

## **The Covid -19 Pandemic and Unemployment in Kigali City, Rwanda**



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**ABSTRACT:**The Covid-19 pandemic led individuals, business community, nations and the world in general to many problems. In the context of Rwanda, Covid-19 pandemic spread rapidly within a short period of time resulted into serious problems including unemployment. This paper aims to assess the effects of Covid-19 pandemic on employment situation in Kigali city, Rwanda focusing on how Covid -19 pandemic cases have been spread in Kigali city, finding out the most affected economic sectors by Covid-19 pandemic and assessing the extent to which Covid-19 pandemic caused unemployment in Kigali city, Rwanda. The study targeted unemployed and laidoff people due to Covid-19 pandemic from whom 96 respondents were selected using Alain Bouchard formula. Data were collected using questionnaire, interview and documentation and analysed using descriptive statics frequency, percentage and Pearson correlation test. The main findings indicated that the spread of Covid-19 has been rapid in kigali city whereby Covid-19 positive cases had reached on 3,452 in Kigali City for the period of almost 9 months. Unemployment caused by Covid-19 pandemic affected people in Kigali city from various sectors in different ways. Construction; education; domestic works; betting games and marriage activities; and industry, tourism and restaurant have been respectively revealed the most affected economic sectors by unemployment due to Covid-19 pandemic in Kigali City. The people in informal and private sectors are the most affected. Moreover, the statistical evidence reveals a significant positive correlation between covid-19 pandemic and unemployment in Kigali city. This implies that the more the Covid-19 confirmed positive cases, the more the cases of unemployment (laidoffs and forced unpaid leaves). There is hence a need for public-private partnership to put in place the measures that can protect people working in informal and private sectors as they are the most affected.

**KEYWORDS:** Pandemic, Covid-19, Unemployment, Kigali City, Rwanda.

### **I. INTRODUCTION**

One of these pandemics that recently afflicted the world is the Covid-19 virus, also known as the new form of Coronavirus. In several nations, the Covid-19 has been a source of issues. There have been numerous, profound effects since the virus's emergence. starting with modest scales and working up to large ones. The Covid-19 virus, a brand-new variety of virus, began to spread out of control in the Wuhan region of Hubei Province, China, in December (World Health Organization [WHO], 2020)[1]. The Covid-19 pandemic virus recently triggered a global pandemic by spreading to numerous nations.

The coronavirus disease outbreak of 2019 (Covid-19) has had a significant impact on regional and global economies. Various businesses are dealing with a range of problems and losses. Particularly, businesses are dealing with a number of issues, including a decline in demand, supply chain interruptions, cancellation of export orders, a shortage of raw materials, and difficulties in transportation, among others (McKibbin and Sidorenko, 2006)[2]. Nevertheless, it is evident that the Covid-19 outbreak is having a substantial impact on businesses all over the world. There will be spillover effects from Covid-19 from the other severely damaged industries, such as the food and hospitality business, even if the job impact is anticipated to be relatively minor in the most labor-intensive sector, agriculture, forestry, and fisheries. In the process of recovering, initiatives for a living, self-employment, and employment should all be fostered (Lee and McKibbin, 2004)[3]. These factors, which are crucial for unemployed people and microbusiness owners, should also be taken into consideration in the economic recovery plan's social protection component (International Labour Organization [ILO], 2020a)[4].

The MOH (2020)[5].reports that cases of the Covid-19 virus started to appear in Rwanda on March 7, 2020, following the confirmation of one Indian patient as a positive Covid-19 case. The Rwandan government quickly organized the implementation of a readiness and response plan on March 9, 2020, just in time for the first incidence. As a result, the Rwandan government launched a number of significant restrictions, including lockdown and social segregation, against Covid 19 on March 14, 2020.

This strategy has had a significant impact on Rwandan producers and entrepreneurs on small, medium, and big dimensions. Daily direct interactions, such as buying and selling transactions, have considerably decreased. Shop owners and other business owners had to fire workers and staff as a result of the drop in sales.

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The cause is that businesses are unable to support or pay the salaries or wages of employees and laborers as a result of a major decline in sales transactions, which are essential to making cash. The failure of business owners to pay salaries or wages to workers has resulted in incidents of layoffs, which have abruptly and substantially grown (National Institute of Statistics of Rwanda [NISR], 2020)[6]. On April 20, 2020, 2,084,593 employees were put off, according to data from the UNDP (2020)[7].

The huge economic downturn brought on by Covid-19 has resulted in significant rises in unemployment and underemployment. As more businesses deal with the effects of the new Corona Virus Disease (Covid-19) epidemic, more employees have been fired and forced to take unpaid leave (MOH, 2020)[5]. One of the major sectors of the Rwandan economy, the tourist sector, has experienced a sharp decline. All hotels in Rwanda have been temporarily shuttered as of March 2020, resulting in unpaid leave and the termination of some employees (who had previously been terminated by a number of enterprises), while other staff were sent home without pay (UNDP, 2020)[7].

The NISR (2020)[6]. reports that between February and May 2020, a three-month period, the country's jobless rate nearly doubled. Prior to the first Covid-19 case being reported in Rwanda in February, the unemployment rate was 13.1%; by May, it had risen to 22.1%. The impact of the COVID-19 epidemic on the labor market is blamed for the rise in unemployment rates seen in May 2020. There is a gap in several industries where working from home is strongly encouraged. Implementing physical distance/quarantine, allowing employees to work from home, and suspending business operations policies would surely cause consumer and corporate spending to decline, which will ultimately lead to a loss of revenue for the company.

Due to this situation, several businesses have temporarily laid off workers, reduced employee pay, or decreased the number of staff (ILO, 2020a)[4]. The number of workers who have been laid off as a result of the Covid-19 pandemic increases as the number of Covid-19 cases in Kigali city increases. Due to the inability of businesses to pay employees' salaries or wages, the quick development of Covid-19 instances has a significant influence on unemployment. Additionally, it is predicted that as the spread widens, there will be an increase in the number of persons who experience layoffs (ILO, 2020a)[4]. It is clear from the literature that the Covid-19 pandemic caused a number of issues for people, the business community, countries, and the world at large.

The unemployment rate in Rwanda is also an urban phenomena, and it tends to be higher among younger people, according to the available literature. According to the 2002 Census, the urban unemployment rate was over ten times higher than the rural jobless rate (3.9% vs. 70.4%) (NISR, 2020)[6]. The EICV3 survey from 2010–2011 revealed a similar pattern, with rates of 8.8% vs. 1.2% in urban and rural areas and 13.1% in Kigali City's urban area. The Covid-19 pandemic spread quickly in Rwanda, as it did in many other nations, over a short period of time, leading to major difficulties like unemployment. The research, however, reveals a gap in terms of the extent and mode of Covid-19 distribution.

It is from this background that this study was conducted in Kigali city to assess the effects of Covid-19 pandemic on employment situation in Kigali city, Rwanda. More specifically, the study examines the spread of Covid-19 pandemic cases, finds out the most affected sectors by unemployment due to Covid-19 pandemic and assesses the extent to which Covid-19 pandemic caused unemployment in Kigali city, Rwanda.

The rest of this paper is organised as follows: section 2 deals with literature review, section 3 discusses the methodology used to collect and analyse data, section 4 presents and discusses the findings and section 5 concludes and presents necessary recommendations.

## II. LITERATURE REVIEW

This section focuses on reviewing existing literature on the pandemics in general and Covid-19 pandemic in particular and the effects of Covid-19 pandemic on employment or layoffs across the world in general and in Rwanda in particular.

### A. Pandemics and their Effects

The literature demonstrates that pandemics are not new and have happened throughout human history (Ferguson et al., 2020)[8]. The Appendix 1 provides historical timelines of significant pandemics across the world, including HIV/AIDS, SARS, influenza, and Covid-19.

Although there have been numerous outbreaks and human tragedies, the frequency of pandemics has significantly increased starting in the year 2000 and continuing to the present. This is caused in part by a rise in the appearance of viral diseases in animals (Madhav et al., 2017)[9]. Many scholars, like Madhav et al. (2017)[9] and Pantano et al. (2020)[10] contend that a significant global pandemic was unavoidable given the growth in the frequency of pandemics.

Numerous studies have established in the literature that population health is positively correlated with economic growth and wellbeing as assessed by life expectancy, newborn and child mortality, and maternal mortality (Haacker, 2004)[11]. Pandemics or infectious diseases, on the other hand, are a hindrance to economic welfare and growth, and there are numerous ways in which such infectious disease epidemics affect the economy. There are currently very few research on the financial costs of widespread infectious illness epidemics (Pritchett and Summers, 1996)[12].

The ILO (2020a)[4] states that studies on the burden of disease in the field of health economics frequently focus on the direct and indirect economic consequences of illness. The traditional method estimates the loss of future income due to death and incapacity

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using data on deaths (mortality) and illnesses that limit employment (morbidity). The estimate of the economic expenses associated with the sickness is obtained by adding direct spending on medical care and supporting services, as well as time and income losses for caregivers. The true economic costs of infectious diseases with epidemic proportions, which are extremely contagious and for which there is no vaccine (such as HIV/AIDS, Severe Acute Respiratory Syndrome (SARS), and pandemic influenza), are underestimated by the usual method.

Several computable general equilibrium (CGE) macroeconomic models have been used to examine the effects of AIDS, for instance, and numerous studies have documented the macroeconomic effects of HIV/AIDS (Mas-Colell et al., 1995)[13]. AIDS has long-lasting impacts, say Arndt and Lewis (2001)[14]. The effects of the HIV/AIDS virus on households, businesses, and governments include altered labor supply decisions, labor productivity, household income efficiency, increased business costs, firms skipping investments in staff training, and an increase in public spending on health care and assistance for disabled people and children orphaned by AIDS (Haacker, 2004)[11].

However, the influenza virus is much more contagious than HIV, and an epidemic can start suddenly and without warning. Due to its great severity and the seriousness of its clinical manifestations, the 1918–19 Spanish influenza is the worst plague in recorded history (Barry, 2004)[15]. The chance of death, the number of years of life lost, and the subjective discounting factor all play a role in an individual's judgment of the dangers of dying. According to Van der Sluijs et al. (2010)[16], influenza and pneumonia are the second and third most common causes of death (following cardiovascular disease and cancer).

A person's desire to pay to prevent dying rises for causes seen as "bad deaths," such as dreaded, unmanageable, involuntary deaths, deaths associated with large externalities and deaths that result in distributional injustice (Sunstein, 1997)[17]. Based on this research, it is reasonable to assume that individual perceptions of the risks associated with the new influenza pandemic virus, which is similar to the Spanish influenza virus in terms of virulence and the severity of clinical symptoms, can be very high, especially in the early stages of the pandemic when there is no vaccine and little access to antivirals (Lee and McKibbin, 2004)[3].

Meltzer et al. (1999)[18], for example, analyzed the anticipated economic implications of the influenza pandemic in the US and evaluated a number of vaccine-based solutions. The repercussions of the influenza pandemic are obvious across the research. With a gross attack rate (i.e., the proportion of the population that contracts the virus) of 15–35%, there will be 89–207 thousand influenza-related deaths and a mean total economic impact of \$73.1–166.5 billion on the US economy.

The Oxford economic forecasting model was used by Bloom et al. (2005)[19] to calculate the possible financial effects of a pandemic brought on by a mutation in the avian influenza strain. They make the assumption that there will be a mild pandemic with a 20% attack rate, a 0.5% case fatality rate, and a 3% consumption shock. A longer-term shock with a longer outbreak and a higher shock to consumption and export provides a loss of 6.5% of GDP (US\$282.7 billion). Scenarios include two-thirds of demand reduction just in Asia (combined effect 2.6% Asian GDP or US\$113.2 billion). Global trade in goods and services declines by \$2.5 trillion (14%), while global GDP declines by 0.6%. The findings also demonstrate that open economies are more susceptible to global shocks. US Congressional Budget Office researchers looked at two different pandemic influenza scenarios for the country in another study from 2005. A less severe situation with an attack rate of 30% and a case fatality rate of 2.5% and a more serious scenario with an attack rate of 20% and 0.1%, respectively, are also possible.

According to the US Congressional Budget Office's [CBO](2005)[20] assessment, the United States' GDP will decrease by 1.5% under the mild scenario and by 5% under the severe scenario. An older version of the model employed in the current paper was utilized by McKibbin and Sidorenko (2006)[2] to investigate four potential pandemic influenza scenarios. They considered four scenarios: a "mild" scenario where the pandemic is comparable to the 1968–1969 Hong Kong Flu; a "moderate" scenario where the pandemic is comparable to the 1957 Asian Flu; a "severe" scenario based on the 1918–1919 Spanish Flu (lower estimate of the case fatality rate); and a "ultra" scenario where the pandemic is comparable to the 1918–1919 Spanish Flu but with upper-middle estimates of the case fatal. For the scenarios looked at, they discovered costs to the global economy ranging from \$US300 million to \$US4.4 trillion.

The 1918 Great Influenza (Spanish flu) pandemic has long been regarded as one of the most expensive in terms of economic loss (Luck, Correia and Verner, 2020)[21]. Understanding potential economic losses from such pandemics can be gained from knowledge of previous epidemics. According to Barro, Ursua, and Weng's (2020)[22] assessment on the economic effects of the 1918–1919 influenza pandemic, up to 50 million people died as a result of the outbreak. In their analysis, they used cross-country panel regressions. Their research revealed that the pandemic caused an overall 8% decrease in consumption growth and a 6% decrease in GDP growth.

Using data from the United States, Correia, Luck and Verner (2020)[23] conducted another analysis on the influenza epidemic of 1918–1919 and found that manufacturing activity declined by 18% annually. They also demonstrated that quicker and more forceful containment reduced the impact. 11,323 Ebola-related deaths were recorded by the World Bank in 2014; they occurred between 2014 and 2016. The analysis found that in the first year of the epidemic, Ebola caused a 2.1% drop in GDP growth in Guinea, a 3.4% drop in Liberia, and a 3.3% drop in Sierra Leone.

The assessment of economic effects of H5N1 avian influenza by Burns, Van der Mensbrugge, and Timmer (2006)[24] from 2003 through 2019 revealed that the yearly GDP of Asia and the world both decreased by 0.1% and 0.4%, respectively. The Hypothetical

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Influenza Pandemic caused a 3.1% loss in annual worldwide GDP, of which 0.4% was attributable to mortality, 0.9% to illness and absenteeism, and 1.9% to precautionary measures (Burns, Van der Mensbrugge, and Timmer, 2006)[24], a 4.25% loss in yearly global GDP, with a supply-side loss of 2.25% and a demand-side loss of 2% (Arnold et al., 2006)[25].

Using data from the United States, Brainerd and Siegler (2003)[26] analysed the economic losses brought on by the influenza pandemic of 1918–1919 and concluded that a rise in mortality greatly reduces growth during the ensuing decade. The literature makes it abundantly obvious that a pandemic like Covid-19 will inevitably result in a reduction in economic growth, however, it says less about how pandemics will affect other important economic indices of a country.

The existing literature also shows that the fear element played a role in how the world responded to Severe Acute Respiratory Syndrome (SARS), a coronavirus that had not previously been identified in humans (Peiris et al., 2004)[27]. The results of the two polls carried out in Taiwan during the SARS outbreak in 2003 demonstrate that the SARS contributes to a higher than predicted willingness to pay to reduce the risk of infection due to its novelty, prominence, and public concern.

Studies of the macroeconomic effects of the SARS pandemic in 2003 indicated major repercussions on economies through considerable drops in consumption of a variety of goods and services, an increase in operating expenses for businesses, and a reevaluation of country risks reflected in higher risk premiums. The financial harms the 2003 SARS outbreak caused include a decrease in China's GDP by 2% and a decline in worldwide GDP by 0.1% (Hai et al., 2004)[28]. Additionally, 774 people died as a result of SARS (Lee and McKibbin, 2004)[3].

The experience from the previous diseases outbreaks provides valuable information on how to think about the implications of Covid-19 (Hai et al., 2004)[28] and the same fear caused by SARS as well as other pandemics is also reflected in the response to Covid-19 (Antonio et al., 2004)[29], a very contagious virus. Travel restrictions, for instance, have been put in place for persons entering China from afflicted nations, and entire cities have been closed. It is stressful, frequently with long-term ramifications (Hyams et al., 2002)[30] and a large number of people would feel at risk at the onset of a pandemic, even if their actual risk of dying from the disease is low (Liu et al., 2005)[31]. Ferguson et al. (2020)[8] from the Imperial College of London Covid-19 Response Team assert that Covid-19 is the most serious occurrence since the 1918 Spanish Influenza pandemic.

### **B. The Effects of Covid-19 pandemic on Employment and Layoffs**

Tens of millions of people in the U.S. alone submitted fresh jobless claims in the early months of 2020 as Covid-19 forced the closure of entire sectors like tourism, hospitality, sports, and entertainment. It is well known that people who are unemployed may suffer from a variety of stress-related effects, such as sadness, anxiety, and physical problems, in addition to losing their income (Wanberg, 2012)[32]. The latent deprivation model developed by Jahoda (1982)[33] acknowledges that employment offers both manifest (such as income) and latent (such as time structure, social contact, sharing of common goals, status, and activity) benefits. This helps to explain the detrimental effects of unemployment on psychological well-being. Financial hardship can be especially painful, setting off a chain reaction of hardship that can affect the entire family (McKee-Ryan and Maitoza, 2018)[34].

There have been hopes that the economic recovery will move quickly enough to recoup most of the jobs lost due to Covid-19 unemployment, although this is far from likely. The widespread closures related to COVID-19 have confounded the usual advice for jobless people to establish a regular job hunting schedule (Wanberg, Ali, and Csillag, 2020)[35]. Researchers examining the distinctive characteristics of Covid-19 will compare how individuals handle and adjust to the shocks entailed by Covid-19 in the short term with regard to the employer that fired them as well as in the long term, where career adaptability (Klehe and Van Hooft, 2012)[36] the willingness and interest to explore new options and future work scenarios might prove to be increasingly valuable.

Unemployment has detrimental knock-on implications for those who are still employed in addition to its personal effects. Prior studies have shown that when businesses reduce their total workforce levels, survivors tend to have lower levels of organizational commitment, are less engaged at work, and are more stressed (Trevor and Nyberg, 2008)[37]. According to meta-analytic data, overall staff reductions have nearly the same negative effects on organizational performance as similar voluntary attrition (Park and Shaw, 2013)[38]. Recent studies have also shown that "zero-sum" thinking tends to increase during general economic downturns, which has the unintended consequence of making people more likely to mistake others for rivals even when they are not (Sirola and Pitesa, 2017)[39].

The Covid-19 pandemic had a significant negative impact on Rwanda, as it is the case on other nations throughout the world, either in terms of rise in number of cases of infection or unemployment rate. The Covid-19 pandemic has had the greatest impact on the informal sector, which includes many persons operating unregistered private businesses (NISR, 2019)[40]. These are primarily people who rely on daily wages to make ends meet, such those who work in mining, restaurants, hairdressing, tea plantations, street vendors, domestic helpers, and many other unregistered service providers.

Over 75% of workers in Rwanda work in the unorganized sectors (NISR, 2019)[40], making up three out of every four workers in this country. The 2019 Rwanda Labour Force Survey data show there are 2,931,494 people working informally, including 214,199 people employed by families, and 238,264 people working in the informal sector. According to the NISR (2019)[40], the Covid-19 pandemic has however caused the most frustration in the informal sector, where workers who are either casual, temporary, or permanent are facing starvation due to the loss of their jobs and, consequently, their money.



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In addition, a number of businesses took steps to temporarily lay off workers, lower wages, and cut back on staff (ILO, 2020a)[4]. In the three months from February to May 2020, the unemployment rate in the nation nearly doubled, reaching 22.1 percent in May from 13.1percent in February, the month before the first Covid-19 case was reported (NISR, 2020)[6] and the predictions indicate that if Covid-19 spreads faster and faster, there would be more forced unemployment and layoffs.

### III. METHODOLOGY

The study has been conducted in Kigali city, Rwanda and used mixed approach (quantitative and qualitative). According to the NISR (2019)[40], 895,007 unemployed and laidoff in informal sectors from Kigali City due to Covid-19 pandemic were counted and this is study targets this population.

From this population, a sample size of 96 respondents were selected using Alain Bouchard (1990)[41] formula. According to the formula, when the population being investigated is less than or equal to one million people, it is important to match a sample of 96 with margin of error of 10% and then apply the following formula:

$$nc = n: (1 + n: N) = 1 + \frac{n}{N} = 1 + \frac{N+n}{N} = \left(\frac{N}{1}\right) \left(\frac{N}{N+n}\right) = \frac{N*n}{N+n}$$

$nc = \frac{895,007*96}{895,007+96} = 95.989=96$ ; whereby n = sample size of Universe; N= is the sample size of the study population; nc= is the sample size or sample to determine correct; and N=total number.

Proportionate stratification and purposive sampling techniques were used to select the respondents. The study used both primary and secondary data. Primary data were collected using questionnaire mainly made of closed-ended questions and interview to key informants (officer in charge of health and labor promotion from Kigali City) and secondary data were collected through documentation.

As regard the validity, factor analysis scoring for items was adopted to restructure the questionnaire. To ensure reliability, data were tested for internal consistency reliability using Cronbach's Alpha, which was found to be 0.864, and hence acceptable as recommended by Kathari (2004)[42]. Data were analysed using descriptive statistics such as frequency and percentage, charts and Pearson correlation test.

### IV. THE FINDINGS AND DISCUSSIONS

This section presents and discusses the findings according to the objectives of the study. The section starts by presenting the demographic characteristics of the respondents.

#### A. Demographic Characteristics of the Respondents

The demographic characteristics of respondents are presented in terms of age, type, gender, level of education and nationality.

**1) Age and Type of Respondents:** The distribution of respondents by age and their type constitute a good indicator in analyzing, interpreting and understanding the characteristics of the participants in a study. The types of respondents consist of unemployed and laidoffs due to Covid-19 pandemic in city of Kigali who availed themselves to provide needed information.

**Table I. Age and Type of Respondents**

| Age          | Type of respondent |             |           |             | Total     | %          |
|--------------|--------------------|-------------|-----------|-------------|-----------|------------|
|              | Unemployed         |             | Laidoff   |             |           |            |
|              | N                  | %           | N         | %           |           |            |
| Below 30     | 20                 | 20.8        | 30        | 31.3        | 50        | 52.1       |
| 30-40        | 12                 | 12.5        | 25        | 26.0        | 37        | 38.5       |
| 40-50        | -                  | -           | 9         | 9.4         | 9         | 9.4        |
| 50 & above   | -                  | -           | -         | -           | -         | -          |
| <b>Total</b> | <b>32</b>          | <b>33.3</b> | <b>64</b> | <b>66.7</b> | <b>96</b> | <b>100</b> |

Source: Field Data, 2020

Table I indicates that 33.3% of respondents, of whom 20.8% were aged below 30 and 12.5% were aged 30 to 40, were unemployed during the period of this study. On the other hand, 66.7% of the respondents (of whom 31.3% were aged below 30; 26.0% were aged 30-40; and 9.4% were aged 40-50) were laidoff due Covid-19 pandemic. From these facts, it is evident that the majority (52.1% of all respondents) of both unemployed and those laidoffs due to Covid-19 pandemic are below 30, that is youth. This therefore implies that, in terms of employment, the young are the most affected by Covid-19 pandemic. These support the findings of the previous studies which revealed that unemployment in Rwanda is an urban phenomenon and it tends to be higher among younger persons (NISR, 2020).

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**2) Age and Gender of respondents:** Age and gender are also important components of consideration to understand the composition of respondents in this study. Gender consideration helps to determine whether and to what extent this study is gender sensitive. Table II cross-tabulates age and gender characteristics of the respondents.

**Table II. Age and Gender of respondents**

| Age          | Gender    |             |           |             | Total     | %            |
|--------------|-----------|-------------|-----------|-------------|-----------|--------------|
|              | Male      |             | Female    |             |           |              |
|              | N         | %           | N         | %           |           |              |
| Below 30     | 10        | 10.4        | 15        | 15.6        | 25        | 26           |
| 30-40        | 15        | 15.6        | 25        | 26          | 40        | 41.6         |
| 40-50        | 10        | 10.4        | 10        | 10.4        | 20        | 20.8         |
| 50& above    | 5         | 5.2         | 6         | 6.2         | 11        | 11.4         |
| <b>Total</b> | <b>40</b> | <b>41.6</b> | <b>56</b> | <b>58.3</b> | <b>96</b> | <b>100.0</b> |

Source: Field Data, 2020

Table II shows that 41.6% of respondents encompassing 10.4% aged below 30, 15.6% aged 30 to 40, 10.4% aged 40-50 and 5.2% aged 50 and above were male. The same Table indicates that 58.3% of respondents including 15.6% aged below 30, 26% aged 30 to 40, 10.4% aged 40-50 and 6.2% aged 50 and above were female. These provide a guarantee that both males and females participated in the study. Additionally, provided that the respondents are those who are affected by Covid-19 pandemic (unemployed and laidoffs), it is also an indication that Covid-19 affected more females than males, i.e, unemployment caused by Covid-19 pandemic was higher among females as compared to males. Moreover, the majority of either males or females (26% and 41.6% respectively) who are affected by Covid-19 pandemic is aged under 40, which means the majority is young.

These confirm the findings revealed by the ILO (2020b)[43] which indicate that the unemployment rate was higher among women (25.0%) than among men (19.6%) and higher among young people 16-30 year (27.2) than among adults 31 years and above (17.7%) in May 2020. It was higher in rural areas as compared to urban areas (22.3 and 21.0% respectively). The level of employment in Rwanda was much affected by the lockdown in April and starts the recovery in May after reopening of different activities.

**3) Age and marital status of respondents:** The distribution of respondents by marital status presents a good picture in analysis of social studies. It is important to specify the marital status of respondents involved in the study since the social standing can influence the observation and the interpretation of the phenomena. The value of research is given by the diversity of opinions from all people who can be affected by and experiencing the problem. In this study, marital status of the respondents in terms of married, single, widow and divorced is presented along with their age in order to determine the corresponding statistics. In cross-tabulation manner, Table III summarises the age and marital status of respondents.

**Table III. Age and Marital status of respondents**

| Age          | Marital status |             |           |             |           |             |          |            | Total     | %            |
|--------------|----------------|-------------|-----------|-------------|-----------|-------------|----------|------------|-----------|--------------|
|              | Single         |             | Married   |             | Widow(er) |             | Divorced |            |           |              |
|              | n              | %           | n         | %           | n         | %           | n        | %          |           |              |
| Below 30     | 10             | 10.45       | 15        | 15.6        | -         | -           | -        | -          | 25        | 26.5         |
| 30-40        | 5              | 2           | 25        | 26          | 7         | 7.2         | 3        | 3.1        | 40        | 42.6         |
| 40-50        | -              | -           | 18        | 18.7        | 1         | 1           | 1        | 1          | 20        | 21.3         |
| 50 and above | -              | -           | 7         | 7.2         | 2         | 2           | 2        | 2          | 11        | 11.3         |
| <b>Total</b> | <b>15</b>      | <b>15.6</b> | <b>65</b> | <b>67.7</b> | <b>10</b> | <b>10.5</b> | <b>6</b> | <b>6.2</b> | <b>96</b> | <b>100.0</b> |

Source: Feld Data, 2020

Table III indicates that 15.6 % of respondents, of whom 10.4% were aged below 30 and 5.2 % were aged 30 to 40, were single. On the other hand, 67.7% of the respondents (of whom 15.6% were aged below 30, 26% were aged 30-40, 18.7% were aged 40-50 and 7.2% were aged 50 and above) were married. Widow(er) and divorced who participated in this study were 10.5% and 6.2% respectively. Refer to Table III, the majority of single, married, widow(er) and divorced respondents (i.e. 15.6; 67.7; 10.5; and 6.2percent respectively) were aged below 40. However, the majority (67.7%) was on overall married, which means they have many social responsibilities and hence more burdened by Covid-19 pandemic.

**4) Age and Education level of respondents:** Education level is another important variable to be considered while conducting a socio-economic study. Generally, ideas and perceptions of people are different depending on their schooling level as well as maturity. Table IV summarises the characteristics of respondents in terms of age and education level.

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**Table IV. Age and Education Level of respondents**

| Age          | Education Level |             |             |             |           |             |            |             | Total     | %            |
|--------------|-----------------|-------------|-------------|-------------|-----------|-------------|------------|-------------|-----------|--------------|
|              | Primary School  |             | TVET School |             | Secondary |             | University |             |           |              |
|              | n               | %           | n           | %           | N         | %           | n          | %           |           |              |
| Below 30     | 2               | 2           | 5           | 5.2         | 18        | 18.7        | -          | -           | 25        | 26           |
| 30-40        | 8               | 8.3         | 7           | 7.2         | 25        | 26          | 8          | 8.3         | 48        | 50           |
| 40-50        | 1               | 1.1         | 1           | 1.1         | 7         | 7.2         | 5          | 5.2         | 14        | 14.5         |
| 50& above    | 3               | 3.1         | 1           | 1.1         | 5         | 5.2         | -          | -           | 9         | 9.3          |
| <b>Total</b> | <b>14</b>       | <b>14.6</b> | <b>14</b>   | <b>14.6</b> | <b>55</b> | <b>57.2</b> | <b>13</b>  | <b>13.5</b> | <b>96</b> | <b>100.0</b> |

Source: Field Data, 2020

Table IV indicates that 14.6% of respondents with 2% aged below 30; 8.3% aged 30 to 40; 1.1% aged 40-50; and 3.1% aged 50 and above completed only primary school. While 14.6% of respondents with 5.2% aged below 30; 7.2% aged 30 to 40; 1.1% aged 40-50; and 1.1% aged 50 and above completed TVET studies, 57.2% of respondents with 18.7% aged below 30; 26% aged 30-40; 7.2% aged 40-50 and 5.2% aged 50 and above completed secondary school. Moreover, 13.5% of respondents with 8.3% aged 30-40 and 5.2% aged 40-50 have university level of education.

This indicates that, on overall, more than 75% of the respondents aged below 40. In addition, the respondents' level of education shows that they have basic employable skills despite the fact they have been laidoff and forced to take unpaid leaves due to Covid-19 pandemic. However, unemployment rate was higher among the persons with only secondary education level who are dominantly aged below 40 (i.e. young).

**5) Age and Nationality of respondents:** Nationality is one of the identifications which help to know the origin of someone. Kigali is a multi-nationality city of people working in different organisations and sectors. In that manner, the respondents were identified in terms of their nationalities along with their age as presented in Table V.

**Table V. Age and Nationality of respondents**

| Age          | Nationality of respondents |             |           |             |           |             |          |            | Total     | %            |
|--------------|----------------------------|-------------|-----------|-------------|-----------|-------------|----------|------------|-----------|--------------|
|              | Rwandan                    |             | Kenyan    |             | Ugandan   |             | Other    |            |           |              |
|              | n                          | %           | N         | %           | N         | %           | n        | %          |           |              |
| Below 30     | 20                         | 20.8        | 6         | 6.2         | 8         | 8.3         | 2        | 2.1        | 36        | 36.5         |
| 30-40        | 30                         | 31.2        | 6         | 6.2         | 2         | 2.1         | 2        | 2.1        | 40        | 43.7         |
| 40-50        | 7                          | 7.2         | 2         | 2.1         | 1         | 1           | 1        | 1          | 11        | 11.4         |
| 50& above    | 6                          | 6.2         | 1         | 1           | 1         | 1           | 1        | 1          | 9         | 9.3          |
| <b>Total</b> | <b>63</b>                  | <b>65.6</b> | <b>15</b> | <b>15.6</b> | <b>12</b> | <b>12.5</b> | <b>6</b> | <b>6.2</b> | <b>96</b> | <b>100.0</b> |

Source: Field Data, 2020

Table V shows that 65.6% of respondents, of whom 20.8% were aged below 30; 31.2% were aged 30-40; 7.2% were aged 40-50; and 6.2% were aged 50 and above, were Rwandans. The same Table indicates that 15.6% of the respondents comprising 6.2% aged below 30; 6.2% aged 30-40; 2.1% aged 40-50; and 1% aged 50 and above, were Kenyans. Moreover, 12.5% of the respondents encompassing 8.3% aged below 30; 2.1% aged 30-40; 1% aged 40-50; and 1% aged 50 and above were Ugandans and 6.2% of the respondents are from other parts of the world. This indicates that the unemployment caused by Covid-19 pandemic faced not only the Rwandans in Kigali city but also other nationalities; however, more than 80% were aged below 40. This implies that while various nationalities have been affected by Covid-19 pandemic in Kigali city, the young people are the most affected regardless their nationalities.

### B. Covid-19 Citizens' Perceptions and Spread in Kigali City

This section discusses citizens' perceptions on Covid-19 and describes how Covid-19 pandemic has been spread in Kigali City, Rwanda using data collected from the 2020-2021 Rwanda Biomedical Centre (RBC) report. However, before understanding how Covid-19 pandemic has been spread in Kigali city, it is important to discuss and understand citizens' perceptions on Covid-19 pandemic.

Covid-19 is new virus, in this way, the respondents showed different perceptions on it, as it is presented in Table VI. The existing perceptions on Covid-19 pandemic turn around God's punishment, incurable disease, disease that kills old people and global health crisis as revealed by the respondents. In order to understand the extent to which the respondents perceive Covid-19 pandemic, five-point Likert scale measures ranging from 5 (strongly agree) to 1 (strongly disagree) were used.

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**Table VI. Respondents' Perceptions on Covid-19 pandemic**

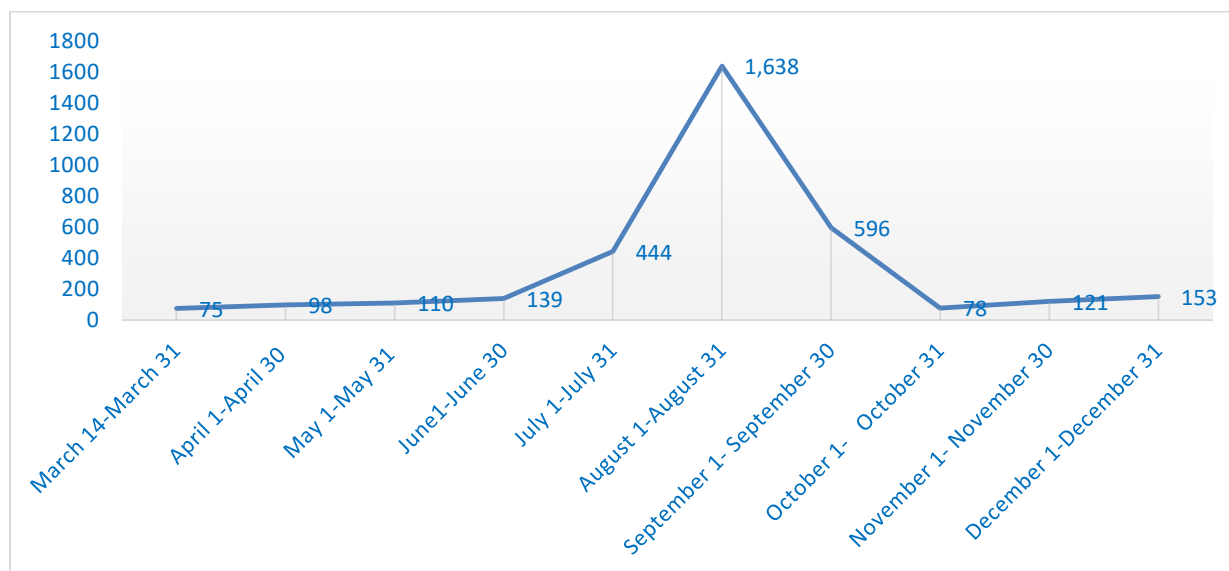
| Measure                  | Statistics | Perception on Covid-19 pandemic |                   |                  |                      |
|--------------------------|------------|---------------------------------|-------------------|------------------|----------------------|
|                          |            | God's punishment                | Incurable disease | Kills old people | Global health crisis |
| <b>Strongly Agree</b>    | N          | 25                              | 22                | 21               | 5                    |
|                          | %          | 26                              | 22.9              | 21.8             | 5.2                  |
| <b>Agree</b>             | N          | 30                              | 40                | -                | 80                   |
|                          | %          | 31.25                           | 41.7              | -                | 83.3                 |
| <b>Neutral</b>           | N          | 10                              | 4                 | 20               | -                    |
|                          | %          | 10.4                            | 4.1               | 20.8             | -                    |
| <b>Disagree</b>          | N          | 25                              | 30                | 55               | -                    |
|                          | %          | 26                              | 31.2              | 52               | -                    |
| <b>Strongly Disagree</b> | N          | 6                               | -                 | 10               | -                    |
|                          | %          | 6.2                             | -                 | 10.4             | 11                   |
| <b>Total</b>             | N          | <b>96</b>                       | <b>96</b>         | <b>96</b>        | <b>96</b>            |
|                          | %          | <b>100.0</b>                    | <b>100.0</b>      | <b>100.0</b>     | <b>100.0</b>         |

Source: Field Data, 2020

Refer to Table VI, there are different perceptions on Covid-19 pandemic as revealed by the respondents. Equally important, the levels of perceptions vary among the respondents. The results indicate that the respondents who perceive Covid-19 pandemic is God's punishment are 57.25% with 26% and 31.25% who respectively strongly agreed and agreed; incurable disease are 64.6% with 22.9% and 41.7% who respectively strongly agreed and agreed; kills old people are 21.8%; and global health crisis are 88.5% with 5.2% and 83.3% who respectively strongly agreed and agreed.

Throughout the literature, the pandemics have been perceived differently. Despite the fact that a large scale global pandemic was inevitable (Madhav et al., 2017[9] and Pantano et al. (2020)[10] and that the pandemics are not new as they have occurred at different stages in human history (Ferguson et al., 2020)[8], Covid-19 pandemic was also viewed differently because of its varying characteristics, whereby some say it's a new virus, meaning that no one has immunity, and there is no vaccine.

To understand the spread of Covid-19, this study covered the period of March 14, 2020 when the first Covid-19 positive case was identified to December, 2020 when the latest data for this study could be collected. Data collected from the RBC indicates that Covid-19 cases were increasingly changing for the aforementioned period as summarized in Figure 1.



**Figure 1. Trends in Spread of Covid-19 in Kigali City (March 14 to December 31, 2020)**

Source: RBC (2020)[44]

Refer to Figure 1, while the first Covid-19 case in Kigali City appeared on March 14, 2020, at the end of March, Covid-19 cases reached 75 and this is the lowest number of monthly cases recorded for the period March 14 to December 31, 2020. The highest number of Covid-19 positive confirmed cases of 1,638 was recorded for the period August 1 to August 31, 2020. Another important fact is that since the first Covid-19 positive case was confirmed on March 14 to August 31, 2020, Covid-19 positive confirmed cases were increasingly changing. However, since September 1 to October 31, 2020, the number of Covid-19 positive confirmed cases



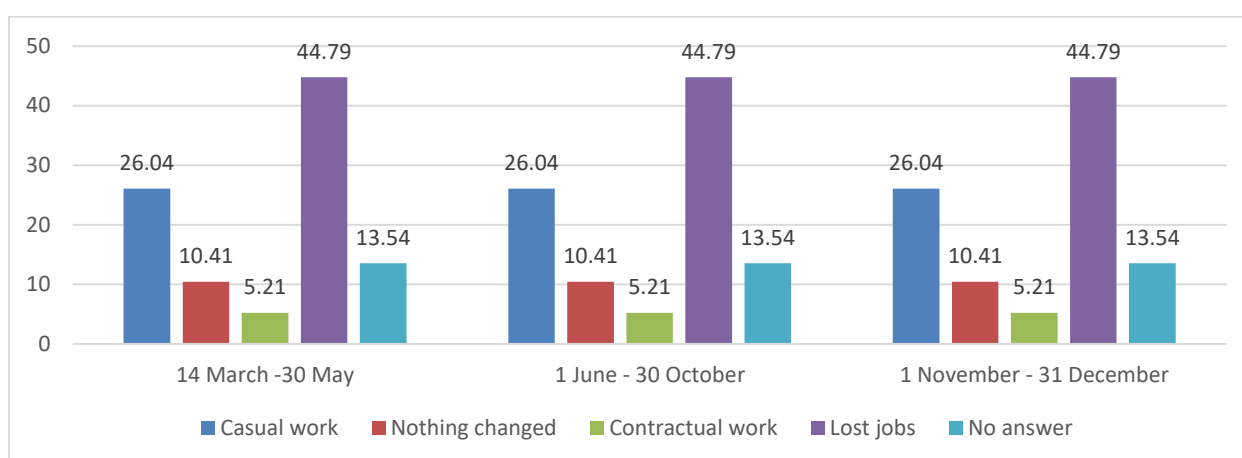
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has rapidly reduced from 1,638 to 78 before it rose to 153 on December 31, 2020. Nevertheless, on December 31, 2020, almost 10 months after the first case appeared, the Covid-19 positive confirmed cases had in total reached 3,452 in Kigali City.

As it is the case in other parts of the country and else where across the world, the spread of Covid-19 pandemic was faster in Kigali city and as a result, it affected in a number of ways the people's living conditions. Existing literature shows that the declaration of the outbreak was followed by a series of preventive measures such as the mandatory quarantine for all travelers coming into the country, compulsory wearing of face masks, hand washing and practice of physical distancing. Several campaigns were organized including risk communication and awareness campaigns, #GumaMuRugo – a call to stay home and save lives- which made a buzz thanks to the Rwanda National Police, the Health Sector and local authorities' efforts and innovations in community awareness, rumor management as they encouraged citizens to respect safety measures in the entire country. #NtabeAriNjye - roughly translated as "Let it not be me" - quickly followed to revive the fight at an individual level when the community started showing signs of complacency and took its foot off the pedal (RBC, 2020)[44].

### C. Development of unemployment cases due to Covid-19 Pandemic in Kigali City

As the Covid-19 pandemic continues to weaken the economy, it forces some companies to lay off employees, whereby approximately the majority of the respondents stated that they had less work while others lost their jobs due to Covid-19 pandemic. Figure 2 presents the development of unemployment caused by Covid-19 pandemic.



**Figure 2. Development of unemployment cases due to Covid-19 Pandemic (in %)**

**Source:** Field Data, 2020

According to Figure 2, the Covid-19 affected employment in various ways. While some were unemployed even before Covid-19 pandemic, some others have completely lost their jobs due Covid-19 and others remained working under special conditions such as casual or on a special contract basis.

For the phase1 (14<sup>th</sup> March to 30<sup>th</sup> May, 2020), phase 2 (1 June and 30 October, 2020) and phase 3 (1 November to 31 December, 2020), the results reveal that 44.79% of respondents completely lost their jobs due to Covid-19 pandemic whereas only 10.41% were facing unemployment even before Covid-19 pandemic . Those who remained working under special conditions are 26.04% and 5.21% who worked on casual and special contract bases respectively. On the other hand, 13.54% preferred to provide no answer or information regarding their employment situation.

This is emphasized by the testimony of one of the interviewees aged 30, mother of 3 children and teacher in Kigali City who said: *I am one of the teachers who were laid off by my school where I received a letter from my school, saying that the school is unable to provide salaries because of covid-19 effects and asked me to look for another job or wait for some changes so I can be back to work. Up to now I am jobless and it is difficult to feed my family*".

These findings are consistent with existing literature by the NISR (2020)[6] that unemployment in the country increased almost two-fold within a period of three months between February and May 2020. The report emphasized that unemployment rate stood at 13.1% in February before the first Covid-19 case was registered in Rwanda and by May, it had skyrocketed to 22.1%. The increase of unemployment rate registered in May 2020 is attributed to the effect of Covid-19 on labour market. The analysis of employment trends shows a decrease of employed population from February 2020(Q1) to May 2020. The number of employed population was 3,569,000 in February 2020 (Q1), decreased to 3,411,000 in March 2020 and kept decreasing to 2,117,416 in April during the general lockdown before increasing to 3,199,000 in May 2020 after reopening of most activities. The employment to-population ratio (EPR) decreased from 48.3percent in February 2020 (Q1) to 43.0 in May 2020.

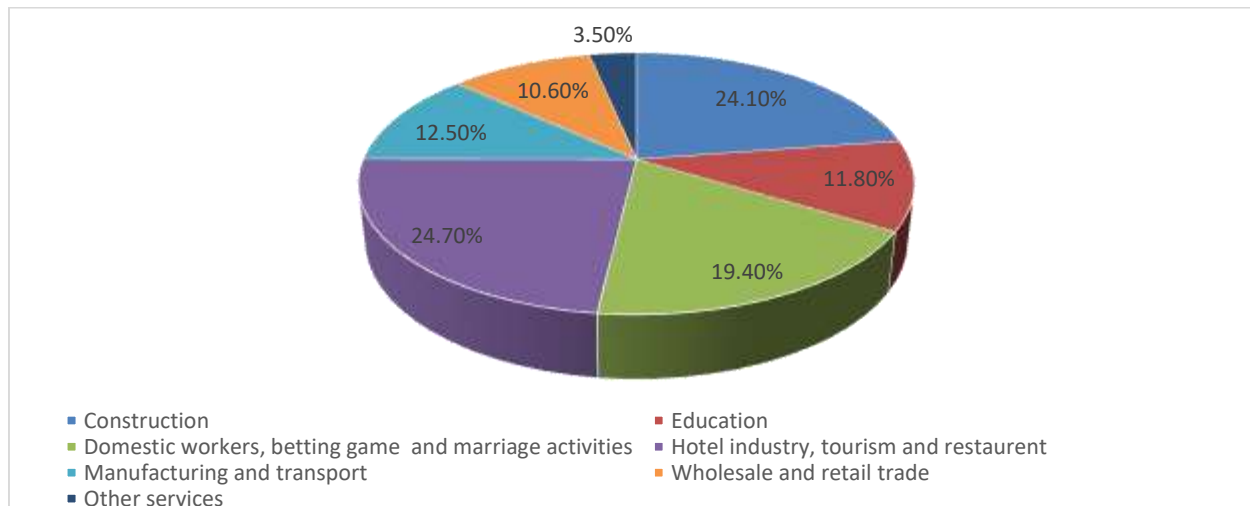
Another interviewee said: *"I am 58 years old, but this year is special because Covid-19 lockdown affected Rwandans employment. Many were laidoff and unemployed by different companies as they were unable to provide them with salaries. So, Covid-19 pandemic*

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has increased unemployment.” The respondents’ testimonies show that there is a relationship between the Covid-19 pandemic and the unemployment.

### D. The most affected Economic Sectors by Unemployment due to Covid-19 pandemic

This section identifies the most affected economic sectors by unemployment due to Covid-19 pandemic in Kigali City. There are numerous economic sectors such as education, transport and storage, construction, betting games, trades, construction, accommodation and food services, manufacturing, and domestic workers. Similarly, there are various people working in those sectors who have severely been affected by the lockdowns and quarantines. Existing literature shows that a number of employees who have been forced to take unpaid leave was increasingly changing day by day as more companies grapple with the impact of the novel Corona Virus Disease (Covid-19) outbreak. For example, the tourism industry, as one of the largest contributors to the Rwandan economy, has taken a substantial plunge in Kigali City, Rwanda (NISR, 2020)[6]. Figure 3 presents sector by sector statistics of unemployment due to Covid-19 as shown by the respondents.



**Figure 3. The most affected Economic Sectors by Unemployment due to Covid-19**

**Source:** Field Data, 2020

Refer to Figure 3, almost all economic sectors have been affected by unemployment due to Covid-19 pandemic in Kigali City as revealed by the respondents. The most affected sectors are hotel industry, tourism and restaurant sector; and construction with 24.7% and 24.1% of all respondents respectively. These are followed by domestic workers, betting game and marriage activities sector with 19.4%; manufacturing and transport with 12.5%; and education with 11.8%. Finally, the wholesale and retail trade sector and other services are shown to be the less affected sectors with 10.6% and 3.5% respectively. It is evident that Covid-19 pandemic has affected the unemployment rates for every sector.

Construction sector is the most affected sector because the measures against Covid-19 pandemic such as lockdowns put in place by the government forced the workers in this sector to stop all their activities and stay home. As many workers in construction sector are casual, construction activities largely ceased during Covid-19 period and as such, the impact was direct and immediate. In addition, although many of the self-employed may do some work from their home, a significant portion of unincorporated self-employed work in construction, including small, home-construction activities whose services were in lower demand during the Covid-19 pandemic while households were social distancing (Hipple and Hammond, 2016)[45].

This is also supported by the testimony of one of the interviewees who said: *“I am engineer with 10 years of experience in that sector. I have been working with construction Company here in Kigali City and I am one of many employees who laid off because of covid 19 pandemic as our company could not support our salaries as it was closed and we were obliged to go home and even, in May when the government eased some measures against Covid-19 pandemic, we were not given a chance to reopen, therefore up to now am jobless, I don’t know my future.”*

As regard the education sector, some educational staff (teachers) were laidoff in private schools as the students were not studying. One of the interviewees emphasised: *“I got surprised when I received a suspension letter on my duty that due to Covid -19 lockdown and government serious measures closing the schools, I have to stay home until further announcement. However, after one month I got another letter that due to financial situation, the school is unable to pay our salaries. As such, I have right to look for another job or wait for school reopening”*

Existing literature shows that private schools have experienced a sharp drop in fee revenues during the closure period, and many may have relinquished their rented premises or be at risk of defaulting on their loan payments. In that regard, the UN (2020)[46]

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estimated that about 21,640 or 21.5% of educational staff (teachers and non-teachers) were employed in private schools and may be vulnerable if private schools are not able to stay afloat (Ndiaye, 2020)[47].

Domestic workers, betting games and marriage activities were also effected by Covid-19 pandemic. According to the ILO (2020)[43], in 2017-18, there were an estimated 4.9 million domestic workers, classified as regular but unprotected. Around two-thirds were women. These workers are vulnerable to second-round effects when households facing losses can no longer employ them. The most vulnerable are those who do not live on the premises. Furthermore, an interviewee said: *“After completing University studies, I decided to create my own business to supply clothes and materials used in the marriage related ceremonies but due to Covid-19 lockdown, marriage related ceremonies were stopped and my business closed. I am since then at home waiting for God’s will.”* Another one stated: *“I am one of many employees laid off by Betting Compaiesy here in Kigali City because of covid 19. Even when the Government eased some measures against Covid-19, betting companies were not given a chance to reopen. As a result, there is no hope for the future.”*

The lockdown has intensively damaged in the hotel industry and restaurant, currently the larger earner for GDP (ILO, 2020b)[43]. Rwandan tourism and restaurant have suffered not only from the standstill in non-essential international travel, but also from expert concerns about transmission of Corona to wildlife (Barro, 2020)[22]. In addition to tourism worries, however, on the individual level, Rwanda is a nation of small business owners in all industries (ILO, 2020a)[4]. One of the interviewees stated that *“I am experienced with almost 10 years in different hotels in Rwanda, but during this pandemic I got laidoff due to the lack of customers at a hotel where we used to host foreign customers.”*

Existing literature also shows that workers whose last job was in the leisure and hospitality industry experienced a higher peak in unemployment (39.3% in April 2020) than did workers who were previously employed in any other industry; they also had the highest unemployment rate in December 2020 (16.7%) (Klehe and Van Hooft, 2012)[36]. Elevated unemployment rates are however not constrained to industries providing in-person services. The NISR (2020)[6] shows that workers whose last job was in the hotel industry, tourism and restaurant or extraction industry have experienced steadily increasing unemployment since the onset of the recession; in December they exhibited the second highest rate among all workers across industries (13.1%).

In general, transport and manufacturing employ many be regular but unprotected workers. In manufacturing and transport sector, workers were laidoff due to Covid-19 pandemic in Rwanda especially in Kigali City. Existing literature confirm that the Covid-19 pandemic has had a huge impact on manufacturing and transport services. Accordingly, McKibbin and Sidorenko (2006)[2], despite the fact that some urban businesses still operate because of increased use of home delivery systems, during the pandemic, some workers have lost their jobs as long-distance movements of people and goods across the country and district boundaries have been curtailed.

Rwandan trademainly depends on primary products export and import processed products, even more of the daily consumption products are from abroad. During Covid-19 pandemic in Rwanda, some workers in trade (wholesale and retail) were laidoff. In addition, one of the interviewees said: *“Restrictions on movement have had a direct impact on trade, especially on retail trade where the majority of wholesale workers are self-employed.”*

This principally increases the level of unemployment and reduces economic growth, because Covid-19 pandemic throw or deprived the necessary and productive human capitals by using different mechanism like reducing the employing capacity of employers and plus it leads to fire their existing workers (Klehe and Van Hooft, 2012)[36]. In addition, the pandemic has increased the amount of debt, reduced countries revenue by blocking money income generator sectors from being productive especially in wholesale and retail trade (Barro, et al., 2020)[22]. In return, social tension increased like some goods and services price increased over expected, job opportunity highly reduced and private workers are at risk (McKibbin and Sidorenko, 2006)[2].

### E. The Extent to which Covid-19 pandemic caused unemployment in Kigali City

This section determines the extent to which Covid-19 pandemic caused unemployment in Kigali city, Rwanda. This has been done by establishing the relationship between Covid-19 and unemployment statistics in Kigali city. To establish that relationship, correlation coefficient was computed whereby, a positive value indicates a positive relationship and negative value indicates a negative relationship. The results are presented in Table VII.

**Table VII.** Correlation between Covid-19 pandemic and unemployment

|                   |                     | Covid-19 pandemic | Unemployment |
|-------------------|---------------------|-------------------|--------------|
| Covid-19 pandemic | Pearson Correlation | 1                 | .980**       |
|                   | Sig. (2-tailed)     |                   | .000         |
|                   | N                   | 85                | 85           |
| Unemployment      | Pearson Correlation | .980**            | 1            |
|                   | Sig. (2-tailed)     | .000              |              |
|                   | N                   | 85                | 85           |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## The Covid -19 Pandemic and Unemployment in Kigali City, Rwanda

The statistical evidence from Table VII depicts that there is a significant positive relationship between covid-19 pandemic and unemployment in Kigali city with a degree of correlation that is equal to 0.980. This implies that the more the Covid-19 confirmed positive cases, the more the risks of lockdown and quarantine and hence, the more the laidoff people and forced unpaid leaves. These findings confirm existing literature that the rapid spread of Covid-19 cases has a huge impact on unemployment because companies cannot pay salaries or wages to employees (ILO, 2020). This incompetence of business people to pay salaries or wages to employees and laborers has led to cases of layoffs which have suddenly increased dramatically (NISR, 2020). For instance, the available data indicate that the number of workers laid off has reached 2,084,593 on April 20, 2020 (UNDP, 2020). It is estimated that if the spread continues to increase, the number of layoff cases that will be suffered by people will also increase (ILO, 2020).

## V. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

The study investigated the relationship between the Covid-19 pandemic and the situation of unemployment in Kigali city, Rwanda. The findings of the study indicate a significant positive relationship between covid-19 pandemic and unemployment in Kigali city. That is the more the positive cases of Covid-19, the more the risks of quarantine and lockdown and hence, the more the cases of forced unpaid leaves and layoffs in Kigali city. Moreover, though unemployment resulting from Covid-19 affected the economy as a whole, some sectors such as tourism industry, restaurants, hotels and construction are the most affected. The spread of Covid-19 in Kigali city was faster and affected people's living conditions in a number of ways.

### B. Recommendations

From the findings of this study, the following recommendations are made:

1. Public-private partnership is needed to put in place the measures that protect people working in informal and private sectors.
2. The government has to put in place the schemes that help people working in both public and private sectors to make savings for future use.
3. The employers have to establish within their respective organisations the schemes that can support their employees in case of unpredicted situation like Covid-19 pandemic.
4. A similar study that can cover the whole country and the entire period of Covid-19 pandemic to develop common trends and diversify the findings of this study.

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**Conflict of Interest:** Authors declare that no conflict of interests exist.

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### Appendix 1: Major Pandemics and Their Historical Timelines

| Pandemic                    | Time Period         | Type/Pre-human host                       | Estimated Death Toll       |
|-----------------------------|---------------------|---|----------------------------|
| Antonine Plague             | 165-180             | Believed to be either smallpox or measles | 5 million                  |
| Japanese smallpox epidemic  | 735-737             | Variola major virus                       | 1 million                  |
| Plague of Justinian         | 541-542             | Yersinia pestis bacteria/rats, fleas      | 30 to 50 million           |
| Black Death                 | 1347-1351           | Yersinia pestis bacteria/rats, fleas      | 200 million                |
| New World Smallpox Outbreak | 1520-onwards        | Variola major virus                       | 56 million                 |
| Great Plague of London      | 1665                | Yersinia pestis bacteria/rats, fleas      | 100,000                    |
| Italian Plague              | 1629-1631           | Yersinia pestis bacteria/rats, fleas      | 1 million                  |
| Cholera Pandemics 1-6       | 1817-1923           | V. cholerae bacteria                      | 1 million+                 |
| Third Plague                | 1885                | Yersinia pestis bacteria/rats, fleas      | 12 million (China & India) |
| Yellow Fever                | Late 1800s          | Virus/Mosquitoes                          | 100,000-150,000 (US)       |
| Russian Flu                 | 1889-1890           | H2N2 (avian origin)                       | 1 million                  |
| Spanish Flu                 | 1918-1919           | H1N1 virus/pigs                           | 40 to 50 million           |
| Asian Flu                   | 1957-1958           | H2N2 virus                                | 1.1 million                |
| Hong Kong Flu               | 1968-1970           | H3N2 virus                                | 1 million                  |
| HIV/AIDS                    | 1981-present        | Virus/chimpanzees                         | 25 to 35 million           |
| Swine Flu                   | 2009-2010           | H1N1 virus/pigs                           | 200,000                    |
| SARS                        | 2002-2003           | Coronavirus/bats, civets                  | 770                        |
| Ebola                       | 2014-2016           | Ebolavirus/ wild animals                  | 11,000                     |
| MERS                        | 2015-present        | Coronavirus/bats, camels                  | <b>580</b>                 |
| <b>Covid-19</b>             | <b>2019-present</b> | -   | -                          |

Source: World Economic Forum (2020).

### Appendix 2: Spread of Covid-19 cases in Kigali City

| District    | Month                   | Number of Cases | Observation                |
|-------------|-------------------------|-----------------|----------------------------|
| Kigali city | 14/March-31 March 2020  | 75              | Cases increased day to day |
| "           | 1April-30 April         | 98              | Cases increased            |
| "           | 1 May-31 May            | 110             | Cases increased            |
| "           | 1June-30 June           | 139             | Cases increased            |
| "           | 1July-31July            | 444             | Cases increased            |
| "           | 1August-31 August       | 1,638           | Cases increased            |
| "           | 1September-30 September | 596             | Cases decreased            |
| "           | 1 October-31 October    | 78              | Cases decreased            |
| "           | 1 November-30 November  | 121             | Cases increased            |
| "           | 1 December-31December   | 153             | Cases increased            |
| "           | Total                   | 3,452           |                            |

Source: RBC, 2020

## The Covid -19 Pandemic and Unemployment in Kigali City, Rwanda

### Appendix 3: Number of confirmed COVID-19 cases in African Region

| Country                          | Total Cases   | Total Deaths | Recovered Cases |
|----------------------------------|---------------|--------------|-----------------|
| Burundi                          | 378           | 1            | 301             |
| Democratic Republic of the Congo | 8,873         | 207          | 5,930           |
| Ethiopia                         | 15,200        | 239          | 6,556           |
| Kenya                            | 18,581        | 299          | 7,908           |
| Rwanda                           | 1,926         | 5            | 1,005           |
| South Sudan                      | 2,322         | 46           | 1,205           |
| Uganda                           | 1,135         | 2            | 989             |
| United Republic of Tanzania      | 509           | 21           | 180             |
| <b>Total (N=8)</b>               | <b>48,924</b> | <b>820</b>   | <b>24,074</b>   |

Source: WHO, 2020



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