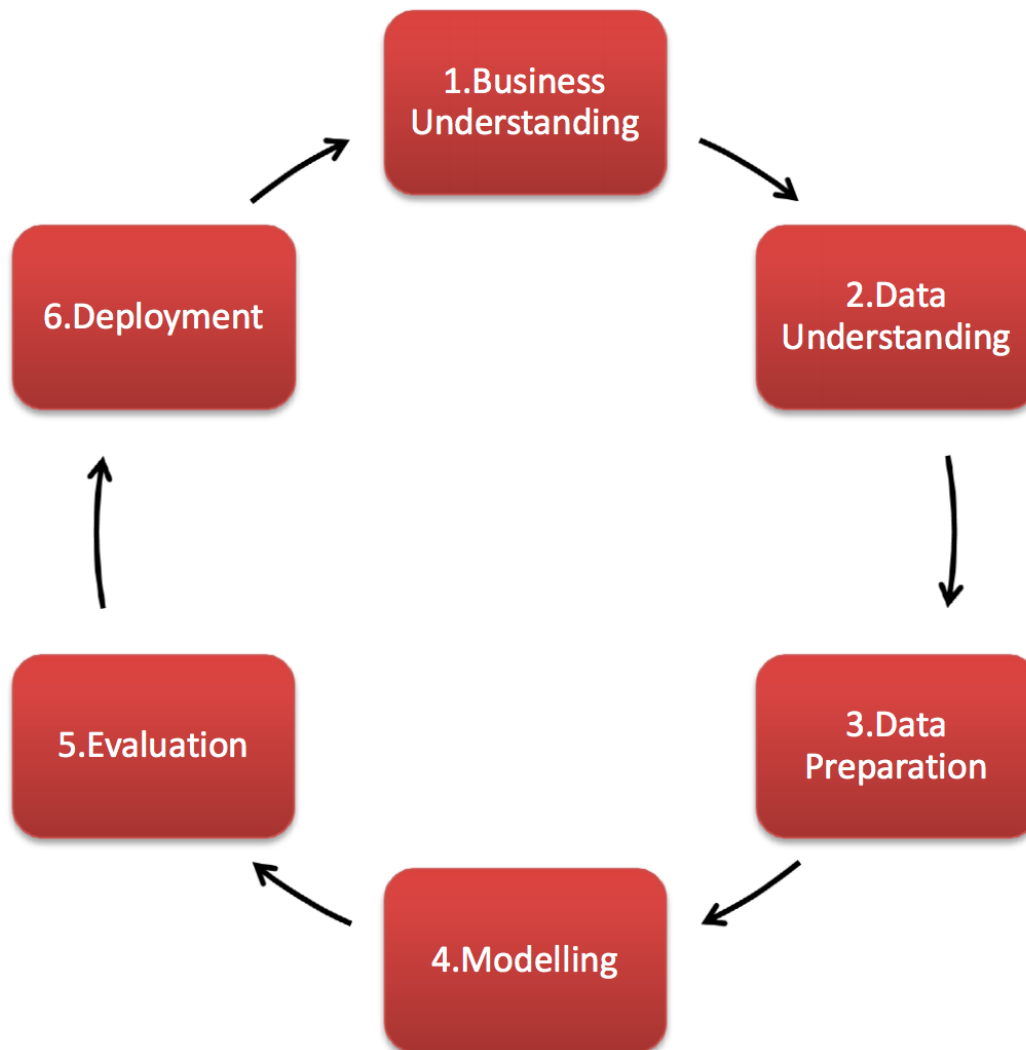
- The COVID-19 pandemic has had a significant impact on human resource management (HRM) practices in organizations.
- One key impact has been the need for digital transformation in HRM, with electronic human resource management (E-HRM) being successful during the pandemic to continue HR procedures digitally.
- Organizations that adopted and implemented digital technologies during the pandemic achieved higher levels of employee productivity and engagement while maintaining commercial operations. Also resulting in more reliance on remote set-ups and online meetings.

- Managing human resources during a pandemic presents difficult challenges, including adjusting to shifts and ensuring that human capital can react to uncertainty and fear. Also maintaining employee well-being to become a top priority.
- The pandemic necessitated that HR leaders develop new skills to support remote work, manage virtual teams, leverage digital technologies, and adapt to new communication channels such as strategic thinking has become a key competency of HR to assist in the development of digital transformation and the use of analytics and big data to enhance the value they bring to the company. Also as another example during the epidemic organizations are able to publish and advertise job openings online through various social media platforms as well as the Internet.

Chapter 3

3.1 Research Methodology

For the implementation of methods, CRISP DM framework has been used as model is given below:



The first stage is called business understanding, and it aims to provide background information about the business model and its goals and data for the developer or engineer. They described the development team in a wide variety of ways, including in-person gatherings, online conferences, reading documentation, gaining expertise in a certain area, and many others. The outcome of this phase is a development team that is familiar with the project's background. Before starting a project, it's important to figure out what it's supposed to accomplish. For

instance, once this process is complete, the development team should have a firm grasp of what the client is selling as to how they go about making a profit. Understanding what can be done with the data is the goal of the second stage, Data Understanding. As an example, it ensures that the data is full, has an even distribution of values, and complies with data governance standards (Kamilaris, 2017).

Since this determines how realistic and reliable the project's outcomes can be, it is an essential part of the process. Members of the team now discuss potential strategies for maximizing the usefulness of the information they have gathered so far. If a developer isn't sure about the significance of a certain piece of data, they can take a step back and learn more about the industry and how the data helps it. As a result of this development, data scientists are now equipped with the knowledge necessary to assess the existing state of data and determine how it should be modified to best serve the needs of the underlying algorithm and process. In the third stage, known as Data Preparation, techniques and processes called ETLs (Extract, Transform, and Load) are used to transform the raw data into a usable format. For data to have any real value, it must be standardized, which is why it is sometimes the responsibility of data engineers and information scientists to ensure that data governance principles are followed and established (Kulatunga, 2017).

Similarly, certain algorithms thrive under specific conditions, while others struggle when presented with a wide range of input values or those that are missing numbers entirely. According to Lazer, one of the reasons for data engineers to exist is responsibility to ensure data consistency. The fourth phase, "Modeling," ate up the bulk of most projects' schedules. The outcomes of this phase are what will ultimately determine whether or not the project's objectives are met. Despite being the most exciting portion of the job, it typically takes the least amount of time to complete because of how little needs to be changed at this point assuming everything that came before it was done correctly. If the outcomes can be made better, the approach is prepared to go back to the data preparation phase (Lazer D. K., 2014).

To ensure that the findings are reliable and accurate, the fifth step is evaluation. In the event that the results are incorrect, the technique allows for a retracing of steps to figure out where things went wrong. Data scientists typically separate the dataset into train and test set before beginning their work. In order to ensure that the model (the end result of step one, modeling)

is representative of reality, testing data is utilized here. Methods can vary greatly from one another and the task at hand. If you're using supervised learning to classify items, for instance, you can check your work with a tool like the confusion matrix. The evaluation process is more challenging for unsupervised learning because there is no single, fixed criterion by which correct and incorrect answers can be distinguished. For example, in the job at hand of classifying items, the success of an answer could be determined by measuring the intra and inter distances between the items in a(n) cluster (s). However, identifying the origin of the problem is crucial. However, if the error measure is always zero, then the model is likely overfit and may not accurately reflect reality (Limaye, 2020).

Last step is the deployment. Once we have trained the model using data, we can use it in predicting the value of the target variable in real time data.

Chapter 4

4.1 Data Analysis

It is necessary to derive the information about which the implications and management of information and deployment must be done to set the utilization factors of services about which the managerial modeling and collection of data will be highly functional according to the concerned details of application measures (Mehboob, 2016).

4.2 Data Sources

The data has been taken from the internal sources of organization ENOC, as the organizational data is more authentic while collecting the source-based information. The information about collected data is shown below in figure. We have total 956 rows and 6 columns in the dataset.

```
In [3]: df.head()
```

```
Out[3]:
```

	Sex	Age	Social Status	Job Designation	Work Experience	Annual Scoring	H1	H2	H3
0	female	42.0	married	Manager	2	4	0	0	1
1	male	23.0	single	Manager	1	4	1	1	1
2	male	35.0	married	Associate	3	3	1	0	1
3	male	27.0	single	Associate	5	3	0	1	1
4	male	28.0	single	Finance manager	7	2	0	1	1

Figure 1: Dataset

Data taken from the end user is about Gender, age, status, Job designation, Work experience, Annual Scoring, and H1, H2, and H3 represents the Hypothesis questions so that the answer can be more optimized and cleared such as 1 is representing **Yes** and 0 is representing **No**.

4.3 Exploratory Data analysis (EDA)

For EDA process, the initial step is to check the `data_types` of the dataset attributes so that the categorical variables and target variables could be selected with respect to the complete measures of information also the integrated development must be managed with respect to the domain-based information about which the learning analytics will be sufficient to have the data acknowledgement (Sandryhaila, 2014).

Next, we can see the data types of each column that is in our data.

```
In [5]: df.dtypes
Out[5]: Sex           object
        Age           float64
        Social Status object
        H1            int64
        H2            int64
        H3            int64
        dtype: object
```

Figure 2: Data types of dataset columns

We see that the rows such as H1, H2, and H3 are integers instead of Boolean. We are keeping them as they are because we need the numerical column for the modeling of data (logistic regression).

As we can see the missing values in the dataset, we should handle them. One of the approaches could be to drop the null rows. Let us drop them using the `dropna()` function.

Dropping the missing values of data so that the functional settlement could be done in order to show the managerial results being specified and managed in order to show the concerned information that must be validated with entries of the dataset.

Let us see the missing values of our dataset;

```

✓ [3] 1 df.isnull().sum()
1s
Sex          1
Age          3
Social Status 32
Job Designation 0
Work Experience 0
Annual Scoring 0
H1           0
H2           0
H3           0
dtype: int64

```

Figure 3: Empty values in dataset

```

In [7]: df.dropna()
Out[7]:
   Sex  Age  Social Status  H1  H2  H3
0  female  42.0      married  1  1  1
1  male  23.0       single  1  0  0
2  male  35.0      married  0  1  0
3  male  27.0       single  0  0  1
4  male  28.0       single  1  1  1
...  ...  ...           ...  ...  ...
985  male  34.0      married  1  0  0
986  male  32.0       single  1  1  1
987  male  28.0       single  1  1  1
988  male  28.0      married  0  0  0
989  male  28.0       single  0  0  1

956 rows x 6 columns

```

Figure 4: Dataset Rows and Columns

Above dropna() function has been used for the removal of missing values which will be helpful in the optimization of the dataset by increasing the accuracy functions of data.

Now check the description of data in which the mean values and count values can be shown for each variable.

```
In [9]: df.describe()
```

```
Out[9]:
```

	Age	H1	H2	H3
count	987.000000	990.000000	990.000000	990.000000
mean	33.655522	0.504040	0.496970	0.511111
std	12.606660	0.500236	0.500244	0.500129
min	1.000000	0.000000	0.000000	0.000000
25%	25.000000	0.000000	0.000000	0.000000
50%	31.000000	1.000000	0.000000	1.000000
75%	40.000000	1.000000	1.000000	1.000000
max	93.000000	1.000000	1.000000	1.000000

Figure 5: Dataset summary

Describe function has been used to check the statistical data for the completion and controlling of data about which the implications of knowledge must be developed with the initiation and planning of the entire results. The total count coming for the age is 987 and for H1 the count coming is 990. The mean coming for the age is 33.65 and for H1 mean coming is 0.50. The mean coming for H2 and H3 is 0.49 and 0.51. The maximum value in age is 93 and the maximum value in H1, H2 and H3 is 1.

```
In [8]: df.plot()
```

```
Out[8]: <AxesSubplot:>
```

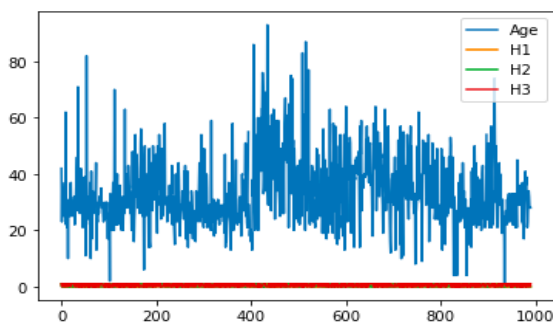


Figure 6: Dataset Plot

Finally, EDA is completed to make sure that data is ready to use for the modeling process.

Chapter 5

5.1 Logistic Regression Modeling

For modeling purpose, Logistic regression has been used to complete the analysis based on which the deployment of the data can be tested significantly as the logistic regression model has been implemented below while H3 is used as a target variable so that the predicted values on the basis of categorical variables could be significant as per the detailed model of information.

```
In [20]: from sklearn.linear_model import LogisticRegression
         from sklearn.metrics import classification_report, confusion_matrix

In [28]: x = df['H2'].values.reshape(-1, 1)
         y=df['H3']

In [29]: model = LogisticRegression(solver='liblinear', random_state=0)

In [30]: model.fit(x, y)

Out[30]: LogisticRegression
         LogisticRegression(random_state=0, solver='liblinear')

In [31]: model = LogisticRegression(solver='liblinear', random_state=0).fit(x, y)

In [32]: model.classes_

Out[32]: array([0, 1])

In [33]: model.intercept_

Out[33]: array([-0.02282439])

In [34]: model.coef_

Out[34]: array([[0.13566216]])
```

Figure 7: Logistic Regression

The values of coefficient and intercept have been shown above based on which the complete model classes can be justified with the information level significance of data modeling techniques about which the learning strategies must be done in order to have the controlled deployment of data. The feature variable x is assigned the values of the 'H2' column from the DataFrame df. The values attribute converts the column to a NumPy array, and .reshape(-1, 1) reshapes the array to have a single feature column. The target variable y is assigned the values of the 'H3' column from df. An instance of the Logistic Regression class is created with the solver set to 'liblinear' and a random state of 0. This solver is suitable for small datasets and is capable of handling L1 regularization. The fit() method is called on the model instance, using x as the feature input and y as the target variable. This trains the logistic regression model on the provided data. The predict() method is used to make predictions on the feature data x using the trained logistic regression model. It returns the predicted target variable values based on the learned model.

The visualization below shows the matrix with actual and predicted values to interpret the complete research approaches.

```
ax.xaxis.set(ticks=(0, 1), ticklabels=('Predicted 0s', 'Predicted 1s'))
ax.yaxis.set(ticks=(0, 1), ticklabels=('Actual 0s', 'Actual 1s'))
ax.set_ylim(1.5, -0.5)
for i in range(2):
    for j in range(2):
        ax.text(j, i, cm[i, j], ha='center', va='center', color='red')
plt.show()
```

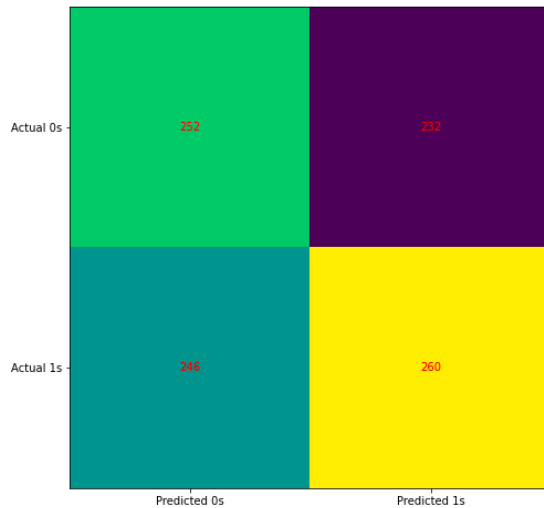


Figure 10: Confusion Matrix

The model has predicted 232 instances as positive (1) when they were actually negative (0). This suggests that the model has a tendency to classify negative instances as positive, leading to a higher false alarm rate. The model has predicted 246 instances as negative (0) when they were actually positive (1). This indicates that the model is missing a significant number of positive instances, leading to a higher rate of failing to identify positive cases. Precision is calculated as $TP / (TP + FP)$, representing the proportion of correctly predicted positive instances out of all instances predicted as positive. With a precision of approximately 52%, the model has a relatively high number of false positives compared to true positives, indicating that it incorrectly labels a significant portion of negative instances as positive. If the distribution of positive and negative instances is uneven, the model may struggle to learn and generalize patterns effectively. This can lead to biased predictions and a higher tendency to favor the majority class. The features used to train the model may not capture the relevant information needed for accurate classification. This can result in suboptimal performance and misclassifications. The chosen model may not be sophisticated enough to capture the underlying patterns in the data. A more complex or advanced model might be required to achieve better performance. If the model is trained on a small or unrepresentative dataset, it

may not have enough information to learn the underlying patterns effectively, leading to poor generalization and performance on unseen data.

The classification report of model is given below:

```
In [40]: print(classification_report(y, model.predict(x)))
```

	precision	recall	f1-score	support
0	0.51	0.52	0.51	484
1	0.53	0.51	0.52	506
accuracy			0.52	990
macro avg	0.52	0.52	0.52	990
weighted avg	0.52	0.52	0.52	990

Figure 11: Classification Report

Classification shows the accuracy, macro average and weighted average to show the complete aspects of information as per the deterministic approach of having the deployment knowledge with the collection of results.

Chapter 6

6.1 Data Visualization

6.1.1 H1 Value counts:

H1 value counts show that how many users has said YES for impact of HR development and NO for the same , so that the user's feedback can be mapped and shown using the visualization plot below as the H1 parameter basically calculates that either there is a positive impact of HR development due to digital revolution or not.

```
In [9]: df['H1'].value_counts().plot(kind='barh')
```

```
Out[9]: <AxesSubplot:>
```

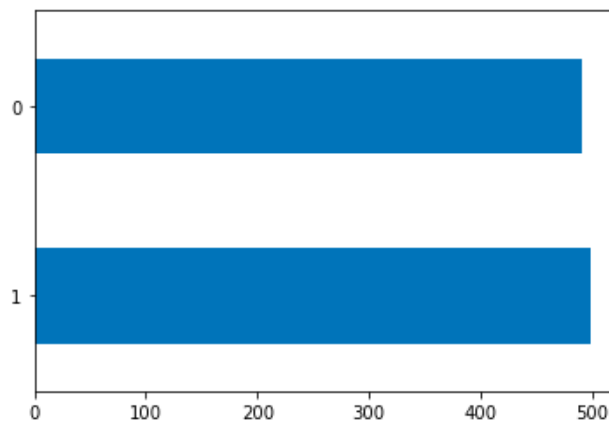


Figure 12: H1 values count

We can see that both the categories YES and NO are having 50% of the instances.

6.2.2 H2 value counts:

Here H2 value counts show the number of people who said YES or NO for H2 such as H2 defines the talent management changes due to digital revolution. We can see that people who said YES for H2 are relatively lower as compared to the number of people who said NO for H2 because of different organizational mindsets.

```
In [10]: df['H2'].value_counts().plot(kind='bar')
```

```
Out[10]: <AxesSubplot:>
```

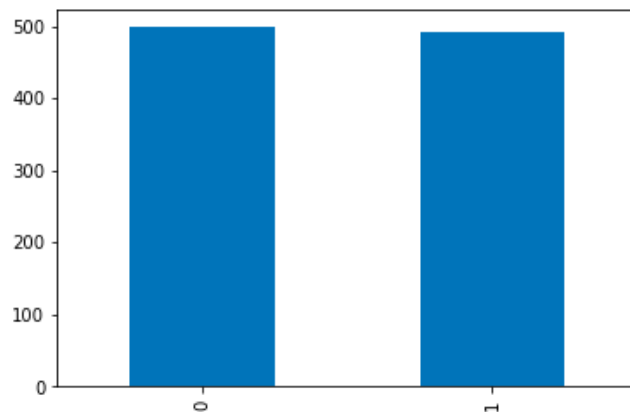


Figure 13: H2 Values Count

6.2.3 Boxplot

Here has been selected the age as a sample to visualize for comparison against Hypothesis (H1, H2, and H3)

Boxplot given below shows the shape revealing the distribution of the data as well as any outliers. Since more than one boxplot can be created for each graph, it is a useful method for comparing various sets of data.

We can see the presence of outlier in the age column.

```
In [20]: plt.figure(figsize=(20,10), facecolor='w')
sns.boxplot(data=df)
plt.show()
```

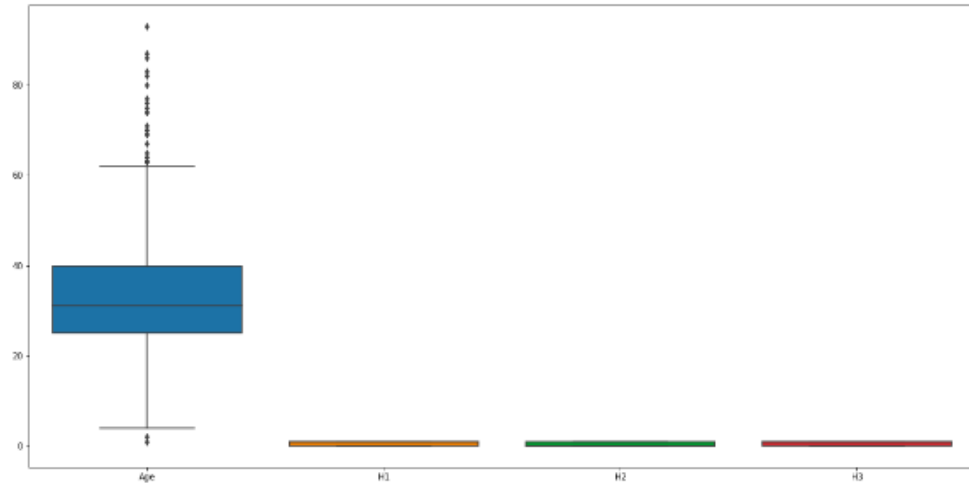


Figure 14: Boxplot

6.3 Correlation

The correlation shows that's how the factors and target variable are linked with one another as it is cleared that the controlled functions must be managed to show the validity of structured and non-structured dataset. The integrated terms and conditions could be signified with the information level development of the dataset information to ensure the properly utilized and information about setting the concerned analysis and measures of correlation factors being initialized.

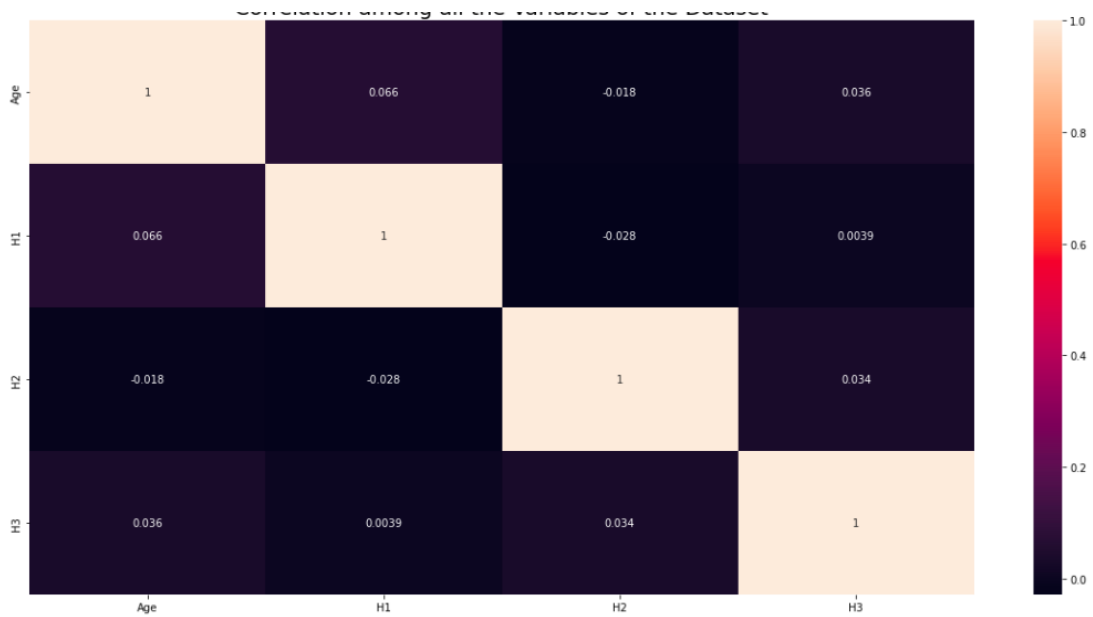


Figure 15: Correlation

6.4 Pie charts from H1 to H3

The given plots shows the exact percentage values with Pie chart structure , it is cleared that the information level development could be applied and managed to have the implementation of functional and non-functional approaches according to the concerned working of information about which the YES and NO values could be understood with the initiation of working structure being evaluated properly.

```
In [31]: plt.pie(df["H1"].value_counts(), autopct="%1.1f%%")
Out[31]: ([<matplotlib.patches.Wedge at 0x7fdcdf75d220>,
<matplotlib.patches.Wedge at 0x7fdcdf66e280>],
[Text(-0.013962314415166308, 1.099911384510667, ''),
Text(0.013962417396301802, -1.099911383203416, '')],
[Text(-0.007615807862817984, 0.5999516642785455, '50.4%'),
Text(0.007615864034346436, -0.5999516635654996, '49.6%')])
```

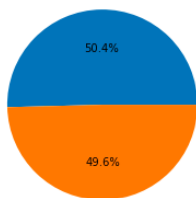


Figure 16: Pie Chart for H1

Here H2 based results are shown in which it is cleared that 50.3% says Yes while remaining do not agree with the hypothesis of research, it is cleared that the research gaps can only be fulfilled with the utilization of results about which the complete combination of strategies must

be applied to set the functional goals of utilization being managed in a proper way. The development of oriented model must be applied with the in depth models and results.

```
In [30]: plt.pie(df["H2"].value_counts(), autopct="%1.1f%%")
Out[30]: ([<matplotlib.patches.Wedge at 0x7fddcf67cd00>,
<matplotlib.patches.Wedge at 0x7fddcf6d0460>],
[Text(-0.010471807347132774, 1.0999501539846634, ''),
Text(0.010471807347132883, -1.0999501539846634, '')],
[Text(-0.0057118949166178766, 0.5999728112643619, '50.3%'),
Text(0.0057118949166179355, -0.5999728112643619, '49.7%')])
```

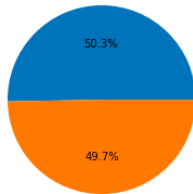


Figure 17: Pie chart for H2

Same implementation has been done with the H3 plotting where 52% people says Yes and rest answered in NO. That means the evaluation of research is equivalent and balanced both sides. The clarity of execution must be there to have the implementation of knowledge about which the settlement must be developed properly.

```
In [29]: plt.pie(df["H3"].value_counts(), autopct="%1.1f%%")
Out[29]: ([<matplotlib.patches.Wedge at 0x7fddcf4e0be0>,
<matplotlib.patches.Wedge at 0x7fddcf4f1340>],
[Text(-0.038389547012185374, 1.0993299062065942, ''),
Text(0.03838964993887884, -1.0993299026123007, '')],
[Text(-0.020939752915737474, 0.5996344942945059, '51.1%'),
Text(0.020939809057570275, -0.5996344923339821, '48.9%')])
```

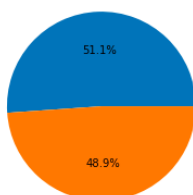


Figure 18: Pie chart for H3

The analysis of H1 value counts reveals the impact of HR development due to the digital revolution. The visualization plot showcases the number of users who responded with a "YES" or "NO" for this parameter. By mapping and displaying user feedback, organizations can assess the effectiveness of HR development strategies in the context of digital transformation. This visualization helps to understand whether the digital revolution has had a positive impact on HR practices within the organization. The H2 value counts analysis focuses on talent management changes resulting from the digital revolution. The visualization demonstrates the

number of people who responded with a "YES" or "NO" for this aspect. The relatively lower number of individuals who answered "YES" suggests that there may be differing mindsets within organizations regarding talent management in the context of digital transformation. This finding highlights the need for organizations to address any barriers or challenges related to talent management strategies and ensure alignment with digital transformation goals. The boxplot visualization, using age as a sample, provides insights into the distribution of data and the presence of outliers. By examining the shape of the boxplot, organizations can gain an understanding of the age distribution within their workforce and identify any potential outliers. This information can be valuable for various purposes, such as workforce planning, targeted training and development programs, or assessing the impact of age on digital transformation initiatives. It is important for organizations to consider the age demographics of their employees and tailor digital transformation strategies accordingly. The results of the data visualization analysis shed light on the impact of HR development, talent management changes, and the age distribution within organizations in the context of digital transformation. These findings can guide organizations in assessing the effectiveness of their digital transformation strategies, identifying areas for improvement, and making informed decisions regarding HR practices and talent management. By leveraging data visualization techniques, organizations can gain valuable insights to drive their digital transformation journey and ensure successful adaptation to the changing digital landscape.

Chapter 7

7.1 Conclusion

The results have been shared and implemented as per the requirements of the research. The adoption of strategies and practices within an organization's business climate is essential for the organization to adopt digital transformation strategies and practices in order to maintain steady financial growth and to remain competitive. This assertion has never been put to the test more than it has in the globe after the pandemic. In the autumn of 2019, the global industrial sector was ignorant of the obstacles that it'd have to encounter in the successive months that would follow. The COVID-19 pandemic not only brought with it a severe medical and political catastrophe, but it also brought with it record-breaking levels of unemployment, the closure of multiple industries, and a number of other complicated concerns. In the face of this widespread epidemic, it was imperative for all firms, regardless of their economic background, to use digital technology in order to reduce the amount of physical connection, thereby protecting the health of both their customers and their employees. Around the course of the last ten years, the idea of digital revolution has become increasingly significant all over the world. However, the outbreak of the COVID-19 did not give the businesses a chance to deliberate and instead pushed them to their boundaries in terms of embracing technology in order to carry on with their usual operations. In addition to the above, the customers demonstrated a growing proclivity towards making their purchases of products and services through various forms of internet commerce.

The descriptive settlement and analysis of the complete utilized functions must be developed with respect to the complete measures and services to be applied with the complete knowledge of deployment about which the service based information to be controlled with the results so that the implementation will be more preferable with respect to the complete utilization factors of services about which the highly accurate results will be applied (Richardson, 2020).

We have presented the results of the hypothesis in the study throughout, along with that we have made use of a logistic regression model that we have used on our data. We have presented a few data visualizations as well, we can see the number of true and false instances for H1, H2, and H3. Apart from that, we have also presented the tableau dashboard that shows that people within the age group of 20-30 contributes most towards H1 and H2.

7.2 Recommendations

Organizations can position themselves for success in the digital age by embracing digital transformation, encouraging data-driven decision making, and emphasizing continuous

evaluation and improvement. These proposals give a structure to associations to adjust to changing business sector elements, influence innovation successfully, and pursue informed choices in view of solid information examination. With the right methodology and a pledge to development, organizations can flourish in the post-pandemic world and stay serious in their separate businesses. The COVID-19 pandemic has demonstrated how crucial digital transformation is for businesses. Businesses must adopt digital strategies and practices in order to maintain steady financial growth and remain competitive. Utilizing cloud computing, data analytics, artificial intelligence, and automation are all components of this. To adapt to the shifting business landscape, organizations should invest in digital infrastructure and skill development. Businesses can streamline processes, increase efficiency, and enhance customer experiences by adopting digital transformation. Understanding, preparing, and analyzing data must be prioritized by businesses in today's data-driven world. Businesses can ensure that they have a solid basis for decision-making by utilizing the CRISP-DM framework or methodologies similar to it. This incorporates gathering exhaustive information, guaranteeing its quality and consistence with information administration norms, and utilizing methods like ETL (Concentrate, Change, and Burden) to change crude information into usable configurations. Organizations can gain valuable insights, identify trends, and make informed business decisions by fostering a culture of data-driven decision making. Organizations should place an emphasis on evaluation and improvement to guarantee the accuracy and reliability of implemented strategies and research findings. Businesses can identify potential flaws, rectify any errors, and refine their approaches by establishing evaluation frameworks and regularly evaluating the results. It is crucial for discrete datasets into preparing and testing sets, utilize proper assessment procedures (e.g., disarray grid), and be cautious about over fitting or failing to meet expectations models. Organizations can enhance their models, improve their strategies, and align their practices with the desired goals through continuous evaluation.

7.3 Future work

Organizations should keep up with the latest developments in technology and think about including new technologies in their digital transformation plans. This might entail investigating how block chain, the Internet of Things (IoT), edge computing, or augmented reality (AR) can further improve customer experiences and business operations. Organizations can improve their ability to adapt to the shifting technological landscape and gain a competitive edge by keeping an eye on emerging trends and conducting research and development in these areas. Even though data analytics techniques were used in the study's research methodology, businesses can concentrate on further developing their data analytics capabilities. This could

entail investing in cutting-edge analytics platforms and tools, constructing a solid data infrastructure, and expanding the company's data science expertise. By tackling the force of information examination, associations can acquire further bits of knowledge into client conduct, market patterns, and functional efficiencies, empowering them to go with additional educated choices and drive advancement. Organizations must cultivate a culture of continuous learning and adaptation in a digital environment that is rapidly changing. This incorporates advancing an outlook of trial and error and development, empowering representatives to up expertise and reskill in computerized innovations, and cultivating cross-utilitarian coordinated effort. Organizations can be better prepared to take advantage of new opportunities and navigate future disruptions by adopting a learning culture. Furthermore, associations ought to remain dexterous and versatile, routinely evaluating and refining their advanced change methodologies in view of changing business sector elements and client assumptions. Integrating new technologies, enhancing data analytics capabilities, and cultivating a culture of continuous learning and adaptation are some of the future works that are relevant to the findings of the research. In a world that is becoming increasingly digital and competitive, businesses can position themselves for long-term success by concentrating on these areas. The key to driving growth, maintaining a competitive edge, and meeting the changing needs of customers will be to embrace innovation and stay ahead of technological developments.

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