



## FE(MALE) GLOBAL LEADERS AND CRISIS MANAGEMENT. EVIDENCE FROM COVID-19 IN EUROPEAN COUNTRIES

Kofi Mintah Oware, PhD 

Kumasi Technical University, Ghana

owaremintah@hotmail.com

Angela Oware Mintah

Upstage Community School, Kumasi, Ghana

angelamint78@gmail.com

### Abstract

*This empirical study examines female and male global leaders in the European Union and COVID-19 management in the context of crisis management. This study contributes to the body of knowledge of gender and politics. The study used a sample of 9509 daily (330 monthly) observations between January 2020 and December 2020 inclusive. The study applied multivariate regression to analyse data. The research shows that 20.9% of Europe's countries have female prime ministers, and 79.1% are male prime ministers. There is a strong and positive correlation between pandemic cases and the number of death. Also, there is a weak and negative correlation between pandemic variable (cases and death) and the human development index (HDI). Our findings show that female global leaders negatively and statistically significantly associate with COVID-19 pandemic cases. Similarly, we find also that female global leaders have a negative and statistically significant association with pandemic death. It is suggested that women have more communal traits than men and therefore have concern for people, which is a vital trait for crises management like COVID-19. The results are robust after controlling for endogeneity. This study's implication advises women to stand for public office positions. Women have intuitions and inner characteristics, which is in line with paternalistic leadership style and nurturing characteristics that bring caution in decision-making, especially in times of crisis (a case study of COVID-19 pandemic).*

*Keywords: Gender diversity, Global leaders, COVID-19, Risk-taking theories, European union, Policy decision making*



## INTRODUCTION

Previous authors and policymakers have asked; do women at the top level of the organisation or public office make a difference? (Izgi & Akkaş, 2012). This question has been asked in the corporate environment and a governmental or public office environment (Cherneski, 2020). The occurrence of COVID-19 causes this study to contribute to the debate of the impact of female leaders in decision-making in crisis and its effect on corporations or society (i.e. using the current health crisis around the world). As a people, we are confronted with a pandemic of coronavirus diseases 2019 (COVID-19), a high-magnitude health crisis since World War 2 (Atkinson, 2020). Leadership has become a necessity, and today's global leaders are tested daily and monthly in these times. The overriding question persists; which of the leaders (i.e. female verse male) can handle this situation better. Academia and all walks of life in the community and decision-making level seek scientific answers to this question. Leadership is defined as someone who sets ideas, people, organisations and society in motion or on a journey (Adler, 1997). A previous study only examines the immediate reaction of gender on COVID-19 (Garikipati and Kambhampati, 2020). Still, this current paper increases the scope to cover the entire year of 2020 beyond the immediate reaction but limits the study to the European Union, where female proportion to male counterparts data is reasonably available to test the proposed hypothesis. The daily news argued that the female prime ministers of Norway, Finland, Iceland and Denmark have lower rates of COVID-19 infections than male-led neighbouring nations (Dudman, 2020). We build on the previous observations and examine the global leaders and policy decisions in COVID-19 management scientifically and use leadership style and risk-taking characteristics (Booth & Nolen, 2012; Charness & Gneezy, 2012; Gill, 2010; H. L. Zhang & Liu, 2020) as the theories to interpret the study. This study limitation of using the European countries as the sample size for male and female prime ministers is not highly skewed, making it appropriate for this study. Therefore, this study examines female and male prime ministers in the European Union and crisis management using the current COVID-19 as the testing case study.

Different authors argue that female leaders are better leaders (Sun, Zhu and Ye, 2015; Dudman, 2020), but the scientific and empirical analysis is weak in terms of the daily cases and death and its monthly cumulative totals of the COVID-19 crisis. Leaders and decision making in crisis are examined in different jurisdictions (Furst & Reeves, 2008; Sun et al., 2015; J. Zhang, Han, & Yin, 2018). For example, previous studies have examined the early response to COVID-19 by European countries. It suggested that distancing, contact testing, and tracing strategies contribute to managing the pandemic (Goniewicz et al., 2020). Nonetheless, it is reflective to see that many institutions failed to foresee the calamity and redress the negative impact of

COVID-19, especially in advanced economies (Walt, 2020). It is, therefore, fair to argue that the management of cases of infections and the resultant death goes beyond institutions, making the relevance of leadership style appropriate for this study. More so, the context of female global leaders and COVID-19 in Europe lacks empirical evidence and creates a gap in this research study. Accordingly, the present study investigates female and male leaders and pandemic cases in Europe with daily and monthly data. Second, this study also examines female and male leaders and pandemic death in Europe with daily and monthly data. We use multivariate regression from January 2020 to December 2020, consisting of 9509 daily (330 monthly) observations across the European Union.

The study contributes to the existing knowledge in two ways. The previous study examined the immediate reaction of gender on COVID-19 and used the first-quarter data of 2020 of the pandemic with descriptive statistics of measurement tools (Garikipati & Kambhampati, 2020). However, this current paper increases the scope to cover the entire year of 2020, beyond the immediate reaction. This study is divided into daily analysis and monthly analysis and uses multiple regression. Second, other studies argued that female and male leadership style is different and is suggested to contribute to why female leaders are doing better in managing the pandemic (Carbonaro, 2020; Nunes, 2021). This study findings support this line of argument through the negative association between the dependent and the independent variables. Third, this study empirically adds new knowledge on female and male global leaders in the European Union and COVID-19 management. Even though the newspaper has commented (Dudman, 2020), there is no proven scientific analysis to support the argument. Still, this study provides the science of reporting to gender and politics of crisis management. The remainder of the paper is organised as follows. Section 2 provides an overview of the empirical literature, underpinning theory and hypotheses development. Section 3 shows the data set, variables description, model specification, and estimation techniques. Sections 4 present the results and discussions. Section 5 and 6 show the conclusion and the implication of the study.

## **THEORY, LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### **Theory**

Female leaders approach risk from a different perspective than male counterparts because there is an ethical difference between them towards their set objectives or difference in their nurture (Gill, 2010; Booth and Nolen, 2012; Charness and Gneezy, 2012), and this has a consequence to the outcome of the decision taken by each group of persons. For example, an investigation into the effect of gender difference on taking a risk in Turkey showed that female

applicants are more likely to apply to low ranking universities than a male counterpart who risk applying to high ranking universities (Saygin, 2016). The characteristic of caution associated with female leaders causes them to be proactive towards anticipated crisis. Risk-taking can sometimes make a person sloppy, and the result can be devastating to the entire society or group of people within a country. Evidence from studies confirms that male leaders are associated with risk-taking in decision making (Khaw, Liao, Tripe, & Wongchoti, 2016) compared to the female counterparts.

Also, female and male leadership style is different and is suggested to contribute to why female leaders are doing better in managing the pandemic (Carbonaro, 2020; Garikipati & Kambhampati, 2020). For example, through engagement with the community, the female leaders in Rio de Janeiro's favelas managed the pandemic in these communities (Nunes, 2021). Through literature, the authors of a study believed that the female leadership style is influenced by three aspects: paternalistic leadership style, transformational leadership style, and democratic leadership style (Zhang & Liu, 2020). This study combines leaders' risk-taking attitude and leadership style to examine the relationship between global leaders and COVID-19 management in the European Union.

### **Gender and performance**

Different authors have examined gender and performance (Jyothi & Mangalagiri, 2019; Pedrini, 2018; Tsou & Yang, 2019). It is argued that the female workforce contributed lower productivity than the male counterparts in a Chinese study that examined sample data from the manufacturing sector (Tsou & Yang, 2019). Conversely, women directors perform better on firm performance in an Indian study (Jyothi & Mangalagiri, 2019). We find further that where female directors exhibit their executive powers and managerial skills, the firm performance is improved (Pham & Hoang, 2019). Female directors are characterised by bringing new ideas and different perspective to the table to address the situations (Papangkorn, Chatjuthamard, Jiraporn, & Chueykamhang, 2019), which is required in cases like the COVID-19 outbreak. Similarly, women leadership in a microfinance institution exhibited superior performance in a period of turbulence in the firm performance (Pedrini, 2018). Even though most studies indicate the benefits of female leadership outweigh male leadership, the environment is significant to influence the relationship. For example, where patriarchal society is high, female leadership is stifled (Chauhan & Dey, 2017). Nonetheless, the common denominator between gender and performance is a good decision and bad decision-making based on decision-makers leadership style and risk-taking attitude.

## Gender and crisis management

The business case of gender diversity on corporate decisions in crisis management is examined in previous studies in both emerging and developed economies (Dang, Houanti, Ammari, & Lê, 2018; Dezsö & Ross, 2012; Furst & Reeves, 2008; Kulich, Gartzia, Komarraju, & Aelenei, 2021; Sabatier, 2015; Sun et al., 2015) and sometimes, a reference is made to disaster occurrence to the lives of people in countries (Zhang et al., 2018). In disaster studies, we find that female directors positively impact firm donation, suggesting that females are conservative in decision-making (Zhang et al., 2018). Nonetheless, it observed in a U.S. study that female executives rise faster in a turbulent environment because female leaders are characterised by open innovation and bold decisions (Furst & Reeves, 2008). It is argued that during times of crisis, different advice from the normal is required. It suggested that female directors significantly improve firm performance during the economic crisis period (Papangkorn et al., 2019) and are more accepted during the economic crisis than a firm's prosperity period (Sun et al., 2015). Even though female leadership may be taken in crisis time, the environment of people responds to the decisions and directives matter. A study examined citizens willingness to respond to female leadership directives on social distancing, face-covering and contact tracing during the COVID-19 pandemic but with little effect on citizenry compliance attitude (Bauer, Kim, & Kweon, 2020). A reason assigned may be gender resentment because it is argued in a study that where gender resentment increases with female leaders in charge, citizenry develops the unwillingness to respond to social distancing directives (Kalaf-Hughes & Leiter, 2020). However, when the state sponsors feminist culture, the environment becomes receptive to female leadership directives (Al-Mutawa, 2020). We also see that trust is high with female leaders than male leaders because of high expectation of ethical standards, an advantage that can support citizenry compliance to COVID protocols (Montgomery & Cowen, 2020). Similarly, women have more communal traits than men and therefore have concern for people, which is a strong trait for crises management like COVID-19 (Denise, 2020). The combination of the characteristics of female leaders can cause better control of the European union COVID-19, which is classified as a crisis.

## Gender and public office

Different studies have also examined gender and public office, with policy decision impacting society (Bauer et al., 2020; Castillo & Berdasco-Gancedo, 2020; Küppers, 2020; Schwartz & Blair, 2020; Sundström & Stockemer, 2021). A micropower study of female leadership caused an effective change in situations that benefited the citizenry during the COVID-19 period (Nunes, 2021). Nonetheless, women and female politicians exercise caution

with respect to COVID-19 compared to their male counterparts (Brooks & Saad, 2020) because there is a tendency for the citizenry to show unwillingness to respond to the public whether female or male leader occupies the public office (Bauer et al., 2020). An argument is made that the feminisation of leaders and leadership is significant in understanding global political and societal structures (Adler, 1997) because female leaders have relationships connectedness (Lee, 2021) which potentially draws the audience closer to the leader. Similarly, it also argued in a U.K. study that investigated female and male leadership constructs that females exhibit transformational leadership qualities, and men exhibit transactional leadership qualities (Alimo-Metcalfe, 1995). Another survey of female and male executives showed that female leaders exhibit a management style that uses interpersonal approaches alien to the male counterpart (Kolpakov & Boyer, 2021). Also, female leaders can exercise masculinity in decision-making, as examined from Theresa May and the Spanish media perspective (Castillo & Berdasco-Gancedo, 2020). Even though female leaders have interpersonal approaches or transformation leadership styles, their leadership qualities are sometimes assessed based on non-verbal communication in public speaking. An evidence-based study showed that female and gender influence a leader's non-verbal communication (Grebelsky-Lichtman & Katz, 2020).

Previous studies have examined the early response to COVID-19 by European countries, and it suggested that the strategies distancing, contact testing, and tracing contributes to the management of the pandemic (Goniewicz et al., 2020). Similarly, the authors of a study, using the first-quarter data of the pandemic and descriptive statistics, argued that countries with female leaders are better managers of COVID-19 than their male counterparts. However, the sample ignored the proportion of female to male leaders, which was highly skewed (Garikipati & Kambhampati, 2020). The research gaps identified and the relevance of the female leadership style with a risk-taking attitude form the basis for the hypothesis development in female global leaders and COVID-19 management as a crisis in the European context.

### **Hypotheses development- Female leaders and COVID-19 management**

The occurrence of COVID-19 causes this study to re-examine the impact of female leader on the decision taken during a crisis because feminist frameworks are beginning to question traditional gender roles (Cherneski, 2020). However, female leaders approach risk from a different perspective than their male counterparts, contributing to why female leaders better manage the pandemic (Carbonaro, 2020; Garikipati & Kambhampati, 2020). This argument is supported by evidence from studies which confirmed that male leaders associate with risk-taking in decision making (Khaw et al., 2016) compared to the female counterparts, which makes for sloppy decision with a negative consequence. Risk-taking can sometimes



make a person careless. The result can devastate the entire society or group of people within a country, but the proof of the consequence in management of COVID-19 lack adequate empirical evidence to prove this theory.

The traits of female leaders, which include trust, may influence the management of COVID-19 better. It is believed that trust is high with female leaders than male leaders because of high expectation of ethical standards, an advantage that can support citizenry compliance to COVID protocols (Montgomery & Cowen, 2020). Similarly, women have more communal traits than men. Therefore, they have concern for people, which is a strong trait for crises management like COVID-19 (Denise, 2020) and tend to adapt quickly and account for superior performance when confronted with crises (An & Meier, 2020). It is observed that females are conservative in decision-making (Zhang, Han and Yin, 2018), and the communal traits allow them to rise faster in turbulent environments (Furst & Reeves, 2008). Even though most studies indicate the benefits of female leadership outweigh male leadership, the environment is significant to influence the relationship (Chauhan & Dey, 2017). COVID-19 management qualifies as an environment that needs crisis management. Also, where female directors exhibit their executive powers and managerial skills, performance is improved because new ideas brought to the table can resolve the situation or crisis (Pham & Hoang, 2019). However, if the environment has an unwillingness of the citizenry (Bauer et al., 2020), the effectiveness of the female leader may become insignificant. Sometimes citizenry becomes resentful (Kalaf-Hughes & Leiter, 2020) and may also account for the weak response to directives from the leaders. Also, in developed economies, the environment matters, as a study showed that female leadership behaviour is high when the environment is female-dominated and gender-mixed (Larsson & Alvinus, 2020).

In this study, we expect female leaders to significantly impact the management of the COVID-19 crisis because female leaders are better able to handle a crisis in a credible way (Schwartz and Blair, 2020). The advantage of feminisation of leaders in understanding the governance of global political and societal structures (Adler, 1997) and their relationships connectedness (Lee, 2021) potentially will allow better management of COVID-19. This current paper increases the scope to cover the entire year of 2020, which is beyond the immediate reaction, and the use of multiple regression strengthens the study's robustness. We propose a hypothesis that state that:

H1: Female leaders are better managers of the pandemic cases in an economy during the COVID-19 crisis than the male counterparts.

H2: Female leaders are better managers of the pandemic death in an economy during the COVID-19 crisis than the male counterparts.

## RESEARCH METHODOLOGY

### Research Design and Data

This study constructs panel data to test female global leaders and COVID-19 management using European countries data set. The period of study is January 2020 to December 2020. The countries under study are made up of 29 countries in the European Union. We determined the sample using purposive sampling, and a content analysis technique is applied as the research instrument to extract the qualitative and quantitative data for the study. The data type is secondary. The study employed descriptive statistics and multiple regression to analyse the study. The data on COVID-19 for the European Union is accessed from E.U. Data Portal (E.U. Open Data Portal, 2020). The criteria for selection is the membership of the European Union. The data set is divided into daily and months. The daily observation for the countries gives a total of 9509 observations converted into 330 monthly observations for January to December 2020. The female and male leaders of the countries under study are extracted from the country's websites.

### Model specification

Following the model applied by Khaw et al. (2016) and Setó-Pamies (2015), we specify the following regression model.

$$COVIDM_{it} = \alpha + \beta_1 GDIV_{it} + \sum \phi CTRL_{it} + \mu_{it} \quad (1)$$

The subscript *i* represent different countries, and *t* represents the period for equations. COVIDM represents COVID-19 cases and death. GDIV represents female and male global leaders in Europe. CTRL represents the control variables of the study, which cover; human development index, R&D Intensity and health expenditure of countries.

### Dependent variable

COVIDM<sub>it</sub> defines the dependent variable, which is the number of cases of infections and death recorded every month (E.U. Open Data Portal, 2020).

### Independent variable

GDIV<sub>it</sub> is an independent variable in this study that is proxy by a binary response variable of 1 for females as the country's leader, and zero represents the male counterpart. Previous studies have used binary variable representation for male and female leaders (Garikipati & Kambhampati, 2020) and also, many gender studies measures gender in a similar function (Bui, Nguyen, & Chau, 2020; García-Sánchez, Aibar-Guzmán, Aibar-Guzmán, & Azevedo, 2020).



## Control variables

$CTRL_{it}$  represents the control variables, including the human development index, R & D Intensity and health expenditure of countries.

(1) Human Development Index (HDI) is an indicator of a country overall social and economic achievement. This includes the health state of the people, their educational levels and, the living people's living standards study expects the country with high HDI will cause the citizenry to respect laws and abide by the political decisions on social distancing, which culminates in a reduction in COVID-19 cases and death (United Nations Development Programme, 2020)

(2) R&D intensity measures a country's research and development expenditure as a ratio to the Gross Domestic Product. R&D intensity is included as a control variable to reduce its effect on the COVID-19 cases and death, and it is expected to have a negative association with the dependent variable (European Commission, 2020).

(3) Health expenditure-2019 measures a country's health expenditure of the previous year. The effect of health expenditure causes increases in health facilities which can support any disease outbreak. We use 2019 values because the health expenditure effect is better felt in the subsequent years. This study uses a natural logarithm function to reduce data outliers' impact on the study based on the outliers. It is expected that health expenditure will reduce its effect on the COVID-19 cases and death, and it is expected to have a negative association with the dependent variable (OECD, 2020)

## Analytical approach

Multiple regression and panel regression with random effect assumptions are used to test hypotheses H1 and H2 of the study. Random panel effect (RE) addresses endogeneity problems across panels. Also, this study uses Stata 15.0. as the Econometric software for the interpretation of the results.

## EMPIRICAL RESULTS AND DISCUSSIONS

### Descriptive statistics

Table 1 provides the means, standard deviations and correlations for all the variables. The study shows that 20.9% of Europe's countries have female prime ministers, and 79.1% are male prime ministers. The daily mean average of pandemic cases in Europe is 1393.94, while the monthly average is 40166.67. Similarly, the daily mean average of pandemic death in Europe is 32.79, while the monthly average is 944.95. The statistics suggest that the number of women who occupy the prime minister position is lower than their male counterparts.

Table 1 Descriptive statistics

Panel A	Symbol	Obs.	Mean	Std. Dev.	Min.	Max
Cases	CAS	330	40166.670	111857.8	0	937504
Death	DEA	330	944.945	2632.944	0	21352
Gender diversity	GDIV	330	0.209	0.407	0	1
Human Index Development	HIDI	330	0.901	0.038	0.816	0.957
R& D Intensity	RDI	330	12.367	22.109	0.091	109.335
Health expenditure-2019	HEP	330	2.912	1.567	0.233	6.000
Panel B						
Cases	CAS	9509	1393.943	4426.536	0	86852
Death	DEA	9509	32.794	110.084	0	2004
Gender diversity	GDIV	9509	0.211	0.408	0	1
Human Index Development	HIDI	9509	0.902	0.038	0.816	0.957
R& D Intensity	RDI	9509	12.497	22.177	0.091	109.335
Health expenditure-2019	HEP	9509	2.929	1.563	0.233	6.000

### Correlation analysis

Table 2 shows the correlation matrix and the variance inflation factor. The correlation matrix is a linear association between variables. The value of the correlation coefficient reflects the degree of association among variables (Dougherty, 2017). There is a strong and positive correlation between pandemic cases and the number of death. Conversely, there is a weak and negative correlation between pandemic variables (cases and death) and the human development index (HDI).

The correlation coefficient among the independent variables is less than 0.80, consistent with an acceptable level in different studies (Damodar, 2004; Dougherty, 2017), reflecting that multicollinearity levels are acceptable. Also, the Variance Inflation Factor (VIF) values are lower than 3.0, indicating that multicollinearity will not cause a problem for the study.

Table 2. Correlation matrix and variance inflation factor

PANEL A	1	2	3	4	5	6	VIF
Monthly totals							
CAS	1						
DEA	0.650***	1					1.23
GDIV	-0.069	-0.087	1				1.28
HDI	-0.008	-0.027	0.415***	1			1.58
RDI	0.278***	0.256***	0.295***	0.373***	1		2.15
HEP	0.335***	0.359***	0.201***	0.486***	0.713***	1	2.61
PANEL B							
Daily totals							
CAS	1						
DEA	0.571***	1					1.15
GDIV	-0.062***	-0.073***	1				1.28
HDI	-0.009	-0.025**	0.418***	1			1.56
RDI	0.240***	0.209***	0.295***	0.372***	1		2.15
HEP	0.291***	0.295***	0.202***	0.486***	0.714***	1	2.52

Note: \*\*p < 0.05, \*\*\*p < 0.01 and \*p < 0.10 level (two-tailed),

Panel A-330 observations, Panel B-9509 observations

### Multivariate results: Fe(male) global leaders and COVID-19 management using daily data

*H1* states female leaders are better managers of the pandemic cases in an economy during the COVID-19 crisis than the male counterparts. Model 1 from Table 3 under OLS shows female global leaders have no association with pandemic cases ( $\beta = -0.609$ ,  $SE = 0.498$ ). However, Model 3 from Table 3 under RE shows that female global leaders have a negative and statistically significant association with pandemic cases ( $\beta = -0.609^{**}$ ,  $SE = 0.297$ ). Thus, there is a 5% level of significance. Therefore, *H1* is supported, suggesting that female global leaders are better at making decisions and that their decisions affect managing pandemic cases. It is suggested that the leadership style of female and male is different and is suggested to contribute to why female leaders are doing better in managing the pandemic (Carbonaro, 2020; Garikipati & Kambhampati, 2020). Women have more communal traits than men and therefore have concern for people, which is a strong trait for crisis management like COVID-19 (Denise, 2020). Based on the leadership style, we argue further that female leaders, through the leadership style of paternalistic leadership style, transformational leadership style and

democratic leadership style (Zhang & Liu, 2020), can enforce the strategies distancing, contact testing and tracing contributes to the management of the pandemic (Goniewicz et al., 2020). It is observed that the issues of unwillingness by the citizenry is lower, which is coupled with lower resentment in the case of the European Union with respect to COVID-19 management, as has been witnessed in previous studies for contributing to the insignificant effect of the directives of female leaders to the citizenry (Bauer et al., 2020; Kalaf-Hughes & Leiter, 2020). We perceive further that new ideas of management, characterised by female leaders (Papangkorn *et al.*, 2019), contribute to the decline in the cases recorded by the European countries. Also, female leaders exhibit a management style that uses interpersonal approaches, which is alien to the male counterpart (Kolpakov & Boyer, 2021) and may contribute to the effective management of COVID-19. This study is also consistent with previous studies, which states that, through engagement with the community, the female leaders in Rio de Janeiro's favelas have managed the pandemic in these communities (Nunes, 2021). It is clear from this study that the environment responds better to the directives of the female leaders in this study because the environment is female-dominated and gender-mixed (Larsson & Alvinus, 2020).

*H2* states female leaders are better managers of the death in an economy during the COVID-19 crisis than the male counterparts. Model 2 from Table 3 under OLS shows female global leaders have no association with pandemic cases ( $\beta = -0.513$ ,  $SE = 0.340$ ). Model 4 from Table 3 shows that female global leaders have a negative and statistically significant association with pandemic death ( $\beta = -0.561^*$ ,  $SE = 0.338$ ). Thus, there is a 10% level of significance. Therefore, *H2* is supported, suggesting that female global leaders are better at making decisions that affect managing the crisis of pandemic death. The conservativeness in decision making by female leaders, especially during disaster periods in the lives of countries (Zhang et al., 2018), gives this study a reason to believe that crisis management is better under the watch of female executive either in the corporate world or public office (Furst & Reeves, 2008; Papangkorn et al., 2019; Sun et al., 2015). Thus, trust is high with female leaders than male leaders because of high expectation of ethical standards, an advantage that can support citizenry compliance to COVID protocols (Montgomery & Cowen, 2020). The consequence of female directors being better decision-makers during the economic crisis (Sun et al., 2015) causes these study findings to show a negative association between female global leaders and COVID-19 management of death of people in European countries. We see from this study that women and female politicians exercise caution with respect to COVID-19 compared to their male counterparts (Brooks & Saad, 2020). Also, our study is consistent with previous descriptive statistics studies that showed that countries with female leaders are better managers of COVID-19 than their male counterparts (Garikipati & Kambhampati, 2020).

In terms of the control variables in Table 3, we find that the human development index has a negative and statistically significant association with pandemic cases and death in the European Union context. Opposite to our expectation, we find that a country's research & development intensity and health expenditure is positively and statistically significant with pandemic cases and death in European countries. We, therefore, argue and agree with the suggestions that say that many institutions failed to foresee the calamity and redress the negative impact of COVID-19, especially in advanced economies (Walt, 2020).

Table 3. Fe(male) global leaders and COVID-19 management, using monthly data

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
	<b>CAS</b>	<b>DEA</b>	<b>CAS</b>	<b>DEA</b>
	<b>OLS</b>	<b>OLS</b>	<b>RE</b>	<b>RE</b>
Human Index Development	-20.493***	-24.495***	-20.493***	-24.271***
	[5.464]	[4.130]	[4.077]	[4.498]
Research & Development	0.002	-0.008	0.002	-0.008
intensity	[0.012]	[0.009]	[0.006]	[0.006]
Health expenditure for	0.887***	1.142***	0.887***	1.141***
2019	[0.154]	[0.121]	[0.101]	[0.094]
Intercept	23.750***	23.045***	23.750***	22.858***
	[4.750]	[3.597]	[3.512]	[3.921]
<i>Independent variable</i>				
Fe(male) leaders	-0.609	-0.513		
	[0.498]	[0.340]		
Fe(male) leaders			-0.609**	-0.561*
			[0.297]	[0.338]
F -Test/Wald chi-square	15.10***	34.14***	200.92***	260.01***
R-square/Overall R-square	0.148	0.292	0.148	0.292
Within R-square			0.014	0.012
Between R-square			0.795	0.807
Observations	330	330	330	330

Note: Robust standard errors are in parenthesis.

\*, \*\*, \*\*\* Indicates significance at 10%, 5% and 1% levels respectively.

## CONCLUSION

This study contributes to the body of knowledge of gender and politics by examining the effects of female and male global leaders and COVID-19 management in the European Union. The study used a sample of 330 monthly and country observations between January 2020 and December 2020 inclusive. The study applied multivariate regression to analyse data. The study shows that 20.9% of Europe's countries have female prime ministers, and 79.1% are male prime ministers. There is a strong and positive correlation between pandemic cases and the number of death. Also, there is a weak and negative correlation between pandemic variables (cases and death) and the human development index (HDI). The first findings show that female global leaders negatively and statistically significantly associate with COVID-19 pandemic cases. It is suggested that the leadership style of female and male is different and is suggested to contribute to why female leaders are doing better in managing the pandemic. Also, trust is high with female leaders than male leaders because of high expectation of ethical standards, an advantage that can support citizenry compliance to COVID protocols. The second findings show that female global leaders negatively and statistically significantly associate with COVID-19 pandemic death. The conservativeness in decision making by female leaders, especially during disaster periods in countries' lives, makes female executive either in the corporate world or public office better managers in times of crisis.

In terms of the control variables, we find that the human development index has a negative and statistically significant association with pandemic cases and death in the European Union. Opposite to our expectation, we find that a country's research & development intensity and health expenditure are positively and statistically significant with pandemic cases and death in European countries. We, therefore, argue and agree with the suggestions that say that many institutions failed to foresee the calamity and redress the negative impact of COVID-19, especially in advanced economies (Walt, 2020).

## IMPLICATIONS

### Theoretical contribution

The previous study examined the immediate reaction of gender on COVID-19 and used the first-quarter data of 2020 of the pandemic with descriptive statistics of measurement tools (Garikipati & Kambhampati, 2020). However, this current paper increases the scope to cover the entire year of 2020 beyond the immediate reaction. It uses data from the European Union where there is evidence of more female leaders as prime ministers. The use of the sizeable ratio of female to male leaders enriches the debate on gender effect on crisis management. The second contribution used OLS regression and panel regression with random effect assumptions



to examine the research, making the analysis more scientific-based. In the third contribution, previous studies argued that the leadership style of female and male is different and is suggested to contribute to why female leaders are doing better in managing the pandemic (Carbonaro, 2020; Nunes, 2021). This study findings support this line of argument through the negative association between the female leaders and COVID-19 management in European countries. Lastly, this study explicitly gives empirical evidence of female and male global leaders in the European Union and COVID-19 management even though the newspaper has commented but not scientifically proven (Dudman, 2020).

### **Policy implications**

The argument that female leaders are better in decision making during crisis situations confirms the need for society and public institutions to leverage women's promotion into higher offices in the European Union. This study's implication advises women to stand for public office positions because women have intuitions and inner characteristics, which is in line with paternalistic leadership style, transformational leadership style, and democratic leadership style proposed by the authors of a study (Zhang & Liu, 2020). It is further suggested that women's job application should include community leadership and all levels of leadership in a country and community. The clarity from this study proposes that COVID-19 reduction in cases is better in the hands of female leaders than the male counterparts. Therefore, in general, the country and society need to break the barriers that limit females to occupy higher positions in governance. However, policymakers must be aware of the limitations of the environment, which can include resentment towards female leaders or the population of the citizenry with a high presence of female or mixed gender. The European union gender issues are well advanced, and the study policy implications for non-European Union countries must be exercised with caution.

### **Limitations and future research**

Caution is needed, and the study's outcome cannot be generalised to cover the emerging economies and countries with an environment that frowns on female leadership. Future studies can look at the cultural impact of COVID-19 management on Asian countries where culture is evidenced in their daily lives.

### **REFERENCES**

- Adler, N. J. (1997). Global Leadership: Women Leaders. *Management International Review*, 37(171–196).
- Al-Mutawa, R. (2020). "i Want to be a Leader, but Men Are Better Than Women in Leadership Positions": State Feminism and Legitimizing Myths in the United Arab Emirates. *Hawwa*, 18(1), 31–50. <https://doi.org/10.1163/15692086-12341369>

- Alimo-Metcalfe, B. (1995). An investigation of female and male constructs of leadership and empowerment. *Women in Management Review*, 10(2), 3–8.
- An, S. H., & Meier, K. J. (2020). Gender and the Effectiveness of Leadership Training: Results From a Field Experiment. *Review of Public Personnel Administration*, Article in Press. <https://doi.org/10.1177/0734371X20932989>
- Atkinson, C. (2020). G20 leaders must answer to COVID-19. *Science*, 368(6487), 111. <https://doi.org/10.1126/science.abc1025>
- Bauer, N. M., Kim, J. H., & Kweon, Y. (2020). Women Leaders and Policy Compliance during a Public Health Crisis. *Politics and Gender*, 16(4), 975–982. <https://doi.org/10.1017/S1743923X20000604>
- Booth, A. L., & Nolen, P. (2012). Gender Differences In Risk Behaviour: Does Nurture Matter? *The Economic Journal*, 122(558), 55–78. Retrieved from <http://www.jstor.org/stable/41418970>
- Brooks, D. J., & Saad, L. (2020). Double Whammy: Why the Underrepresentation of Women among Workplace and Political Decision Makers Matters in Pandemic Times. *Politics and Gender*, 16(4), 1110–1122. <https://doi.org/10.1017/S1743923X20000628>
- Bui, H. T. M., Nguyen, H. T. M., & Chau, V. S. (2020). Strategic agility orientation? The impact of CEO duality on corporate entrepreneurship in privatized Vietnamese firms. *Journal of General Management*, 45(2), 1005–1027.
- Carbonaro, G. (2020, June 6). Why have female leaders been so successful in handling COVID-19? *CGTN*, pp. 1–12.
- Castillo, C. A., & Berdasco-Gancedo, Y. (2020). Brexit and female leadership in Spanish digital media from a linguistic perspective. The case of theresa may's decline. *Communication and Society*, 33(2), 243–257. <https://doi.org/10.15581/003.33.2.243-257>
- Charness, G., & Gneezy, U. (2012). Strong Evidence for Gender Differences in Risk Taking. *Journal of Economic Behavior and Organization*, 83(1), 50–58. <https://doi.org/10.1016/j.jebo.2011.06.007>
- Chauhan, Y., & Dey, D. K. (2017). Do female directors really add value in Indian firms? *Journal of Multinational Financial Management*, 24(36). <https://doi.org/10.1016/j.mulfin.2017.10.005>
- Cherneski, J. (2020). Evidence-loving rock star chief medical officers: Female leadership amidst COVID-19 in Canada. *Gender, Work and Organization*, 27(5), 900–913. <https://doi.org/10.1111/gwao.12494>
- Damodar, G. (2004). *Basic Econometrics* (4th ed.). The McGraw-Hill Companies, New York.
- Dang, A. R., Houanti, L., Ammari, A., & Lê, N. T. (2018). Is there a 'business case' for board gender diversity within French listed SMEs. *Applied Economics Letters*, 25(14), 980–983. <https://doi.org/10.1080/13504851.2017.1390308>
- Denise, S. (2020). The persistence of gender bias in evaluation of leaders. *Nordic Journal of Working Life Studies*, 10(1), 59–79.
- Dezső, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal*, 33(9), 1072–1089. <https://doi.org/10.1002/smj.1955>
- Dougherty, C. (2017). *Introduction to Econometrics* (5th Edition). Great Clarendon Street. The United Kingdom.: Oxford University Press.
- Dudman, J. (2020, December). Female leaders make a real difference. Covid may be the proof. *The Guardian*. Retrieved from <https://www.theguardian.com/society/2020/dec/16/female-leaders-make-a-real-difference-covid-may-be-the-proof>
- EU Open Data Portal. (2020). COVID-19 Coronavirus data - daily. Retrieved January 4, 2021, from <https://www.ecdc.europa.eu/en/covid-19/data>
- European Commission. (2020). R&D intensity in the EU. Retrieved January 4, 2021, from Eurostat Statistics website: [https://ec.europa.eu/eurostat/documents/4187653/10321624/RD\\_intensity\\_2019data\\_Kreslici+plátno+1.jpg/eab014e5-dafc-1bb6-33c3-3b1ab5a5a5c9?t=1606313161665](https://ec.europa.eu/eurostat/documents/4187653/10321624/RD_intensity_2019data_Kreslici+plátno+1.jpg/eab014e5-dafc-1bb6-33c3-3b1ab5a5a5c9?t=1606313161665)
- Furst, S. A., & Reeves, M. (2008). Queens of the hill: Creative destruction and the emergence of executive leadership of women. *Leadership Quarterly*, 19(3), 372–384. <https://doi.org/10.1016/j.leaqua.2008.03.001>
- García-Sánchez, I. M., Aibar-Guzmán, B., Aibar-Guzmán, C., & Azevedo, T. C. (2020). CEO ability and sustainability disclosures: The mediating effect of corporate social responsibility performance. *Corporate Social Responsibility and Environmental Management*, 27(4), 1565–1577. <https://doi.org/10.1002/csr.1905>
- Garikipati, S., & Kambhampati, U. (2020, June 21). Women leaders are better at fighting the pandemic. *VOX, CEPR Policy Portal*, pp. 1–6.

- Gill, S. (2010). Is gender inclusivity an answer to ethical issues in business? An Indian stance. *Gender in Management*, 25(1), 37–63. <https://doi.org/10.1108/17542411011019922>
- Goniewicz, K., Khorram-Manesh, A., Hertelendy, A. J., Goniewicz, M., Naylor, K., & Burkle, F. M. (2020). Current response and management decisions of the European Union to the COVID-19 outbreak: A review. *Sustainability (Switzerland)*, 12(9). <https://doi.org/10.3390/su12093838>
- Grebelsky-Lichtman, T., & Katz, R. (2020). Gender effect on political leaders' nonverbal communicative structure during the COVID-19 crisis. *International Journal of Environmental Research and Public Health*, 17(21), 1–14. <https://doi.org/10.3390/ijerph17217789>
- Izgi, B. B., & Akkaş, I. (2012). Do women at the top make a difference? Women in management and firm performance in Turkey. *European Journal of Economics, Finance and Administrative Sciences*, 34–40.
- Jyothi, P., & Mangalagiri, J. (2019). Would Firm Performance be Better with Women Directors? Evidence from India. *Vision: The Journal of Business Perspective*, in press. <https://doi.org/10.1177%2F0972262919840217>
- Kalaf-Hughes, N., & Leiter, D. (2020). That Woman from Michigan: How Gender Resentment Shapes the Efficacy of Stay-at-Home Policies. *Politics and Gender*, 16(4), 983–990.
- Khaw, K. L. H., Liao, J., Tripe, D., & Wongchoti, U. (2016). Gender diversity, state control, and corporate risk-taking: Evidence from China. *Pacific Basin Finance Journal*, 39, 141–158. <https://doi.org/10.1016/j.pacfin.2016.06.002>
- Kolpakov, A., & Boyer, E. (2021). Examining Gender Dimensions of Leadership in International Nonprofits. *Public Integrity*, 23(1), 68–81. <https://doi.org/10.1080/10999922.2020.1777836>
- Kulich, C., Gartzia, L., Komaraju, M., & Aelenei, C. (2021). Contextualizing the think crisis-think female stereotype in explaining the glass cliff: Gendered traits, gender, and type of crisis. *PLoS ONE*, 16. <https://doi.org/10.1371/journal.pone.0246576>
- Küppers, A. (2020). Effects of Party Primaries in German Regional Party Branches. *German Politics*, Article in. <https://doi.org/10.1080/09644008.2020.1748602>
- Larsson, G., & Alvinus, A. (2020). Comparison within gender and between female and male leaders in female-dominated, male-dominated and mixed-gender work environments. *Journal of Gender Studies*, 29(7), 739–750. <https://doi.org/10.1080/09589236.2019.1638233>
- Lee, C. (2021). How do male and female Head teachers evaluate their authenticity as school leaders? *Management in Education*, Article in Press. <https://doi.org/10.1177/0892020621999675>
- Montgomery, N. V., & Cowen, A. P. (2020). How leader gender influences external audience response to organizational failures. *Journal of Personality and Social Psychology*, 118(4), 639–660. <https://doi.org/10.1037/pspa0000176>
- Nunes, N. R. D. A. (2021). The power that comes from within: female leaders of Rio de Janeiro's favelas in times of pandemic. *Global Health Promotion*, Article in Press. <https://doi.org/10.1177/1757975921994690>
- OECD. (2020). Health Expenditure and Financing. Retrieved February 10, 2021, from OECD Publishing website: <https://www.oecd-ilibrary.org/sites/860615c9-en/index.html?itemId=/content/component/860615c9-en>
- Papangkorn, S., Chatjuthamard, P., Jiraporn, P., & Chueykamhang, S. (2019). Female directors and firm performance: Evidence from the Great Recession. *International Review of Finance*. <https://doi.org/10.1111/irfi.12275>
- Pedrini, M. (2018). Exploring the effect of gender diversity in MFIs during turbulent periods. *International Journal of Human Resource Management*, 29(16), 2455–2481. <https://doi.org/10.1080/09585192.2016.1246460>
- Pham, A. D., & Hoang, A. T. P. (2019). Does female representation on board improve firm performance? A case study of non-financial corporations in vietnam. *Studies in Computational Intelligence*, 809, 497–509. [https://doi.org/10.1007/978-3-030-04200-4\\_36](https://doi.org/10.1007/978-3-030-04200-4_36)
- Sabatier, M. (2015). A women's boom in the boardroom: effects on performance? *Applied Economics*, 47(26), 2717–2727. <https://doi.org/10.1080/00036846.2015.1008774>
- Saygin, P. O. (2016). Gender differences in preferences for taking risk in college applications. *Economics of Education Review*, 52, 120–133. <https://doi.org/10.1016/j.econedurev.2016.02.002>
- Schwartz, J. A., & Blair, C. W. (2020). Do Women Make More Credible Threats? Gender Stereotypes, Audience Costs, and Crisis Bargaining. *International Organization*, 74(4), 872–895. <https://doi.org/10.1017/S0020818320000223>
- Setó-Pamies, D. (2015). The Relationship between Women Directors and Corporate Social Responsibility. *Corporate Social Responsibility and Environmental Management*, 22(6), 334–345. <https://doi.org/10.1002/csr.1349>

Sun, S. L., Zhu, J., & Ye, K. (2015). Board Openness During an Economic Crisis. *Journal of Business Ethics*, 129(2), 363–377. <https://doi.org/10.1007/s10551-014-2164-1>

Sundström, A., & Stockemer, D. (2021). Political Party Characteristics and Women's Representation: The Case of the European Parliament. *Representation*, Article in Press. <https://doi.org/10.1080/00344893.2021.1898458>

Tsou, M. W., & Yang, C. H. (2019). Does gender structure affect firm productivity? Evidence from China. *China Economic Review*, 55(1), 19–36. <https://doi.org/10.1016/j.chieco.2019.03.005>

United Nations Development Programme. (2020). Development Index ( HDI ) Ranking. Retrieved February 6, 2021, from <http://hdr.undp.org/en/content/latest-human-development-index-ranking> %0D%0A%0D%0A

Walt, S. M. (2020). The Coronavirus Pandemic Will Change the World Forever. *The Wall Street Journal*. Retrieved from <https://foreignpolicy.com/2020/03/20/world-order-after-coronavirus-pandemic/>

Zhang, H. L., & Liu, M. J. (2020). Analysis of the influencing factors of female leadership style on enterprise development. *2020 International Conference on Wireless Communications and Smart Grid*, 379–381. <https://doi.org/10.1109/ICWCSG50807.2020.00087>

Zhang, J., Han, J., & Yin, M. (2018). A female style in corporate social responsibility? Evidence from charitable donations. *International Journal of Disclosure and Governance*, 15(3), 185–196. <https://doi.org/10.1057/s41310-018-0046-y>