REVIEW OF ECONOMIC AND BUSINESS STUDIES

Published by Alexandru Ioan Cuza University Press

Address:
14thLăpuşneanu Street, 4th Floor, Room 412
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Web: www.rebs.feaa.uaic.ro

ISSN 1843-763X

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RESEARCH ARTICLE

REBS Review of Economic & Business Studies

Volume 14, Issue 1/2021, pp. 9-31
ISSN-1843-763X
DOI: 10.47743/rebs-2021-1-0001

IMPACT OF COVID-19 ON FINANCIAL MARKETS: CASE OF THE ITALIAN STOCK EXCHANGE

MAHFOUD DJEBBAR*, ADILA MERIMET**

Abstract *The aim of this study is to shed light on the repercussions of Corona pandemic on financial markets. Using the Vector Autoregression, VAR, model, we estimate the relationship between the Italian Stock Exchange's Index, FTSEMib, and the number of cases and deaths by Covid-19 in Italy over the period February 24, 2020 to May 15, 2020. We find that both the number of infections and the number of deaths from Coronavirus negatively affect the stock market, and that the analysis of variance shows that the relative importance of daily infections by Covid-19 in explaining the fluctuations of the Italian Stock Exchange index has reached 17% in the medium and long terms, while the relative importance of daily deaths from Covid-19 in explaining the fluctuations of the Italian Stock Exchange index does not exceed 2% in the medium and long terms.*

Keywords: *Covid-19, financial markets, Italian stock exchange, VAR.*

JEL Classification: *G01, G12, G15, G18.*

1. INTRODUCTION

Corona pandemic, known for short in the prevailing literature as Covid-19, appeared in Wuhan, a Chinese city, in late 2019, and then spread to Italy and Europe before it spread to the United States and the rest of the world within a few weeks. It greatly impacted all countries on the five continents, and influenced every country according to its economic structure and the precautionary measures it has taken, and pushed the World Health Organization, WHO, to declare it a world pandemic on 3/ 11/ 2020 (Zhang et al, 2020).

Coronavirus was not the first pandemic to hit humanity, but it was preceded by many pandemics such as the plague, or, as it is known, by the black death, which killed two-thirds of the population of medieval Europe; the Spanish flu, which caused the death of more than 50 million people in 1918 (Boissay and

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Rungcharoenkitkul, 2020), SARS in 2002, Ebola in 2013 and other pandemics. However, Covid-19 was distinguished from other pandemics in that it affected developing and developed countries alike, despite the latter's availability of enormous human and material capabilities; it is a global health crisis that has led to unexpected human and economic costs in a short period of time; it also came in a completely different international environment, where the world economy became more integrated and connected, and interest rates were very low or zero, or even on negative territory in some countries; it also affected both supply and demand for goods and services at the same time. Another feature is that this pandemic came in tandem with two trade wars, namely the trade war between China and the US, and the oil prices war between Russia and Saudi Arabia, which led to the collapse of its price to unprecedented levels.

This pandemic caused a severe shock to the whole world and took them by surprise, as the number of infected people in the world became in tens of millions and the number of deaths in millions, which prompted all countries to take multiple and strict measures to protect their populations from this devastating pandemic, and led to unprecedented repercussions on various economic, social and strategic levels. Educational institutions were closed, jobs were cut, borders closed to air, land, and sea navigation; restrictions were placed on the movement of individuals, and entire cities and regions were isolated in order to limit the transmission of the virus to them. In addition, shops and all non-essential activities were closed, and their peoples had to enter into strict measures, such as confinement and social distancing.

These measures caused severe damage to many economic and social sectors, and the most affected was the services sector, especially services related to domestic and international tourism, as the demand for these services decreased dramatically and suddenly, to the point of its absence in some cases as a result of canceling reservations. The transport industry of various kinds has also been strongly hit, among them airlines and cruise companies; as well as the hospitality industry, with millions of hotels, entertainment centers, restaurants, cafes, clubs and retail centers closed. High costs of international transactions in terms of exports and imports, that is, high costs of foreign trade, were also recorded due to the drop in global production of goods and services and the disruption of global supply chains, among other reasons. This has led to an unprecedented rise in unemployment rates in developed and developing countries with a service oriented economy, especially those that specifically depend on tourism. For example, the number of unemployed persons who applied for unemployment benefits reached 40.7 million workers in the USA during only 10 weeks, that is from mid-March to the end of May 2020 (CNN,

5/29/2020). As a result, incomes fell, consumption dropped on a large scale and consequently consumer confidence was undermined.

In addition, impacted countries have taken many other measures to mitigate and contain the devastating effects of the pandemic, as they have canceled trade fairs, public gatherings, sports competitions and religious activities. They have also taken expansionary fiscal and monetary policies with the aim of providing liquidity and facilitating credit for banks and investors in affected economies, among other measures. Despite all of this, the human and economic costs were great by all standards, which called for international coordination and cooperation, whether in terms of intensifying efforts to find a vaccine for the pandemic or sharing necessary information and experiences to limit its wide impacts.

Returning to the topic of research, it can be said that financial markets, or FMs in short, collapsed with the expansion of the pandemic in various parts of the world, and their levels decreased in developed and emerging countries alike, for fear of slowing growth of the global economy, or even recording negative growth rates; occurrence of deep recession; increasing doubts about financial distress, and default of individuals who lost their jobs and companies that stopped their activities (AIMD, ASEAN, 2020). As a result, the stock and bond holders, i.e., individual investors and financial institutions, recorded heavy losses, especially after the central banks of most developed countries cut interest rates. Fear that the pandemic will lead to a deep economic and financial crisis, has led investors, after losing confidence in those markets, to resort toward safe havens and invest their money in other assets, such as treasury bonds, sovereign bonds, gold, and some commodities such as soybeans, West Texas Intermediate oil, WTI, some relatively stable currencies, and even cryptocurrencies, especially bitcoin, among other tools (Conlon and McGee, 2020; Corbert et al, 2020; Ji et al, 2020).

As a result of uncertainty and extreme volatility that has characterized the main FMs since the outbreak of Covid 19, contagion has spread to the rest of the global and emerging markets, and this led to an increase in risks and costs of lending, and to capital flight from developing markets towards safer havens in developed countries, which negatively affected the real economy. This also led to the collapse of stocks of affected companies such as airlines, financial institutions, energy companies, industrial companies among others. Accordingly, trading was halted in many global stock exchanges, that were panic-stricken; and investors lost confidence in dealing, as a result of the wide fluctuations in asset prices. For example, the trading floor of the New York Stock Exchange was closed to individual dealers for nearly

two months, as its activity remained limited to electronic trading, then it was reopened on May 29, 2020 (CRS, Apr 17, 2020).

The rest of the article is organized as follows. The second section briefly deals with previous studies on the topic. The third analyses the financial markets' response to information related to Coronavirus, focusing on the New York Stock Exchange, since it is the locomotive of global financial markets. The fourth deals with the empirical study where the relationship between the Italian Stock Exchange Index and the number of cases and deaths from Covid-19 in Italy, was estimated. The fifth analyses the findings and the sixth concludes.

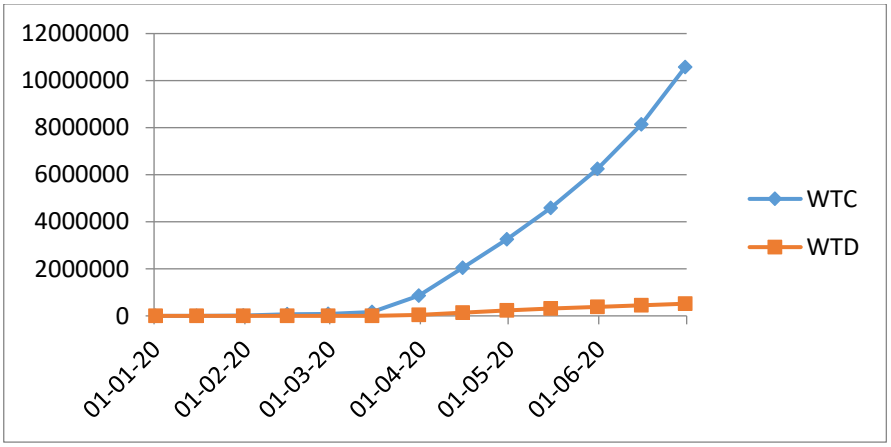
2. RELATED LITERATURE

Many studies focuse on the economic and social impacts of Corona pandemic, especially on human and economic costs, centering mainly on the hospitality industry, transport, tourism, foreign trade, unemployment, and so on (Boissay and Rungcharoenkitkul, 2020; Niestadt, 2020; Kochhar, 2020; Tagliapietra, 2020; Maliszewska and Matoo, 2020). While another part of literature is concerned with the impact of that pandemic on financial markets and increasing stock price volatility and their response to its development (Ramelli and Wagner, 2020; Sansa, 2020; Yan et al, 2020; Baker et al, 2020; Ashraf, 2020; Zhang et al, 2020; Al-Awadhi et al, 2020; Çitak et al, 2020). The third part pays attention to safe havens in times of crisis such as *bitcoin*, some stable currencies such as the Swiss franc and the Japanese yen, gold, oil and a limited number of other commodities, such as soy (Gil-Alana and Aikins Abakah, 2020; Corbet et al, 2020; Conlon and McGee, 2020; Ji et al, 2020).

3. FINANCIAL MARKETS' RESPONSE TO COVID-19

A follower of global, emerging, and even active developing financial markets, during the first semester of 2020, can easily note that those markets ignored the emergence of Corona pandemic at the beginning of the year 2020, and some of them achieved the highest levels ever, although the pandemic appeared in late 2019. But as soon as the pandemic spread in China and first death cases were recorded, those markets panicked and suddenly collapsed in a few days. However, after several months, they returned to relatively acceptable levels, ignoring once again that the pandemic continues to claim many lives, especially in the US, and inflicting more losses to the global economy (see Table 1 and Appendix 1).

Figure 1: Evolution of the number of cases, WTC, and the number of deaths, WTD, in the world during the first half of 2020
(On a bi-monthly basis)



Source: Authors' calculations based on statistics available at:
https://www.worldometers.info/coronavirus/

It is noticed from the previous figure, that the number of confirmed cases worldwide, WTC, was increasing in a geometric sequence, as it accelerated in the last weeks of this semester in a real fearful way. It reflects the great impact of this pandemic on all aspects of life in the world, including financial markets, which is the subject of our study, as they collapsed in a relatively short period of time and lasted at lower levels for weeks thenafter.

Accordingly, FMs collapsed, as previously mentioned, in response to "bad" news received, and mainly related to Covid-19, especially the number of deaths since mid-February 2020, as share prices of industrial companies and financial institutions, that decreased or even stopped their activities after the pandemic spreading, and consequently, experienced credit defaults for their bad loans. Thus, FMs panicked, price volatility and investment risks increased, resulting to a wide correction process. Experts of the World Bank, WB, believe that this pandemic has led to the following (W.B., March 25, 2020):

- Global FMs volatility and re-pricing of various assets;
- Lack of liquidity in the global FMs;
- Flight of capital from developing and emerging countries, and the appreciation of the US dollar against most currencies;

- Lack of (and in some cases no) dealing in bonds, including the closing of their primary markets; and high borrowing costs;
- Stronger negative effects were reported on small and undeveloped FMs.

In the same context, Baker et al, 2020, believes that FMs responded in an unprecedented way, not only to Covid-19, but also to the strict measures that were taken by various countries to limit the spread of the pandemic on their soil, especially stopping many activities and services and restricting individuals' movement, in a service oriented economy. In addition to contagion effects, FMs negatively responded to the length of time the pandemic lasts, the number of victims, and the speed at which it spreads in the five continents; while they positively responded to policy responses, economic recovery programs, and rescue packages.

These programs have taken various forms, such as lowering interest rates, IRs, as happened in the US, where the Fed cut IRs to nearly zero on March 15, and lowered the required reserve ratio (reserve requirements), to zero for the first time in history. The US government also decided to acquire $700 billion worth of available assets, and pump 2.3 trillion dollars into the US economy to overcome the devastating effects of the pandemic. For its part, the European Central Bank, ECB, announced the purchase of $820 billion of bonds; and thenafter many countries followed suit in taking measures related to monetary and fiscal policies, aiming to calm FMs and providing liquidity to the economy. Moreover, countries also adopted a considerable number of programs to strengthen health and social sectors (CRS, Apr 17, 2020; CRS), Jun. 4, 2020).

Despite all this, stock markets lost about 6 trillion dollars in a single week, i.e. from 24-28 February 2020, and the S&P 500 lost more than 5 trillion dollars of its value during the same week (Ozili, 2020). During the period from February 19 to March 20, 2020, Dow Jones lost 34.67% of its value, British FT lost 31.35%, German Dax lost 34.72%, Italian FTSEMib 37.90%, French CAC 33.52% and Spanish Ibex 33.67% (www.statista. com, 2020). This led to the trading suspension on many global stock exchanges during March 2020, due to sharp decline in asset prices. For example, on the morning of Monday, March 9, 2020, the S&P 500 fell by 7% after 4 minutes of trading, and Dow Jones fell by 7.8% and lost about 2013 points, which is the largest loss since the global financial crisis in 1987 (Black Monday, October 19, 1987), that triggered the Automatic Circuit Breaker[1] for the

- [1] - The **automatic circuit breaker** is a system that was developed by the Securities and Exchange Commission, SEC, after the collapse of 1987, with the aim to automatically halt trading in case of

first time since the 2007-8 financial crisis, and trading was halted on Wall Street and major US stock exchanges for 15 minutes (CRS, Apr. 3, 2020; CRS, Apr. 17, 2020). Wall Street continued to decline losing 2,999 points on March 16, the biggest one-day loss in Dow Jones' history (Fernandes, 2020; AIMD, 2020).

In addition to trading suspension and opening for shorter trading days in FMs, and in order to limit wide fluctuations, many countries such as the UK, the US, France, Italy, Korea, Spain, Turkey and Indonesia have banned short selling deals[2], which are usually characterized by intense speculation. Stock buybacks have also been prohibited in several countries (CRS, Apr 3, 2020; FSB, Apr. 15, 2020).

Among the price fluctuation signals that global FMs experience from time to time, is the number of deviations or jumps, which are the cases of daily highs and lows in the market index that are greater than 2.5% compared to the previous day's closing prices, as these jumps affect FMs and represent their levels of risk. While there occurred 1143 jumps in the US financial markets from January 2, 1900 to April 30, 2020, hence about 9.5 jumps per year; 18 jumps were recorded only in 22 trading days, i.e., from February 24 to March 24, 2020, which is the highest in one month ever. This means that the number of jumps during this pandemic is 20 times higher than the average number since 1900 (Baker et al, Apr 2020). If this indicates anything, then it indicates the high intensity of FM fluctuations during this period, in response to the evolution of the pandemic on the one hand, and to measures taken by countries, such as monetary policies, financial policies, etc., on the other.

In the same order of ideas, the Market Volatility Index, known for short as VIX, is also used as the expected volatility barometer for FMs. It is based on options prices, and has its roots in 1973. Accordingly, since this index was affected by Corona

prices collapse to an extent that harms market liquidity. According to the instructions of that commission, there are 3 thresholds or level, namely:

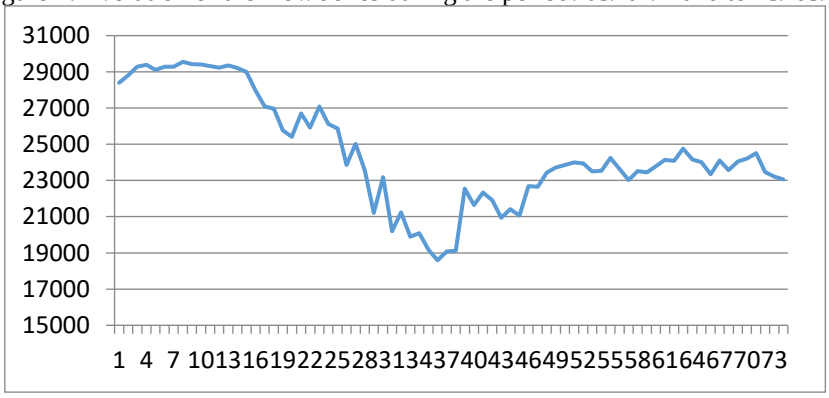
- The first level: a drop of 7% of the S&P 500, compared to the previous day's closing price, triggers trading suspension for 15 minutes. Trading is not stopped if the decline occurs after 3:25 p.m;
- The second level: a drop of 13% of the S&P 500, compared to the previous day's closing price, triggers trading suspension for 15 minutes. Trading is not stopped if the decline occurs after 3:25 p.m;
- The third level: a drop of 20% of the S&P 500, compared to the previous day's closing price, leads to the trading suspension for the rest of the day (*www.sec.gov*).

[2] - **Short selling** is a strategy that is utilized in financial markets, whereby the investor sells a security that does not actually own, but he borrows it from a broker or an asset management company and sells it at the market price. In this case, the seller is betting on a decline of the security's price in the short term. Therefore, as soon as its price drops, he buys it and delivers it to the broker or company before the deal's due date. Despite the possibility of making high profits, as a result of dealing in this form of speculation, these transactions are not without high risks and the possibility of making unlimited losses, when the investor's expectations are not met. Financial authorities require this seller to have a specific financial guarantee that he puts in a special account.

pandemic it means higher price fluctuations of FMs, and consequently, high levels of risk. This is due mainly to the number of cases, deaths, and the number of affected countries. The high VIX reflects optimism among market participants, while low VIX reflects the possibility of a market correction (Fernandes et al, without date).

What attracts attention here is that, the most important and largest global FMs, achieved relatively high or record levels at the beginning of the year 2020, despite the emergence of the pandemic in China at the end of 2019, which means that they completely ignored that event at the beginning, as we have already indicated. So, the Dow Jones reached 29,551 points on 12/ 02/ 2020, the S&P 500 reached 3386 points on 19/ 02/ 2020, the highest level in its history; Dax 13,789 points on 19/ 02/ 2020; the FT 7675 points on 04/ 02/ 2020; and the Japanese Nikkei 24041 points on 17/ 01/ 2020 (https://tradingeconomics.com). It should be noted here that, the American FMs, as the locomotive of global FMs, have witnessed a successive rise over the last 11 years, that ended in mid-March 2020, which is the longest upward period ever, and that ended with the fastest collapse in its history as well (CRS, Apr 3, 2020). That is why the last correction of these markets and other global FMs, which coincided with this pandemic, was devastating and caused heavy losses to investors in a few weeks, as previously indicated.

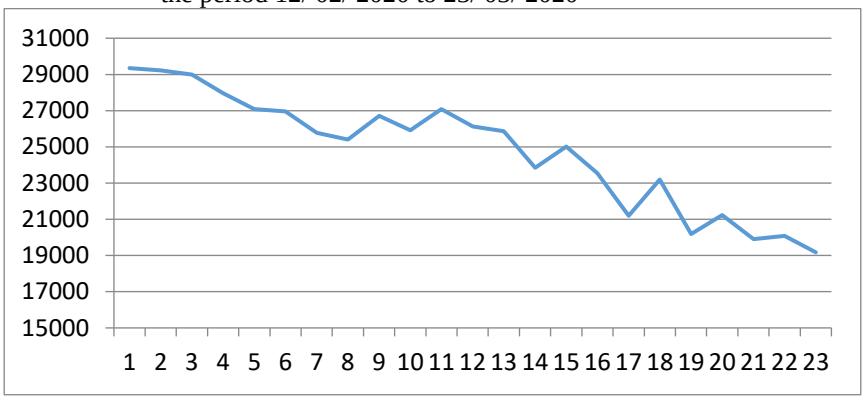
Figure 2: Evolution of the Dow Jones during the period: 03/ 02/ 2020 to 15/ 05/ 2020



Source: Authors' calculations based on statistics available at: *https://www.worldometers.info/coronavirus/*

However, during the period in which the crisis intensified, Dow Jones rolled rapidly from February 12, 2020 to March 23, 2020, reaching its lowest level during the first half of this year 2020.

Figure 3: Evolution of the Dow Jones during the period 12/ 02/ 2020 to 23/ 03/ 2020



Source: Authors' calculations based on statistics available at: *https://www.worldometers.info/coronavirus/*

Accordingly, and after recording these positive results before the spread of the pandemic, global FMs witnessed very low levels in a few days, and even collapsed completely once Covid-19 moved from China to Europe, and then to the US and the rest of the world. Fortunately, these markets are also back to acceptable levels after several weeks.

Table-1: Evolution of indexes for some global FMs during the first semester of 2020

Unit: point

Index	country	date	Val 1	data	Val 2	Ch%1*	date	Val 3	Ch 2*
DJ	US	12/02	29551	23/03	18591	-39.09	08/06	27594	+48.43
FT	GB	04/02	7675	23/03	4930	-35.77	05/06	6484	+31.52
Dax	Ger	19/02	13789	18/03	8489	-38.44	05/06	12848	+51.35
Mib	Italy	19/02	25305	12/03	14930	-41.00	08/06	20231	+35.51
CAC	France	19/02	6064	18/03	3750	-38.16	05/06	5198	+38.61
Ibex	Spain	19/02	10083	16/03	6071	-39.79	08/06	7896	+30.06
Shgh	China	05/03	3071	23/03	2662	-13.32	30/06	2985	+12.13

Source: Authors' calculations based on statistics available at: *https://tradingeconomics.com*

(*) Change 1 represents the ratio between value 2 and value 1; while change 2 is the ratio between the value 3 and the value 2.

From the previous table, it is noted that the sharpest and widest decline was recorded in the Italian market - 41% in about 3 weeks, as this market experienced a shock after the quick outbreak of the pandemic in Italy. On the contrary, the Chinese financial market was the most stable, compared to the rest of global FMs and recorded a decline of 13.32% during the crisis and recovered about 12.13% by the

end of the first half of 2020. On the whole, most FMs have not achieved new record levels after this crisis, but came somewhat close to the levels at which they were at the beginning of the year, then ignoring the actual skyrocketing number of cases and deaths due to Covid-19 all over the world, and that there were no signs on the horizon to find a vaccine for it.

Here it must also be noted that the collapse was not limited to stocks alone, but rather sovereign financial instruments suffered the same crisis, as yields on US Treasury bonds fell to historical levels on March 6 and then on March 9, 2020. What deepens the problem is the shift of investors from stocks to those safer instruments, and to sovereign bonds in general, driven by expectations of lower corporate returns, and consequently lower equity returns (CRS, Apr 17, 2020).

4. EMPIRICAL STUDY

During this part of the study, the relationship between the Italian Stock Exchange Index and the number of confirmed cases and the number of deaths from Covid-19 in Italy, will be estimated, by following the methodological steps and using the statistical and mathematical tools and methods appropriate to our study.

4.1. The Model

The model used in this study is the P-order Vector Autoregressive, VAR, model, that takes the following form (Ben Habib, w.d; Bechichi, 2016):

$$Y_t = \delta + \phi_1 Y_{t-1} + \phi_2 Y_{t-2} + \cdots + \phi_p Y_{t-p} + \varepsilon_t$$

where:

Y_t is the value of the variable in the current period;
$Y_{t-1}, Y_{t-2}, \ldots, Y_{t-p}$ are the values of the variable in previous periods;
ε_t is the term error in the current period;
δ is the intercept

The VAR model, using the lagged term L, usually takes the form:

$$Y_t = \delta + \phi_1 L Y_{t-1} + \phi_2 L^2 Y_{t-2} + \cdots + \phi_p L^p Y_{t-p} + \varepsilon_t$$

After simplifying and rearranging, we get:

$$\phi(L) Y_t = \delta + \varepsilon_t$$

where

$$\phi(L) = (1 - \phi_1 L - \phi_2 L^2 - \cdots - \phi_p L^p)$$

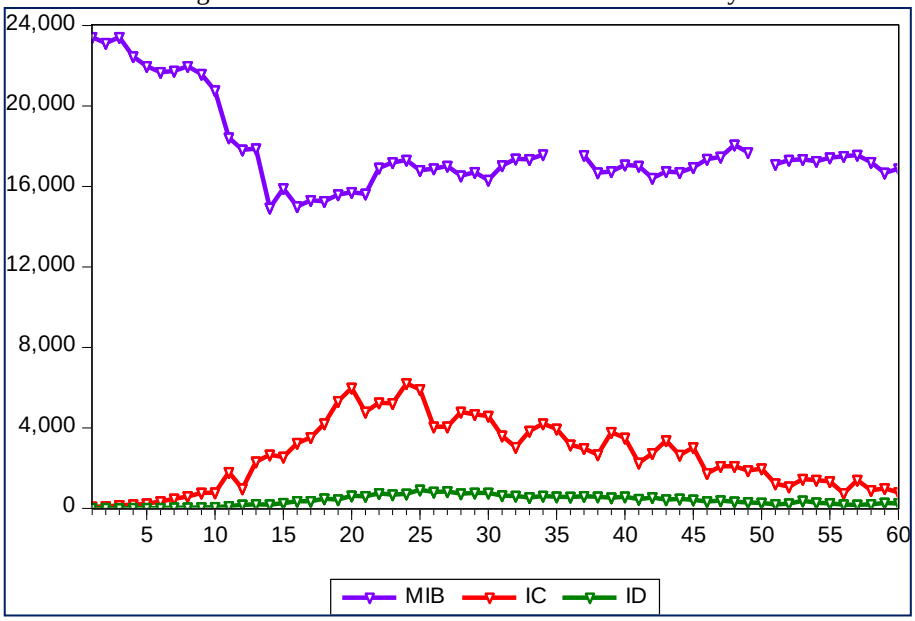
4.2. Study variables

The study variables are:

- the Milan Stock Exchange Index, referred to as "MIB", is the main index at Italiana Stock Exchange, the Italian national stock exchange, and measures the performance of 40 most liquid Italian stocks and largest capitalizations. Currently, it is known as the FTSE MIB, since the British FTSE Group has acquired 50% of its shares;
- the daily number of confirmed cases of Covid-19: "IC"; and
- the daily number of deaths from Coronavirus: "ID".

The time series for the study, i.e., MIB, IC and ID, variables are obtained from the following websites: *https://www.worldometers.info/coronavirus/ https://tradingeconomics.com; https://www.statista.com*, that are available in the form of moving figures. Figure 4 below depicts the evolution of these variables during the period Feb. 24, 2020 to May 15, 2020.

Figure 4: Evolution of the variables used in the study



Source: Authors' calculations based on Eviews8 software output**.**

4.3. Stationarity tests

To ensure the stationarity of the time series of the variables used in our study, we utilize the Augmented Dickey-Fuller, ADF, to test for the null hypothesis, which means that the time series contain a unit root, i.e. nonstationary; and the alternative

hypothesis, which means that they do not contain a unit root, and therefore, they are stationary. The following table shows these tests.

Table- 2: Augmented Dickie-Fuller, ADF, test for time-series stationarity

Variables	ADF Test Statistic at Level	ADF Test Statistic at 1st Diffrence	5% Critical Value	Decision
MIB	-1.986784	-2.471033	-3.513075	non-stat
IC	-3.136165	-1.689399	-3.496960	non-stat
ID	-0.938017	-10.68203	-3.489228	stationar

Source: Authors' calculations based on Eviews8 software output**.**

Table 2, above, shows that, we reject the null hypothesis with respect to the variable ID, because the absolute value of ADF Test Statistic at the first difference is greater than the absolute value of the 5% critical value, i.e., it is stationary at the first difference and cointegrated of the order I(1). However, for the other variables, MIB and IC, the null hypothesis is accepted due to the existence of the unit root and, consequently, the nonstationarity of the time series for these two variables at the Level and at the first difference, because the absolute values of ADF Test Statistic are less than the absolute values of the 5% critical values. This, necessitates studying their stationarity at the second difference. Table 3 shows these tests.

Table- 3: Augmented Dickie-Fuller, ADF, Unit Root Test at Second Difference

Variables	ADF Test Statistic at 2nd Difference	5% Critical Value	Decision
MIB	-9.083365	-3.513075	stationary
IC	-9.674549	-3.496960	stationary

Source: Authors' calculations based on Eviews8 software output**.**

We note, here, that the absolute values of ADF Test Statistic at the second difference are greater than the absolute values of the 5% critical values, and accordingly, we reject the null hypothesis for the two variables MIB and IC, that is, they are stationary at the second difference and cointegrated of the order I(2).

To sum up, stationarity tests indicate that the variables are stable at their second difference, except for the number of deaths, ID, which is stationary at its first difference; and accordingly:

- cointegration cannot be tested, because variables do not have the same order of cointegration; and
- causality cannot be tested, because it places restrictions on parameters of the variables to be tested, and it also assumes the stationarity of all variables.

This prevents the use of the vector error correction model, VECM, to study the relationship between the Italian Stock Exchange Index, MIB, and the number of cases and deaths from Covid-19 in Italy, and this calls for the use of the unrestricted VAR model that does not require the cointegration between time series.

Therefore, the relationship between Covid-19 and the Italian stock exchange index will be studied as a short-term phenomenon, since we are not looking for a long-term equilibrium relationship to the evolution of the economy (Boucha, 2012).

4.4. Selection of the optimal lag order

Before estimating the model, it is necessary to select the lag order (Nd) of the VAR model defined for this series, as this is the most difficult stage in building time-series models; and therefore the optimal lag length should be selected, depending on a set of criteria shown in the following table:

Table- 4: Tests to select the optimal lag order

VAR Lag Order Selection Criteria
Endogenous variables: DDMIB DDIC DID
Exogenous variables: C
Date: 06/23/20 Time: 16:36
Sample: 1 60
Included observations: 39

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-878.8059	NA	8.74e+15	45.22082	45.34878	45.26673
1	-853.7116	45.04113	3.84e+15	44.39547	44.90733*	44.57912
2	-838.1307	25.56865	2.77e+15	44.05798	44.95375	44.37938
3	-825.3494	19.00811*	2.33e+15*	43.86407*	45.14373	44.32320*
4	-820.3219	6.703329	2.99e+15	44.06779	45.73135	44.66466

* indicates lag order selected by the criterion

Source: Authors' calculations based on Eviews8 software output**.**

From the precedent table, we notice that most criteria have chosen the third lag order as an optimum lag length, that we can use to estimate the VAR model.

4.5. Estimation of the VAR model

The VAR model is as follows:

VAR=F(DID, DDIC, DDMIB, C)

Assuming that all variables are endogenous, meaning that they change within the model, i.e., their values can be predicted internally; and after selecting the lag order (Nd=3), we estimate the Vector Autoregression, VAR, model, using the results of the assessment and the Eviews8 software described in Appendix 2. The estimated relationship can be summarized as follows:

MIB = 8.487 – 0.91 DDMIB(-1) -0.44 DDMIB(-2) -0.037DDMIB(-3) -0.286DDIC(-1) -0.17DDIC(-2) – -0.21DDIC(-3) +2.33DID(-1) +0.46DID(-2) -1.05DID(-3)

F= 5.194759 $\bar{R}^2 = 0.4794$ $R^2 = 0.5937$

From the above estimated equation, we note that:

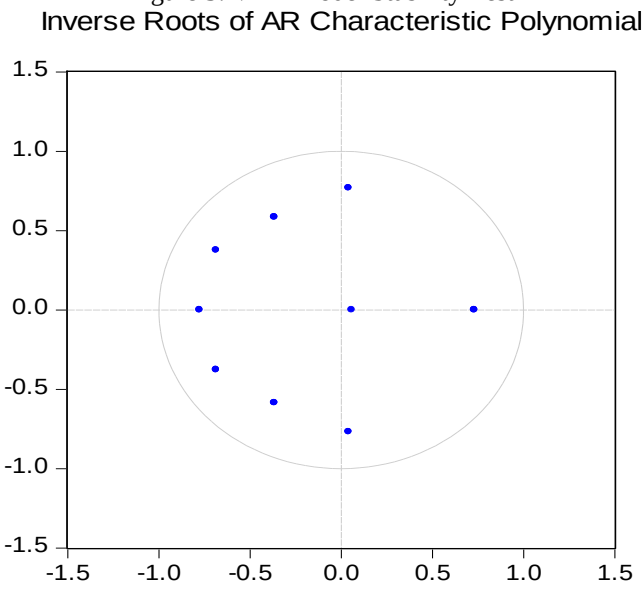
- from an economic point of view, we find that the Italian Stock Exchange Index has a negative relationship with the daily number of infections with Covid-19, during the three lagged terms. The Index also responds negatively to the daily number of deaths during the same lagged terms; and therefore, we can admit that the model is economically acceptable;
- with regard to the adjusted coefficient of determination, $\bar{R}^2$, which is estimated at 0.4794, meaning that 47.94% of the change in the Italian Stock Exchange is explained by the lagged variables at three lagged terms;
- by testing the overall significance of the model, it is found that the calculated F-statistic is greater than the tabulated F-statistic (2.60), that is, there is at least one variable that is not equal to zero, and therefore, the model is statistically acceptable.

It is evident from the previous model, that there is a negative effect of medium strength of the daily number of cases of Coronavirus at three lagged periods, on the performance of the Italian Stock Exchange, i.e., a one unit change in IC leads to a decrease in MIB of 0.286 points at the first lagged period, and it decreases by 0.17 and 0.21 During the second and third lagged periods, respectively. It was also evident that there is a negative effect of medium strength of the daily number of deaths from Covid-19 at three lagged periods, on the performance of the Italian Stock Exchange, which appears at the third lagged period, i.e., a one unit change in ID leads to a decrease in MIB of 1.05 points.

4.6. Stability of the model

In order to trust the VAR model results and their explanatory capacity of the relationships between variables, the stability of this model must be tested; since its instability makes the obtained results incorrect. The following figure summarizes the results of testing its stability.

Figure 5: VAR Model Stability Test



Source: Authors' calculations based on Eviews8 software output**.**

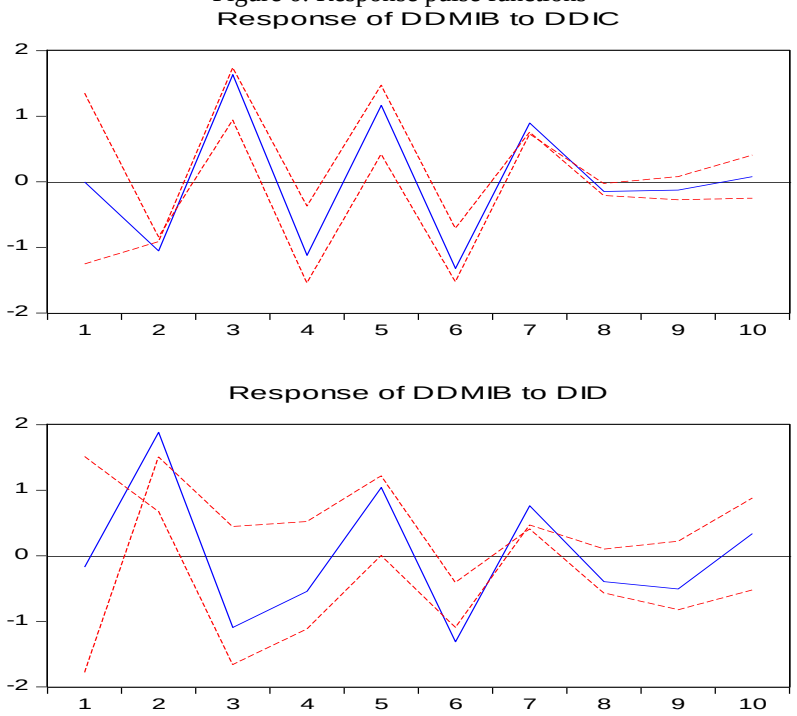
It is evident from the figure that, all the inverse roots of AR characteristic polynomial lie within the unit circle, and this means that the estimated VAR model is stable.

4.7. Dynamic analysis of the model

Perhaps the most important characteristic of VAR models is the possibility of studying the dynamic behavior of the relationships between variables, and this through the functions of response pulses and variance segmentation.

4.7.1. Analysis of response pulses functions. The results of the test of the functions of response pulses are as shown in the following figure.

Figure 6: Response pulse functions



Source: Authors' calculations based on Eviews8 software output**.**

Through the above figure, we note that the occurrence of a positive structural shock to the number of daily infections with Covid-19, IC, amounting to 1%, led to a zero response (0%) to the Italian Stock Exchange index, MIB; it decreases and becomes negative by 1.1% in the second year of the shock. This response quickly turns into a positive one by 1.6% in the third year, then it becomes negative again in the fourth year, and remains at the same pace where it becomes positive and then negative in the following years and, so that the effect becomes almost non-existent starting from the eighth year of the shock.

Moreover, the occurrence of a positive structural shock amounting to 1% in the daily number of deaths from Covid-19, led to a negative and weak response of the Italian Stock Exchange index of 0.2%. This response quickly turns into a positive one of 1.9% in the second year after the shock. Then the response becomes negative again in the third and fourth years, and fluctuations in the response remains between positive and negative during the rest of the period.

4.7.2. Variance segmentation. An analysis of variance shows the relationship between variables and the effect of each of them on the other, by determining the amount of variance in the prediction for each variable, due to the prediction error in the same variable and the amount due to the prediction error in other variables. The following table shows the results of the variance segmentation.

Table 5: Results of the variance segmentation test for the Italian Stock Exchange index

Period	S.E.	DDMIB	DDIC	DID
1	765.6379	100.0000	0.000000	0.000000
2	1059.559	95.78660	2.731984	1.481417
3	1118.004	89.99536	8.408339	1.596303
4	1138.062	87.62795	10.78989	1.582158
5	1164.584	84.96121	13.09981	1.938983
6	1189.259	81.80568	15.97333	2.220986
7	1200.679	80.35079	17.23129	2.417914
8	1201.261	80.31637	17.25463	2.428999
9	1201.758	80.27321	17.26960	2.457188
10	1202.437	80.21228	17.26270	2.525016

Source: Authors' calculations based on Eviews8 software output**.**

The above table illustrates the contribution of the study variables in explaining the change in the Italian Stock Exchange index, as we note that the circumstantial fluctuations that MIB index experienced are primarily caused by self-shocks of the variable itself during the first period of the shock. These shocks allow an explanation of 100% of changes in the Italian Stock Exchange Index. However, this percentage dropped to 95% in the second year and continues to decline at weak rates until it reached 81% in the sixth year; and remained close to 80% in the medium and long terms. In parallel with that, the relative importance of the daily number of infections with Covid-19, IC, in the interpretation of changes in the Italian Stock Exchange index increased from 2% in the second period to 8% in the third period of shock, and increased to 15% in the sixth period; and then remained constant during the last four periods, where it came close to 17%. We also note the rise in the relative importance of the variable ID (the daily number of deaths from Covid-19) in explaining the fluctuations at the Italian Stock Exchange to 1.5% in early periods of the shock, and then remained close to 2.5% in the medium and long terms.

5. EMPIRICAL RESULTS

This study attempts to estimate the relationship between the Italian Stock Exchange index and the daily number of infections and deaths from Covid-19 in Italy. It concludes:

- the existence of a statistically significant negative relationship between the daily number of infections with Covid-19 and the Italian Stock Exchange index;
- the existence of a statistically significant negative relationship between the daily number of deaths from Covid-19 and the Italian Stock Exchange index (appearing in the third lagged period);
- the analysis of random shocks shows that the occurrence of a positive shock in the daily number of infections with Covid-19 leads to a null response, and then negative one, to the Italian Stock Exchange index during the first and second periods respectively. This response turns into a positive one during the third period, and remains at the same frequency of fluctuation until the effect is almost non-existent starting from the eighth year of the shock. Almost the same observation can be made regarding the response of the Italian Stock Exchange index in the case of a positive structural shock in the daily number of deaths from Covid-19, then its responses fluctuate between positive and negative during the whole period;
- analysis of variance shows that the relative importance of the daily number of infections with Covid-19 in explaining the fluctuations of the Italian Stock Exchange index reached 17% in the medium and long terms, while the relative importance of the daily number of deaths with Covid-19 in explaining the fluctuations of the Italian Stock Exchange did not exceed 2% in medium and long terms.

6. CONCLUSION

Corona pandemic began as a health and humanitarian crisis and turned into a devastating global economic and financial disaster, which prompted various countries of the world to take draconian measures to contain the virus and limit its effects. These measures, notably the suspension of many economic and social activities and the restriction of the movement of individuals over a period of several months, led to a considerable disruption in the global economy, a sharp decline in stock prices and wide fluctuation in global financial markets. Accordingly, by estimating the VAR model to determine the relationship between the Italian Stock

Exchange index and each of the daily number of infections with Coronavirus and the daily number of deaths from the virus, we found that there is a negative impact of a medium strength of the daily number of infections with Covid-19 and the daily number of deaths from the virus lagged for three periods on the Italian Stock Exchange performance. This confirms the negative relationship between the performance of financial markets and this pandemic, i.e. the negative impact of Covid-19 on those markets.

APPENDICES

Appendix 1: Some information on Coronavirus until 06/30/2020

Country	Number of Cases	Number of deaths	Date of 1st case	Date of 1st death
USA	2729060	130313	22/01/2020	29/02/2020
GB	283253	43730	31/01/2020	05/03/2020
Germany	195832	9052	27/01/2020	09/03/2020
Italy	240599	34767	31/01/2020	21/02/2020
France	164801	29818	24/01/2020	15/02/2020
Spain	296351	28355	01/02/2020	03/03/2020
China	83531	4634	22/01/2020	22/01/2020
World	10573550	517121	22/01/2020	22/01/2020

Source: Authors' calculations based on statistics available at: *https://www.worldometers.info/coronavirus/*; and Ashraf, B.N., 2020.

Appendix 2: VAR model estimation results

Vector Autoregression Estimates
Date: 06/23/20 Time: 16:30
Sample (adjusted): 6 60
Included observations: 42 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DDMIB	DDIC	DID
DDMIB(-1)	-0.913390	0.213984	-0.008742
	(0.17914)	(0.17989)	(0.01375)
	[-5.09873]	[1.18953]	[-0.63571]
DDMIB(-2)	-0.444384	0.155683	-0.009434
	(0.22901)	(0.22997)	(0.01758)
	[-1.94047]	[0.67698]	[-0.53663]
DDMIB(-3)	-0.037289	0.011719	0.017044
	(0.18552)	(0.18629)	(0.01424)
	[-0.20100]	[0.06291]	[1.19678]
DDIC(-1)	-0.286097	-0.866094	0.020411
	(0.15986)	(0.16053)	(0.01227)
	[-1.78968]	[-5.39527]	[1.66326]
DDIC(-2)	-0.175251	-0.576375	0.040299
	(0.18716)	(0.18794)	(0.01437)
	[-0.93637]	[-3.06674]	[2.80482]

DDIC(-3)	-0.211442	-0.333800	0.036964
	(0.16577)	(0.16646)	(0.01273)
	[-1.27552]	[-2.00524]	[2.90472]
DID(-1)	2.334623	-4.044847	-0.227891
	(1.99413)	(2.00248)	(0.15308)
	[1.17075]	[-2.01992]	[-1.48867]
DID(-2)	0.463939	-1.935911	0.466158
	(1.78216)	(1.78962)	(0.13681)
	[0.26032]	[-1.08175]	[3.40732]
DID(-3)	-1.053063	1.408878	0.260167
	(1.84711)	(1.85485)	(0.14180)
	[-0.57011]	[0.75957]	[1.83478]
C	8.487103	38.40190	8.518976
	(120.818)	(121.323)	(9.27483)
	[0.07025]	[0.31652]	[0.91850]
R-squared	0.593665	0.590395	0.538784
Adj. R-squared	0.479384	0.475194	0.409067
Sum sq. resids	18758443	18915788	110547.0
S.E. equation	765.6379	768.8422	58.77578
F-statistic	5.194759	5.124901	4.153535
Log likelihood	-332.7946	-332.9700	-224.9815
Akaike AIC	16.32355	16.33191	11.18959
Schwarz SC	16.73728	16.74564	11.60332
Mean dependent	10.69048	28.88095	10.38095
S.D. dependent	1061.120	1061.299	76.45912

Determinant resid covariance (dof adj.)	1.05E+15
Determinant resid covariance	4.65E+14
Log likelihood	-888.0384
Akaike information criterion	43.71611
Schwarz criterion	44.95731

Source: Authors' calculations based on Eviews8 software output**.**

REFERENCES

1. AIMD, ASEAN Secretariat, (2020), "Economic Impact of Covid-19 Outbreak on ASEAN", *ASEAN Policy Brief,* available at: *https://asean.org/storage/2020/04/ASEAN-Policy-Brief-April-2020_FINAL.pdf,* consulted on 01/ 06/ 2020.
2. Al-Awadhi, A.M., Alsaifi, K, Al-Awadhi, A., Alhammadi, S., (2020), "Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns", Journal of Behavioral and Experimental Finance 27, 2020.
3. Ashraf, B.N., (2020), "Stock markets' reaction to COVID-19: Cases or fatalities?", Research in International Business and Finance, 54, 2020.
4. Baker, S.R,. Bloom, N., Davis, S.J., Kost, K.J., Sammon, M.C., Viratyosin, T., (2020), "The Unprecedented Stock Market Impact of COVID-19", NBER Working Paper 26945, available at: http://www.nber.org/papers/w26945, consulted on 03/ 05/ 2020.
5. Bechichi, W., (2016), "Role of Monetary Policy in Achieving Economic Growth in Light of the Current Economic Reforms", a PhD Thesis in Economic Sciences, Annaba University, Algeria.
6. Ben Habib, T., (nd), "Steps to apply VAR technique using Eviews", available at:
7. https://drive.google.com/file/d/0Bx4rXkaBqpRja0YxNHdOR3hDSDA/view; consulted on 27/ 08/ 2020.
8. Boissay, F., (2020), and Rungcharoenkitkul, P., "Macroeconomic effects of Covid-19: an early review", BIS Bulletin, N° 7, 17 April 2020; available at: www.bis.org; consulted on 06/ 07/ 2020.
9. Boucha, M., (2012), "An Attempt to Assess the Results of the Monetary Policy in Light of the Economic Reforms: the case of Algeria for the period 1993-1998", a Ph.D. Thesis in Economics, University of Algiers 3.
10. Çitak, F., Bağcı, B., Şahin, E.E., Hoş, S., (2020), "Review of stock markets' reaction to COVID-19 news: fresh evidence from Quantile-on-Quantile regression approach"; available at: https://ssrn.com/abstract=3596931; consulted on 14/ 07/ 2020.
11. CNN, 29/5/2020.
12. Conlon, T., McGee, R., (2020), "Safe haven or risky hazard? Bitcoin during the Covid-19 bear market", Finance Research Letters, 35, 2020.
13. Corbet, S., Larkin, C., Lucey, B., (2020), "The Contagion effects of the COVOD-19 pandemic: Evidence from gold and cryptocurrencies", Finance Research Letters, 35, 2020.
14. Gil-Alana, L.A., Aikins Abakah, I.J., Romero Rojo, M.F., (2020), "Cryptocurrencies and stock market indices. Are they related?" Research in International Business and Finance, 51, 2020.
15. CRS, Congressional Research Service, USA, (2020), "Covid-19 and Stock Market Stress", available at: https://crsreport.congress.gov, consulted on 06/ 08/ 2020.
16. Fernandes, M., Marcelo, M.C., Marcel, S., (nd), "Modeling and predicting the CBOE market volatility Index", WP No. 548, available at: http://hdl.handle.net/10419/176031; consulted on 15/ 06/ 2020.
17. FSB, (2020), "COVID-19 pandemic: Financial stability implications and policy measures taken", Apr. 15, 2020, available at: http://www.fsb.org; consulted on 25/ 07/ 2020.
18. Ji, Q., Zhang, D., Zhao, Y., (2020), "Searching for safe-haven assets during the COVID-19 pandemic", International Review of Financial Analysis, 71, 2020.
19. Maliszewska, M., Matoo, A., Mensbrugghe, D., (2020), "The Potential Impact of COVID-19 on GDP and trade: A Preliminary Assessment", World Bank WP N° 9211, available at: http://www.worldbank.org/prwp; consulted on 05/ 05/ 2020.

20. Niestadt, M., (2020), "The European Parliament, Covid-19 and the Tourism Sector, At a Glance", available at: http://www.europarl.europa.eu/RegData/etudes/ATAG/2020/649368; consulted on 09/ 05/ 2020.
21. Ozili, P., (2020), "Spillover of COVID-19: impact on the Global Economy", available at: www.researchgate.net/publication, consulted on 17/ 06/ 2020.
22. Ramelli, S., Wagner, A.F., (2020), "Feverish Stock Price Reactions to COVID-19", Swiss Finance Institute Research Paper Series N°20-12; available at: https://ssrn.com/abstract=3550274; consulted on 20/ 06/ 2020.
23. Sansa, N.A, (2020), "The Impact of COVID - 19 on the Financial Markets: Evidence from China and USA", available at: https://ssrn.com/abstract=3562530; consulted on 19/ 07/ 2020.
24. Tagliapietra, S., (2020), "COVID-19 is causing the collapse of oil markets: when will they recover?" April 23, 2020, available at: https://www.bruegel.org/2020/04/covid-19, consulted on 07/ 07/ 2020.
25. World Bank, (2020), "COVID-19 Outbreak: Capital Markets Implications and Response", March 25, 2020; available at: http://www. pubdocs.worldbank.org ; consulted on 09/ 06/ 2020.
26. Yan, H., Tu, A., Stuart, L., Zhang, Q., (2020), "Analysis of the Effect of COVID-19 on the Stock Market and Potential Investing Strategies", available at: https://ssrn.com/abstract=3563380, consulted on 26/ 08/ 2020.
27. Zhang D., Hu, M., Ji, Q., (2020), "Financial markets under the global pandemic COVID-19", available at: https://doi.org/10.1016/j.frl.2020.101528; consulted on 27/ 08/ 2020.

Websites

- *https://www.worldometers.info/coronavirus/*
- *https://www.tradingeconomics.com*
- *https://www.statista.com*

REBS Review of Economic & Business Studies

Volume 14, Issue 1/2021, pp. 33-53
ISSN-1843-763X
DOI: 10.47743/rebs-2021-1-0002

ACCOUNTING REFORMS AND ACCOUNTING QUALITY: EVIDENCE FROM ALGERIA

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Abstract: *This paper aims to explore the impact of the 2010 accounting change in Algeria on accounting quality. The study included 20 non-financial companies during the period 2005-2009 before and the period 2011-2016 after the accounting change. The first sub-period included 81 firm-year observations, while the second included 94 firm-year observations. Accounting quality was measured by the three known proxies: accounting earnings management as the discretionary accruals (Dechow et al., 1995), real earnings management as the abnormal cash flows from operations (Dechow et al., 1998; Roychowdhury, 2006), and accounting conservatism (Ball and Shivakumar, 2005). According to the results, accounting change impacted accounting quality in the Algerian companies, with inconsistency regarding the improvement of accounting quality between different measures, where the results recorded an insignificant decrease in accounting earnings management, significant decreases in both real earnings management and accounting conservatism.*

Keywords: *Accounting change, Accounting quality, Accounting earnings management, Real earnings management, Accounting conservatism*

JEL Classification: *M41, M48*

1. INTRODUCTION

High quality of financial information plays a decisive role and is a fundamental guarantee for the resources allocation since it represents a means of transparency and fair disclosures, and thus reducing information asymmetry (Anchev, 2018). Even though the necessity of regulations to strengthen the market supervision and improve the financial communication, accounting quality as the true and fair financial information is important to achieve an ideal allocation of resources

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(Liu and Long, 2016; Atuilik and Salia, 2018). For that, the determinants of accounting quality have been the subject of many studies in different disclosure environments with its specifics. In this context, the accounting standards system and accounting regulations can be considered the main source for the high quality of financial reporting.

Legenzova (2016) identified three broad areas of research about accounting quality: accounting quality in the context of international and local accounting harmonization, firm-specific factors influencing accounting quality, and institutional factors that impact changes in accounting quality. This paper interests in the first area, which is concerned with the accounting regulatory changes as a determinant of accounting quality. For policymakers, regulators, and standard setters, such research stream may offer confirmations of whether accounting regulatory changes or reforms are having the intended impacts. Empirical findings may offer evidence about the consequences of the adopted reforms and can even serve as a justification for the implementation of further future reforms (Leuz, 2018).

Accounting reform is a wide concept that can be used to describe any changes in accounting regulations or the procedures that generate it. The first concept is frequent and employed to describe the evolutions in accounting standards or rules used by companies to prepare and present their financial statements. Accordingly, accounting reform is the process that intends to improve accounting practices, and thereby, increase accounting quality, in order to achieve the transparency and reduce the information asymmetry contributing to a better function of financial markets (Legenzova, 2016). The second concept refers to the procedures and mechanisms of generating accounting standards or rules and their implementation including several institutional aspects. Consistent with this concept, we can distinguish between two common models, the Continental European under which the accounting reform has completely controlled by the government bodies, and imposed by the law. However, the accounting reform under the Anglo-American model has been controlled by the professional bodies.

On the other side, the concept of accounting reform is similar to the concept of harmonization or standardization at the international level, where the International Financial Reporting Standards (IFRS) constitute a base of accounting reforms for many countries. This can be achieved through the voluntary adoption of the IFRS, the mandatory adoption of the IFRS, or through the development of an accounting system depending on the international accounting reference as is the case in Algeria.

Accounting rules or standards are important regulatory tools of accounting practice (Sunder, 2002) since they provide a comprehensive guide on how

accounting information should be prepared, reported, and interpreted (Khanagha *et al.*, 2011). Thereby, the quality of rules or standards can substantially affect the accounting quality (Bartov *et al.*, 2005). High quality of accounting standards or rules and their appropriate enforcement are expected to provide consistent, relevant, and reliable financial statements (Yahaya *et al.*, 2015). Consequently, any accounting regulatory changes or reforms are expected to play a major role in improving accounting quality (Christensen *et al.*, 2013).

Algeria is a transitory economy that known deep economic and institutional reforms since the early of 90s, which required accounting reforms to respond effectively to the requirements of the new environment. With the end of the 90s, Algeria was commenced studying the accounting environment for the horizon of introducing accounting reforms. In 2007 Algeria adopted the Financial Accounting System (SCF), which abstracted from the IFRS 2003 version, where most of its policies and methods reflect the international reference. The SCF was issued in 2008, whereas its effective application was delayed until the beginning of 2010 (Saidi, 2013; Kimouche, 2016).

The SCF adoption in Algerian was a revolutionary change in accounting regulation, since the National Accounting Plan (PCN) that adopted before 2010 was rules-based, whereas the SCF is more principles-based, which can change the form and content of financial statements of the Algerian companies, and thus impact substantially its quality. Therefore the aim of this paper is to explore whether the accounting reforms in Algeria affect the quality of financial information of companies. The remainder of this paper is structured as follows: Section 2 summarizes the literature review; Section 3 presents the Hypotheses development; Section 4 describes the data and methodology; Section 5 discuses the results; and finally, Section 6 contains the conclusion.

2. LITERATURE REVIEW

Although the literature about the consequences of accounting regulatory changes is expansive, consensus on its effectiveness in enhancing the accounting quality is not yet decisive. Even studies use the same measure of accounting quality, they found opposite and contradict results (Trimble, 2018). The emergence of studies in this stream was coincided with the increasing trend towards international standardization, especially in the European countries before 2001. Other transitory environments have also known the emergence of these studies as a response to the reforms introduced including the accounting regulations in order to shift from socialism to capitalism.

In this context, Giner and Rees (1999) explored the value relevance of accounting information before and after the 1989-1990 Spanish accounting reforms, using a sample of non-financial companies listed on the Madrid Stock Exchange during the period 1986-1995. The results demonstrated a modest improvement in the value relevance of accounting information following the adoption of accounting reforms. Khanagha *et al.* (2011) studied the value relevance of accounting information in Iran during the period 1996-2008, before and after the 2001 accounting reform. The results showed that the value relevance of accounting information after the accounting reform was declined.

The real widespread of literature in this stream have mainly been motivated by the IFRS adoption in Europe, and extended later to include most countries in the world. Consistent with this mutation, Ames (2013) studied the IFRS adoption effects on the accounting quality in South Africa, using a sample of 3950 firm-year observations during the period 2000-2011. The study showed that earnings quality is not significantly improved after the IFRS adoption.

Bahloul and Ben Arab (2014) investigated whether the IFRS regulation provides better earnings quality than the local GAAP. The study included 1901 listed companies from 17 countries during the period 2001-2010. The results showed that the IFRS adoption improved the predictability of cash flows and earnings, and the persistence and the timeliness of earnings. The results showed also that earnings are less manipulated under the IFRS regulation, but they are more value relevant and more conservative under the local GAAP regulation.

Müller (2014) investigated the impact of the IFRS mandatory adoption on the quality of consolidated financial reporting. The study included the largest and the most traded 100 companies on the EURONEXT during the period 2003-2008. The results suggested an increase in the quality of the consolidated statements after the IFRS adoption.

Bryce *et al.* (2015) investigated whether the IFRS adoption improved the accounting quality in Australia and whether audit committees are more effective in promoting accounting quality. The results suggested that accounting quality is not significantly enhanced after the IFRS adoption in Australia.

Yurt and Ergun (2015) explored the impact of the IFRS adoption on the accounting quality in Turkey using the financial statements of the 19 largest companies listed in Borsa Istanbul during the period 2005-2011. The results indicated that the IFRS implementation in Turkey improved the accounting quality. Nnadi and Nwobu (2016) found a mixed effect of the IFRS adoption on earnings management, but a significant decrease in earnings management in the post Central

Bank of Nigeria reforms. They concluded that the IFRS adoption was wrongly timed in Nigeria.

Garza Sánchez *et al.* (2017) examined whether the accounting regulatory changes in Mexico improved the quality of financial information reported by the listed companies. The study included 141 companies during the period 2000-2013 and suggested that the change from the local regulations to international reference increased the value relevance of accounting information, and therefore increased its quality.

Rodríguez García *et al.* (2017) analyzed whether the changing from the local to the international reference improved the accounting quality for Latin American companies in terms of value relevance and earnings timeliness. The study was conducted during the period 2000-2014 using a sample of 923 companies from Argentina, Brazil, Chile, and Mexico. The findings showed that the changing from the local to the international reference increased the value relevance of accounting information and the earnings timeliness.

Perafán Peña and Benavides Franco (2017) assessed the impact of the IFRS adoption on the financial information quality, using 3677 firm-year UK and 2941 firm-year French observations during 1991-2014. The findings revealed influences of size on the impact of the IFRS adoption in the UK, where the financial information quality of larger firms has improved after the IFRS adoption. However, the findings do not show any improvement in the financial information quality after the IFRS adoption in France.

Li *et al.* (2018) examined the impact of the accounting reforms known by China in 2001 and 2007 on earnings conservatism, using 24186 firm-year observations during the period 1998-2013. The results indicated the existence of conservatism in the financial statements of companies since the 1998 accounting reform, with different impacts of two accounting reforms. The 2001 accounting reform improved the conservatism, while the 2007 accounting reform reduced the conservatism. The results suggested also that the two accounting reforms restricted the managers' abilities to practice earnings management.

Hwang *et al.* (2018) analyzed whether the effects of IFRS adoption on accounting quality have changed over time in countries with different legal systems, enforcement, and level of external investor protection. The study employed 26148 firm-year observations during 2005, 2007, and 2001 from Korea, China, France, Germany, UK, and Australia. The findings showed that the effects of the IFRS adoption continue over time in the companies listed in countries with common law systems, contrarily the companies listed in Asian countries with statutory law

systems. The results recorded differences in the continued effects of IFRS on accounting quality due to the social, economic, and cultural characteristics of countries.

Hao *et al.* (2019) examined how accounting quality affected after China converges towards the IFRS. The study was carried out during the period 2001-2010 indicating that, in general, the convergence to IFRS is associated with an increase in aggressive reporting of accruals for Chinese companies, which means a decrease in the accounting quality.

Fuad *et al.* (2019) examined whether the IFRS adoption process enhances the accounting quality proxies, including accruals quality, earnings smoothing, conservatism, and earnings persistence. Using 3861 firm-year observations during the period 2008-2014, the results did not indicate conclusive evidence that all accounting quality dimensions increased in the post-IFRS adoption.

Alshyoukh *et al.* (2019) examined the impact of the IFRS mandatory adoption on the accounting quality (value relevance, conservatism, earnings persistence, and earnings management). The study included 1941 observations that concern 180 listed companies on the Amman Stock Exchange during 2001-2015. The findings showed that there was no change in the value relevance of earnings, whereas the value relevance of book value of equity, conservatism, and earnings management were significantly lower after the IFRS adoption. Finally, earnings persistence was increased after the IFRS adoption.

Key and Kim (2020) investigated the accounting quality (earnings management and conservatism) after the transition of Korean companies in 2011 from domestic to IFRS. Using a sample of 439 companies during the period 2006-2015, the results showed that IFRS affected positively Korea's capital markets.

Depending on a sample of 5135 firm-year observations from Datastream Worldscope and Bisnode Firmendatenbank, Gros and Nevrela (2020) did not found any significant evidence regarding the effect of the accounting reforms enforcement on the earnings quality and market valuation.

As a summary of our review, we note that the majority of existing literature about the impact of accounting reforms on accounting quality have interested in the accounting reforms resulting from the IFRS adoption or from the adaptation of the local accounting regulation with the IFRS. The findings are inconsistent and contradict sometimes. Brüggemann *et al.* (2013) suggested that studies examining the effects of accounting regulatory changes on earnings quality in Europe provide mixed and inconclusive findings. According to Alshyoukh *et al.* (2019), *"this could be associated with poor compliance with IFRS among adopters, lack of reporting*

incentives in some countries, and studies' adoption of different accounting information quality proxies, different time periods, and different variables to control firms' incentives and economic environments".

Most studies about the accounting reforms were based on the developed and emerging economies, with little attention given to the developing countries (Chen et al., 2014; Nnadi and Nwobu, 2016). For that, this study provides a significant contribution to accounting literature and professional practice, since it was carried out in a developing country like Algeria, which is rules-based and characterized by accounting practices that tend towards the Continental European model. Therefore, the reform of Algerian accounting regulation through the adaptation with IFRS which is principles-based can be considered an interesting case study. Additionally, in the limits of our review, we did not find any study in the Algerian context, except for some studies that were confined to qualitative analyses without any empirical evidences.

3. HYPOTHESES DEVELOPMENT

Accounting quality is a multidimensional concept that can be expressed by many attributes or figures of financial statements. Cohen (2003) expressed accounting quality by the faithful representation, indicating that accounting quality is the extent to which components of financial statements accurately prescribe the financial position and performance of a company and the level for which they reflected in the future cash flows. Most literature expressed accounting quality through earnings as the widely used to measure financial performance. According to Schipper and Vincent (2003), earnings quality is the level to which accounting earnings approaches from the Hicksian income.

Due to the lack of a specific definition of accounting quality, studies used many measures as proxies since there is no one measure of accounting quality for all decision models (Dechow et al., 2010), so accounting quality varies according to the users of financial information (Ball and Shivakumar, 2005). In the literature, accounting quality is generally associated with a lower earnings management, a higher conservatism, higher value relevance of accounting information, and a lower cost of capital (Barth et al, 2008).

The improvement of accounting quality is a high target for standard setters, which can be achieved through many mechanisms, among the most prominent is the accounting reform. Simply, accounting reform determines the accounting policies that should be used by companies to prepare and present their financial statements, so it can affect substantially accounting quality. Accounting reform can follow

different approaches, the most known are the auto development of local rules or standards, the IFRS adoption, or the adaptation with IFRS.

In this paper, we interested in the first and second approaches, which consider the most common in the three last decades under the tendency towards the international standardization, especially after the reform of the International Accounting Standards Committee (IASC) in 2001. The IFRS adoption or the adaptation with IFRS are expected to impact substantially accounting quality due to the remarkable differences between the IFRS and the local GAAP, whereas the points of view are not consistent. In this context, we can distinguish between two major streams; the first expect a positive effect of the IFRS adoption on accounting quality, unlike the second, which assumes a negative effect.

The argument that the IFRS adoption will improve accounting quality is started from the assumption that, since IFRS are internationally accepted as high-quality standards, the quality of accounting information prepared depending on them would be higher. The primary expected benefit of the IFRS adoption has strongly increased the comparability, and ideally, improved capital allocation. Additionally, IFRS are seemed to be more principles-based than local GAAP. This can be considered as an advantage, since principles-based standards provide higher flexibility for different situations (Ames, 2013).

Barth *et al.* (2008) attributed the improvement in accounting quality associated with the IFRS adoption to three primary factors: the hard work of IASB to develop high-quality standards, the attempt of IASB to remove available accounting alternatives limiting the opportunistic of discretion for managers, and the use of fair value that seen to be more relevant and the best to reflect economic conditions of a company and its performance.

The IFRS adoption has differential impacts on accounting quality, depending on cultural variables and the specifics of each country's environment (Rodríguez García *et al.*, 2017). Even the widespread use of IFRS over countries is expected to increase the transparency and accounting quality, many do not agree with that supposition due to the differences existed between environments. The adoption of a single set of standards across different legal, cultural, economic, and political environments is complicated (Ames, 2013). Therefore, the local GAAP are expected to be more suitable for and compatible with the local business conditions (Bryce *et al.*, 2015).

Primary arguments against the supposition that the IFRS adoption enhances the accounting quality can be summarized in three items; the first is that in some situation IFRS do not specify accounting policies for particular economic events as

they are principles-based, which provide wide flexibility in their application. The second is that IFRS limit overall accounting policies, which can exclude the policies that reflect better a company's financial position and its performance. Finally, the interpretation of IFRS or the possibility of any enforcement and litigation could affect accounting quality.

Many other studies stated that the IFRS are principles-based, which provides more flexibility for managers to engage in earnings management practices, and hence decreasing accounting quality (Barth et al., 2008). In this context, Hellman (2011) demonstrated that Sweden's voluntary adoption of IFRS gave managers discretion to conduct earnings management.

Concerning Algeria, it followed the last approach through the adaptation with IFRS; it adopted the Financial Accounting System (SCF) that inspired from the 2003's IFRS version since the beginning of the fiscal year 2010. As a result, the major accounting policies of the SCF are similar to those of IFRS, except for some cases, where the specificity of the Algerian environment was taken into the consideration. Before 2010, Algerian companies were applying the National Accounting Plan (PCN), which was compatible with the Algerian economic environment in the previous three decades.

The Algerian accounting culture is rules-based since the regulation imposes more requirements and does not leave a wide room for discretion, which contradicts with the IFRS that is principles-based, so they provide a guide but require more judgments in their application. In addition, The Algerian accounting culture tends towards conservatism without referring to any aggressive accounting practices like the fair value. Consequently, we expect a negative effect of accounting reforms in Algeria on accounting quality, as the adoption of SCF can motivate earnings management practices and decrease the level of conservatism. These expectations can be expressed in the following hypotheses:

Hypothesis1: Accounting reforms in Algeria increase the level of accounting earnings management.

Hypothesis2: Accounting reforms in Algeria increase the level of real earnings management.

Hypothesis3: Accounting reforms in Algeria decrease the level of conservatism.

4. DATA AND METHODOLOGY

4.1. Data collection

This study included 20 non-financial companies during the period 2005-2016. This period has been divided into two sub-periods, the first from 2005 to 2009 and the second from 2011 to 2016, the study did not include the fiscal year 2010 because it is the transitory year. The first sub-period contained 81 firm-year observations, while the second contained 94 firm-year observations. The only criterion employed to select the studied companies is the availability of and the accessibility to their financial statements, due to the secrecy and caution that characterize corporate governance in the Algerian companies. Additionally, it is difficult to obtain the financial statements of the Algerian companies since the majority of them are public or family companies and they are not listed in the Algiers Stock Exchange, so they do not have many reporting requirements.

4.2. Measurement of accounting earnings management

The measure of accounting earnings management is based on the discretionary accruals using the Modified Jones model (Dechow et al., 1995) as shown in Equation (1).

$$TACit /Ait\text{-}1 = \alpha1\ (1/Ait\text{-}1) + \alpha2\ [(\Delta REVit - \Delta RECit)/Ait\text{-}1] + \alpha3\ (PPEit /Ait\text{-}1) + eit \quad (1)$$

Where TACit is the total accounting accruals; Ait-1 is the total assets; ΔREVit is the variation in sales; ΔRECit is the variation in customers; PPEit is the property, plant, and equipment; α1, α2, and α3 are the regression coefficients; eit is the error term, which measures the un-expectable (abnormal) accounting accruals or discretionary accruals.

The variables of the Modified Jones model have been obtained directly from the financial statements, whereas the total accounting accruals have been calculated depending on Equation (2).

$$TACit = \Delta WCN_{it} + CP_{it} - DOT_{it} \quad (2)$$

Where $\mathbf{\Delta WCN_{it}}$ is the variation in working capital needs during the period; $\mathbf{CP_{it}}$ is the non-cash expenses; $\mathbf{DOT_{it}}$ is the amortization and impairment expenses for the period.

First, it must estimate the non-discretionary accounting accruals $\mathbf{(NDAC_{it})}$ depending on Equation (3) and using the estimated parameters of the Modified Jones model.

$$NDAC_{it} /A_{it\text{-}1} = \alpha_1\ (1/A_{it\text{-}1}) + \alpha_2\ [(\Delta REV_{it} - \Delta REC_{it})/A_{it\text{-}1}] + \alpha_3\ (PPE_{it} / A_{it\text{-}1}) \quad (3)$$

Second, it must calculate discretionary accruals **(DAC_{it})** using Equation (4).

$$DAC_{it}/A_{it-1} = TAC_{it}/A_{it-1} - NDAC_{it}/A_{it-1} \quad (4)$$

Finally, accounting earnings management **(AEM_{it})** was calculated depending on Equation (5).

$$AEM_{it} = |DAC_{it}|/A_{it} \quad (5)$$

4.3. Measurement of real earnings management

The measure of real earnings management is based on the abnormal cash flows from operations (Dechow *et al.*, 1998; Roychowdhury, 2006), as shown in Equation (6).

$$CFO_{it}/A_{it-1} = \beta_0 + \beta_1 (1/A_{it-1}) + \beta_2 (S_{it}/A_{it-1}) + \beta_3 (\Delta S_{it}/A_{it-1}) + \delta_{it} \quad (6)$$

Where **CFO_{it}** is the net cash flows from operations for the period; **S_{it}** is the sales for the period; **β_0**, **β_1**, **β_2**, and **β_3** are the regression coefficients; **δ_{it}** is the error term, which represents the abnormal cash flows and used as a proxy for real earnings management. (Cash-based earnings management).

4.4. Measurement of conservatism

The measure of conservatism is based on Ball and Shivakumar's (2005) model shown in Equation (7), which is suitable for the Algerian companies, as it includes only variables from the financial statements and does not require any market variables, where the majority of the Algerian companies are not listed.

$$TAC_{it}/A_{it-1} = \lambda_0 + \lambda_1 CFO_{it}/A_{it-1} + \lambda_2 DCFO_{it} + \lambda_3 CFO/A_{it-1} * DCFO_{it} + \varepsilon_{it} \quad (7)$$

Where **$DCFO_{it}$** is a dummy variable takes 1 if CFO_{it} is negative, otherwise 0; **λ_0**, **λ_1**, **λ_2**, **λ_3** are the regression coefficients; **ε_{it}** is the error term.

Accounting conservatism level can be accessed through the value of the incremental coefficient λ_3, the higher the value of the incremental coefficient λ_3, the high the level of accounting conservatism.

5. Results and Discussion

5.1. The impact of accounting reforms on accounting earnings management

In the first step, we estimated the accounting earnings management proxy using the Modified Jones model, which is based on the discretionary accruals. Table 1 shows the Model (1) estimation results, which has been employed to calculate the non-discretionary accruals ($NDACit/A_{it-1}$) using Equation (3), then the discretionary accruals ($DACit/A_{it-1}$) using Equation (4), and finally, the accounting earnings

management (AEM_{it}) using Equation (5). Model (1) was estimated depending on pooled regression before and after the accounting change in Algeria separately, to avoid the problem of the small sample.

The estimation of Model (1) gave substantially different results, although the model is significant at 1% level both in the period preceding and the period following the accounting change, the explanatory power was higher in the post-period, where it reached 0.390 comparing with the pre-period, where it reached 0.239. The intercept and the regression coefficients of plant, property, and equipment (PPEit /Ait-1) are significant at 1% level in the two periods with higher values in the pre-period of the accounting change. However, the regression coefficient of total assets ($1/A_{it-1}$) is not significant and the regression coefficient of the variation in cash sales ($(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}$) is significant at 5% level only in the post-period of the accounting change.

Concerning the validity of Model (1), we based on the Ordinary Least Squares (OLS) criteria including the Collinearity, the Autocorrelation, the Normality, and the Homoscedasticity. According to the Variance Inflation Factor (VIF), which did not exceed 1.60 in the two periods; there is no sign of Collinearity between the independent variables. On the other side, the calculated Durbin-Watson value reached 2.087 and 1.806 in the pre-and post-period of the accounting change respectively and they are situated between the upper critical value dU (= 1.604) and the value 2.396 (= 4 – dU), thus the residuals of Model (1) are not autocorrelated in the two cases. Finally, Shapiro-Wilk and Breusch-Pagan are not statistically significant, so the residuals of Model (1) are normality distributed and homoscedastic, whether before or after the accounting change.

Table- 1: The Modified Jones model's (Dechow *et al.*, 1995) estimation results

Independent Variables	**Before accounting change**		**After accounting change**	
	Coefficient[a]	**VIF**	**Coefficient[a]**	**VIF**
Intercept	0.092** 2.761	-	0.041** 2.760	-
$1/A_{it-1}$	22229.26 0.362	1.059	-100303.65 -1.437	1.060
$(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}$	-0.005 -0.327	1.001	0.077* 4.080	1.012
PPE_{it}/A_{it-1}	-0.121** -4.581	1.058	-0.061** -5.377	1.055
F	7.744**		14.645**	
Adjusted R^2	0.239		0.390	
Durbin-Watson	2.087		1.806	
Shapiro-Wilk	Stat.(0.099) Sig.(0.057)		Stat.(0.992) Sig.(0.961)	
Breusch-Pagan	LM(6.458) Sig.(0.129)		LM(0.231) Sig.(0.972)	

[a] Dependent Variable: $TACC_{it}/A_{it-1}$.
** Significant at 1% level.
* Significant at 5% level.

Source: Based on SPSS

In the second step, a difference test must be employed to determine whether the difference between the pre-and post-period of the accounting change in terms of accounting earnings management is significant. For that, we can use the T-test as a parametric test if the data are normally distributed or Mann-Whitney Test as a nonparametric test if the distribution of data is not normal. Starting from Table 2, it appears that the Shapiro-Wilk test is statistically significant at 1% level, so the data related to accounting earnings management (AEM_{it}) are not normally distributed, and thus it is necessary to use Mann-Whitney Test.

As it is shown in Table 2, even though the mean of accounting earnings management level in the pre-period of the accounting change ($AEM_{it}(0) = 0.026$) is higher comparing with the post-period of the accounting change ($AEM_{it}(1) = 0.020$), the Mann-Whitney Test is not statistically significant since the significance level reached 6.9% and it was more than 5%. Consequently, the difference between the two periods in terms of accounting earnings management level is not statistically significant, which contradicts with ***Hypothesis1***, and thus accounting reforms in Algeria did not impact accounting earnings management level in the Algerian companies.

Table- 2: Normality test and difference test for accounting earnings management

Variable	Descriptive		Shapiro-Wilk			Mann-Whitney Test			
	Mean	Standard deviation	Statistic	df	Sig.	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
$AEM_{it}(0)$	0.026	0.037	0.774	175	0.000	1748.50	3828.50	-1.821	0.069
$AEM_{it}(1)$	0.020	0.045							

Source: Based on SPSS

5.2. The impact of accounting reforms on real earnings management

The followed approach is similar to that followed in the precedent sub-section; firstly, it must estimate the real earnings management depending on Model (6), which was also estimated depending on pooled regression before and after the accounting change separately. The results in Table 3 suggest a differentiation between the pre-and post-period of the accounting change. Generally, the model is statistically significant at 1% level both before and after the accounting change, and the explanatory power is medium and it is convergent between the two periods (0.346 and 0.328 respectively).

Regarding the coefficients, the results are inconsistent in terms of significance and value; the only consistent existed between the regression coefficients of sales (S_{it}/A_{it-1}) in terms of significance (at 1% level), while they differ in terms of value. The intercept is statistically significant at 1% level only in the post-period of the accounting change, whereas the regression coefficients of assets ($1/A_{it-1}$) and the variation in sales ($\Delta S_{it}/A_{it-1}$) are statistically significant at 1% level only in the pre-period of the accounting change.

Concerning the validity of Model (6), Table 3 indicates that the highest value of the Variance Inflation Factor (VIF) reached 2.691, which means that any sign of Collinearity exists between the different independent variables of Model (6). Additionally, the calculated Durbin-Watson value reached 2.123 and 1.748 in the pre- and post-period of the accounting change respectively and they are situated between the upper critical value dU (= 1.604) and the value 2.396 (= 4 – dU), so we can easily estimate that the residuals of Model (6) are not autocorrelated. Lastly, it appears from Table 3 that Shapiro-Wilk and Breusch-Pagan are not statistically significant suggesting the Normality and Homoscedasticity of residuals of Model (6).

Table- 3: The estimation results of the model of abnormal operating cash flows

Independent variables	**Before accounting change**		**After accounting change**	
	Coefficient[a]	**VIF**	**Coefficient[a]**	**VIF**
Intercept	-0.012 -0.247	-	0.058** 3.984	-
$1/A_{it-1}$	-503079.25** -2.895	1.069	149227.76 1.487	1.016
S_{it}/A_{it-1}	0.330** 5.018	2.691	-0.053** -5.410	1.047
$\Delta S_{it}/A_{it-1}$	0.418** 5.734	2.624	0.034 1.282	1.042
F	12.108**		11.093**	
Adjusted R^2	0.346		0.328	
Durbin-Watson	2.123		1.748	
Shapiro-Wilk	Stat.(0.109) Sig.(0.057)		Stat.(0.988) Sig.(0.806)	
Breusch-Pagan	LM(4.216) Sig.(0.297)		LM(7.198) Sig.(0.66)	

[a] Dependent Variable: CFO_{it}/A_{it-1}.

** Significant at 1% level.

* Significant at 5% level.

Source: Based on SPSS

After estimating the real earnings management during the pre-and post-period of the accounting change as the residuals of Model (6), it is required to test the significance of the difference between the two periods. However, it must first test the normality of data to determine whether the parametric (T-test) or the

nonparametric (Mann-Whitney) test is adequate. According to the results summarized in Table 4, the Shapiro-Wilk Test is statistically significant at 1% level, and therefore the distribution of data related to real earnings management (REM_{it}) is not normal, so the Mann-Whitney Test must be used.

Table 2 shows that the abnormal cash flows from operations reached 6.7% from the total assets on average ($REM_{it}(0)$) during the pre-period, and decreased to 3.2% from the total assets on average ($REM_{it}(1)$) during the post-period of the accounting change. Taking into consideration that the Mann-Whitney Test is statistically significant at 1% level, the decrease in real earnings management that was previously recorded as a decrease in the abnormal cash flows due to the accounting change is statistically significant. Therefore, ***Hypothesis2*** must be rejected; hence accounting reforms in Algeria impacted negatively the level of real earnings management in the Algerian companies.

Table- 4: Normality test and difference test for real earnings management

Variable	Descriptive		Tests of Normality			Mann-Whitney Test			
	Mean	Standard deviation	Statistic	df	Sig.	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
$REM_{it}(0)$	0.067	0.269	0.595	175	0.000	1444.00	3722.00	-3.223	0.001
$REM_{it}(1)$	0.032	0.153							

Source: Based on SPSS

5.3. The impact of accounting reforms on accounting conservatism

Table 5 presents the descriptive statistics for the conservatism model variables, which indicates an increase in the total accounting accruals level ($TACC_{it}/A_{it-1}$) from 0.9% to 2.3% of total assets and a decrease in the operating cash flows level (CFO_{it}/A_{it-1}) from 7.6% to 6.8% of total assets. Table 5 indicates also that all variables are more dispersal in the pre-period, where the dummy variable ($DCFO_{it}$) is more dispersal than cash flows from operations, total accounting accruals, and conservatism variable ($CFO_{it}/A_{it-1}*DCFO_{it}$) respectively. According to the minimum and maximum values, it appears that cash flows from operations and total accounting accruals contain positive and negative values.

Table- 5: Descriptive statistics for data used to estimate the conservatism model

	Before accounting change				After accounting change			
	$\frac{TACC_{it}}{A_{it-1}}$	$\frac{CFO_{it}}{A_{it-1}}$	$DCFO_{it}$	$\frac{CFO_{it}}{A_{it-1}} * DCFO_{it}$	$\frac{TACC_{it}}{A_{it-1}}$	$\frac{CFO_{it}}{A_{it-1}}$	$DCFO_{it}$	$\frac{CFO_{it}}{A_{it-1}} * DCFO_{it}$
Observ.	81	81	81	81	92	92	92	92
Mean	-0.009	0.076	0.220	-0.059	-0.032	0.068	0.180	-0.025
Median	-0.028	0.092	0.000	0.000	-0.019	0.042	0.000	0.000

Std. Deviation	0.360	0.386	0.414	0.280	0.217	0.258	0.390	0.120
Minimum	-1.446	-2.084	0.000	-2.084	-1.446	-1.064	0.000	-1.063
Maximum	2.160	1.943	1.000	0.000	1.041	1.943	1.000	0.000

Source: Based on SPSS

The preliminary results of descriptive statistics indicate that the mean of the conservatism variable was decreased after the accounting change. However, it must estimate the model of Ball and Shivakumar (2005) to determine the statistical significance of that decrease. As shown in Table 6, the results obtained from the Model (7) estimation are convergent between the pre-and post-period of the accounting change. The model is statistically significant at 1% level, and its explanatory power is very strong in the two cases, reaching 0.912 and 0.872 respectively, suggesting that Ball and Shivakumar (2005) provides a good estimate for accounting conservatism in the Algerian environment.

In addition, the intercept is statistically significant at 1% level before and at 5% level after the accounting change. Contrarily, the regression coefficient of cash flows from operations (CFO_{it}/A_{it-1}) is statistically significant at 1% in the two cases with convergent values (-0.783 and -0.767). Regarding the regression coefficient of the dummy variable ($DCFO_{it}$) it is not significant neither before nor after the accounting change. Finally, the regression coefficient of conservatism ($CFO_{it}/A_{it-1}*DCFO_{it}$) is significant at 1% in the two cases, while its value was decreased from 0.249 to 0.202 suggesting a decline in the coefficient of conservatism, which confirms ***Hypothesis3*** that the Algerian accounting reforms decrease the level of conservatism in the financial statement of companies.

Similarly to the previous, Table 6 indicates the absence of Collinearity due to the low values of Variance Inflation Factor (VIF), and the no autocorrelation of residuals since the calculated Durbin-Watson value is situated between the upper critical value dU (= 1.604) and the value 2.396 (= 4 – dU) in the two cases. The results indicate also the Normality and Homoscedasticity of residuals of Model (7) due to the no significance of both the Shapiro-Wilk Test and Breusch-Pagan Test.

Table- 6: Conservatism model's (Ball and Shivakumar, 2005) estimation results

Independent variables	**Before accounting change**		**After accounting change**	
	Coefficient[a]	**VIF**	**Coefficient[a]**	**VIF**
Intercept	0.039** 4.980	-	0.016* 2.465	-
CFO_{it}/A_{it-1}	-0.783** -30.360	3.019	-0.767** -30.067	1.459
$DCFO_{it}$	-0.017 -1.053	1.304	-0.006 -0.410	1.273

CFO_{it}/A_{it-1}*$DCFO_{it}$	-0.249** -7.28	2.786	-0.202** -3.571	1.545
F	1295.26**		499.33**	
Adjusted R^2	0.912		0.872	
Durbin-Watson	1.696		2.131	
Shapiro-Wilk	Stat.(0.969) Sig.(0.055)		Stat.(0.986) Sig.(0.486)	
Breusch-Pagan	LM(4.323) Sig.(0.229)		LM(0.208) Sig.(0.976)	

[a] Dependent Variable: $TACC_{it}/A_{it-1}$.
** Significant at 1% level.
* Significant at 5% level.

Source: Based on SPSS

5.4. Discussion

This study indicates contradictory results between different measures of accounting quality in terms of accounting change consequences, which confirm the conclusions of Brüggemann *et al.* (2013), Trimble (2018), and Alshyoukh *et al.* (2019). This because the change in accounting policies has different effects on the items used to estimate the measures of accounting quality. The study shows that accounting change in Algeria affected negatively accounting earnings management, but this effect is not statistically significant, which reflects the managers' avoidance of this practice as it is easy to detect.

The study suggests a significant and negative effect of accounting change in Algeria on real earnings management reflecting a positive effect on accounting quality. On the other side, the effect of the Algerian accounting reforms on the level of conservatism is significant and positive reflecting a negative effect on accounting quality, due to the introduction of new measurement bases that are not consistent with conservatism and tend towards aggressiveness like the fair value.

6. CONCLUSION

Accounting quality is a focus of interest in financial accounting whether for the suppliers or demanders of financial information, as well as for accounting standards setters. In this context, accounting standards or rules play critical role in accounting since it is the framework in which the form and the content of the financial statements are determined. Therefore, any change in the accounting regulations is expected to affect the financial statements, and thus affect their quality. Starting from this idea, the present study asks the question about the impact of the 2010 accounting change in Algeria on the accounting quality, knowing that Algeria

has known a revolutionary change in the accounting practices of companies that have been adapted with the IFRS.

The study included 20 non-financial companies during the period 2005-2009 before and the period 2011-2016 after the accounting change. The first sub-period included 81 firm-year observations, while the second included 94 firm-year observations. Accounting quality was measured by the three known proxies: accounting earnings management (Dechow *et al.*, 1995), real earnings management (Dechow *et al.*, 1998; Roychowdhury, 2006), and accounting conservatism (Ball and Shivakumar, 2005).

The results suggested the existence of impacts for accounting regulatory change on accounting quality in the Algerian companies. However, these impacts were not consistent regarding the improvement of accounting quality, where the results recorded an insignificant decrease in accounting earnings management, hence no significant impact on accounting quality. On the other hand, the results recorded significant decreases in the real earnings management and accounting conservatism indicating a positive impact on accounting quality in terms of real earnings management and a negative impact on accounting quality in terms of conservatism.

The results of this study have practical implications and they are beneficial for related parties whether they are suppliers or demanders of financial information. They provide confirmations for the Algerian regulator to assess the feasibility of accounting reforms, and the required corrections and modifications. However, future studies must use large samples and they must focus on specific practices.

REFERENCES

1. Alshyoukh, F. M., & Abdul Manaf, K. B. (2019), "The effects of mandatory IFRS adoption on accounting information quality: Empirical evidence from Jordan", *Social Science and Humanities Journal*, Vol. 3, No. 7, pp. 1395- 1415.
2. Ames, D. (2013), "IFRS adoption and accounting quality: The case of South Africa", *Journal of Applied Economics and Business Research*, Vol. 3, No. 3, pp. 154-165.
3. Anchev, S. (2018), Information and Financial Markets. Phd Dissertation, Sweden: Umeå University.
4. Atuilik, W. A., & Salia, H. (2018), "The Importance of financial reporting to capital market development in Ghana", *Economics and International Finance*, Vol. 10, No. 8, pp. 89-94. https://doi.org/10.5897/JEIF2017.0840.
5. Bahloul, J., & Ben Arab, M. (2014), "The effects of mandatory IAS/IFRS regulation on the properties of earnings' quality in Australia and Europe", *European Journal of Business and Management*. Vol. 6, No. 3, pp. 92-111.
6. Ball, R., & Shivakumar, L. (2005), "Earnings quality in UK private firms: Comparative loss recognition timeliness", *Journal of Accounting and Economics*, Vol. 39, No. 1, pp. 83-128. https://doi.org/10.1016/j.jacceco.2004.04.001.
7. Barth, M. E., Landsman, W. R., & Lang, M. H. (2008), "International accounting standards and accounting quality", *Journal of accounting research*, Vol. 46, No. 3, pp. 467-498.
8. Bartov, E., Goldberg, S. R., & Kim, M. (2005), "Comparative value relevance among German, U.S., and International Accounting Standards: A German stock market perspective", *Journal of Accounting, Auditing & Finance*, Vol. 20, No. 2, pp. 95-119. https://doi.org/10.1177%2F0148558X0502000201.
9. Brüggemann, U., Hitz, J.-M., & Sellhorn, S. (2013), "Intended and Unintended Consequences of Mandatory IFRS Adoption: A Review of Extant Evidence and Suggestions for Future Research", *European Accounting Review*, Vol. 22, No. 1, pp. 1-37, https://doi.org/10.1080/09638180.2012.718487.
10. Bryce, M., Ali, M. J., & Mather, P. R. (2015), "Accounting quality in the pre-/post-IFRS adoption periods and the impact on audit committee effectiveness - Evidence from Australia", *Pacific-Basin Finance Journal*, Vol. 35, No. A, pp. 163-181. https://doi.org/10.1016/j.pacfin.2014.12.002.
11. Chen, C. J. P., Ding, Y., & Xu, B. (2014), "Convergence of accounting standards and foreign direct investment", *International Journal of Accounting*, Vol. 49, No. 1, pp. 53-86. https://doi.org/10.1016/j.intacc.2014.01.007.
12. Christensen, H. B., Hail, L., & Leuz, C. (2013), "Mandatory IFRS reporting and changes in enforcement", *Journal of Accounting and Economics*, Vol. 56, No. 2, pp. 147-177. https://doi.org/10.1016/j.jacceco.2013.10.007.
13. Cohen, D. A. (2003), *Quality of financial reporting choice: Determinants and economic consequences*, https://archive.nyu.edu/handle/2451/27547, [Accessed 10.09.2020].
14. Dechow, P., Sloan, R., & Sweeney, A. (1995), "Detecting earnings management", *The Accounting Review*, Vol. 70, No. 2, pp. 193-225.
15. Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998), "The relation between earnings and cash flows", *Journal of Accounting and Economics*, Vol. 25, No. 2, pp. 133-168. https://doi.org/10.1016/S0165-4101(98)00020-2.

16. Dechow, P., Ge, W., & Schrand, C. (2010), "Understanding earnings quality: A review of the proxies, their determinants and their consequences", *Journal of Accounting and Economics*, Vol. 50, No. 2-3, pp. 344-401.
17. Fuad, F., Juliarto, A., & Harto, P. (2019), "Does IFRS convergence really increase accounting qualities? Emerging market evidence", *Journal of Economics, Finance and Administrative Science*, Vol. 24, No. 48, pp. 205-220. https://doi.org/10.1108/JEFAS-10-2018-0099.
18. Garza Sánchez, H. H., Cortez Alejandro, K. A., Méndez Sáenz, A. B., & Rodríguez García, M. P. (2017), "Effect of information quality due accounting regulatory changes: Applied case to Mexican real sector", *Contaduría y Administración*, Vol. 62, No. 3, pp. 761-774. https://doi.org/10.1016/j.cya.2015.11.013.
19. Giner, B., & Rees, W. (1999), "A valuation based analysis of the Spanish accounting reforms", *Journal of Management and Governance*, Vol. 3, pp. 31-48. https://doi.org/10.1023/A:1009968532672.
20. Gros, M., & Nevrela, A. (2020), "Revisiting the effectiveness of the German accounting enforcement reforms: a replication study", *Management Review Quarterly*, Vol. 70, No. 1, pp. 135-164. https://doi.org/10.1007/s11301-019-00162-9.
21. Hao, J., Sun, M., & Yin, J. (2019), "Convergence to IFRS, accounting quality, and the role of regional institutions: evidence from China", *Asian Review of Accounting*, Vol. 27, No. 1, pp. 29-48. https://doi.org/10.1108/ARA-01-2017-0008.
22. Hellman, N. (2011), "Soft Adoption and Reporting Incentives: A Study of the Impact of IFRS on Financial Statements in Sweden", *Journal of International Accounting Research, Sarasota*, Vol. 10, No. 1, pp. 61-83.
23. Hwang, I., Hur, K., & Kang, S. (2018), "Does the IFRS effect continue? An international comparison", *Sustainability*, Vol. 10, No. 12, pp. 4818.
24. Key, K. G. & Kim, J. Y. (2020), "IFRS and accounting quality: Additional evidence from Korea", *Journal of International Accounting, Auditing and Taxation*, Vol. 39, pp. 100306. https://doi.org/10.1016/j.intaccaudtax.2020.100306.
25. Khanagha, J. B., Shamsher, M., Hassan, T., & Sori, Z. M. (2011), "The impact of reforms on the value relevance of accounting information: Evidence from Iran", *African Journal of Business Management*, Vol. 5, No. 1, pp. 96-107. https://doi.org/10.5897/AJBM10.780.
26. Kimouche, B. (2016), "Value relevance of intangible assets: An exploratory study of Algerian listed companies", *Ponte Journal*, Vol. 72, No. 3, pp. 229-240. https://doi.org/10.21506/j.ponte.2016.3.10.
27. Legenzova, R. (2016), "A concept of accounting quality from accounting harmonisation perspective", *Economics and Business*, Vol. 28, No. 1, pp. 33-37. https://doi.org/10.1515/eb-2016-0005.
28. Leuz, C. (2018), "Evidence-based policymaking: promise, challenges and opportunities for accounting and financial markets research", *Accounting and Business Research*, Vol. 48, No. 5, pp. 582-608.
29. Li, S., Wu., H., Zhang, J., & Chand, P. (2018), "Accounting reforms and conservatism in earnings: Empirical evidence from listed Chinese companies", *Journal of International Accounting, Auditing and Taxation*, Vol. 30, pp. 32-44. https://doi.org/10.1016/j.intaccaudtax.2017.12.004.

30. Liu, O., & Long, H. (2016), "Research on accounting reform and accounting information quality", *Proceedings of 2016 5th International Conference on Social Science, Education and Humanities Research*, Atlantis Press. https://doi.org/10.2991/ssehr-16.2016.5.
31. Müller, V. O. (2014), "The impact of IFRS adoption on the quality of consolidated financial reporting", *Procedia - Social and Behavioral Sciences*, Vol. 109, pp. 976-982. https://doi.org/10.1016/j.sbspro.2013.12.574.
32. Nnadi, M. A., & Nwobu, O. A. (2016), "The impact of international financial reporting standards adoption and banking reforms on earnings management: evidence from Nigerian banks", *African Journal of Accounting, Auditing and Finance*, Vol. 5, No. 3, pp. 231-253. http://dx.doi.org/10.1504/AJAAF.2016.10004608.
33. Perafán Peña, H., & Benavides Franco, J. (2017), "Impact of IFRS on the quality of financial information in the United Kingdom and France: Evidence from a new perspective", *Intangible Capital, Vol. 13*, No. 4, pp. 850-878. http://dx.doi.org/10.3926/ic.939.
34. Rodríguez García, M. D., Cortez Alejandro, K. A., Méndez Sáenz, A. B., & Garza Sánchez, H. H. (2017), "Does an IFRS adoption increase value relevance and earnings timeliness in Latin America?" *Emerging Markets Review*, Vol. 30, pp. 155-168. http://dx.doi.org/10.1016/j.ememar.2016.11.001.
35. Roychowdhury, S. (2006), "Earnings management through real activities manipulation", *Journal of Accounting and Economics*, Vol. 42, No. 3, pp. 335-370. http://dx.doi.org/10.1016/j.jacceco.2006.01.002.
36. Saidi, F. (2013), "Accounting developments in Algeria: The Road to IFRS", *International Research Journal of Applied Finance*, Vol. 9, No. 1, pp. 124-142.
37. Schipper, K., & Vincent, L. (2003), "Earnings Quality", *Accounting Horizons*, Vol. 17 No. s-1, https://doi.org/97-110. 10.2308/acch.2003.17.s-1.97.
38. Sunder, S. (2002), "Regulatory competition among accounting standards within and across international boundaries", *Journal of Accounting and Public Policy*, Vol. 21, No. 3, pp. 219-234. https://doi.org/10.1016/S0278-4254(02)00050-9.
39. Trimble, M. (2018), "A reinvestigation into accounting quality following global IFRS adoption: Evidence via earnings distributions", *Journal of International Accounting, Auditing and Taxation*, Vol. 33, pp. 18-39. https://doi.org/10.1016/j.intaccaudtax.2018.09.001.
40. Yahaya, O. A., Onyabe, J. M., & Usman, S. O. (2015), "International financial reporting standards' adoption and value relevance of accounting information of listed deposit money banks in Nigeria", *Journal of Economics and Sustainable Development*, Vol. 6, No. 12, pp. 85-93.
41. Yurt, C., & Ergun,U. (2015), "The IFRS Adoption and Accounting Quality: A Comprehensive Trend Analysis", *International Journal of Academic Research in Economics and Management Sciences*, Vol. 4, No. 2, pp. 11-19. http://dx.doi.org/10.6007/IJAREMS/v4-i2/1631.

REBS Review of Economic & Business Studies

Volume 14, Issue 1/2021, pp. 55-73
ISSN-1843-763X
DOI: 10.47743/rebs-2021-1-0003

THE INTERRELATIONSHIP AMID CHARACTERISTICS OF FLEXIBILITY AND BARGAINING STYLE WITH THE PERCEIVED VALUE GAINED AMONGST NEGOTIATORS IN THE HI-TECH BUSINESS SECTOR

ALON EFRAT*

Abstract: *In today's business market, a modern negotiator needs to change or persist in behavior according to changing internal and external circumstances. This study explores how flexibility and bargaining style influence the social-psychological outcomes valued subjectively as consequences of negotiations from the high-tech sector. 39 respondents from the High-tech arena who by virtue of their position have access to customers or suppliers took part in this study. Quantitative analysis was used to perform hypothesis testing, by using a four-chapter closed structured questionnaire data collected as an instrument. Fndings show that those with a positive perception of change tend to perceive high subjective value. The collaborative and compromising styles appear to have a strong moderating effect on the connections between Psychological Flexibility and Subjective Value Inventory. Those with a collaborative and compromising approach to negotiation tend to combine elements of flexibility to achieve higher subjective value from the negotiating process and outcome.*

Keywords: *Negotiations, Bargaining, Flexibility, Thomas-Kilmann conflict mode instrument, Subjective value*

1. INTRODUCTION

Over and above building descriptive models of negotiation strategies and providing an explanation of people's behavior in various negotiation situations, experimental economics, as well as formal sciences such as decision and game theory, attempts to build prescriptive or constitutive models which would guide dealmakers' behavior towards obtaining coherent outcomes (Wachowicz & Wu, 2010). Negotiation is an intercommunication-based process between entities who seek to reach a tangible agreement based on common interests while optimizing their

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individual utilities. This beneficial outcome can be for all the parties involved, or just for one or some of them (Adnan, et al, 2016). The issue of objective and subjective achievements from the negotiation process forms the foundation of many studies (Curhan et al, 2006, Hindriks et al, 2007, Gelfand et al., 2006, Elfenbein et al, 2008, Carmon & Ariely, 2000). Studies also analyzed the role of individual differences in the context of inherently interpersonal, dyadic interactions. After all, one-on-one negotiation involves two well-defined interaction partners, both of whom may influence the negotiation outcomes (Elfenbein et al, 2008). Negotiations are one of the most essential components in business success (Herbst and Schwarz 2011, cited in Sigurðardóttir et al, 2019). Negotiation outcomes affect the development of negotiated relationships. Interactions after negotiations are likely to be the norm in today's business markets, as sales and marketing personnel work toward building long-term customer relationships (Gordon, 1999, cited in Patton & Balakrishnan, 2010). The relationship throughout the negotiations reflects the personality and behavior of both parties who are characterized by a different personality and attitude they bring to the negotiation table. Once they know the tendency, the personal motivation of themselves as well as of the other party, it is possible to start dealing with strategy (Thompson, 2001).

Novel literature deals with different aspects of negotiation such as characterization of negotiation behavior (Saorín-Iborraa & Cubillo, 2019), the expectation of future negotiation interaction on bargaining processes and outcomes (Patton& Balakrishnan, 2010), and power and negotiation (Schaerer et al, 2020). However, “there is a lack of information about what actually occurs during business negotiations in general” despite the importance of the negotiation to the success of business strategies, (Fells et al. 2015) and how practitioners behave in business-to-business (B2B) settings (Agndal, Age, and Frick 2017, cited in Sigurðardóttir et al, 2019).

Satisfaction has distinctly important implications given the evidence of the correlation between cooperation and the desire for unremitting relationships (Barry and Oliver, 1996; Heide and Miner, 1992; Oliver et al., 1994; Purdy et al., 2000, cited in Patton & Balakrishnan, 2010). Negotiators in the business market are categorized into different bargaining styles and personal flexibility characteristics. It is worth questioning whether the direct main effects of individual differences have any predictive power for negotiation subjective performance. This study takes a deliberatively exploratory approach to the question of how an encounter between negotiation bargaining styles and

flexibility characteristics affects the subjective negotiation outcomes among professionals involved in ongoing negotiations in the business market.

2. THEORY AND HYPOTHESIS

Both parties to the negotiation experience the process through their personal perception. Negotiation processes include negotiators' behaviors, cognitions, emotions, and motivations. The interpersonal system alludes to the ways that negotiators' behavior and end results depend upon the presence of the other party or parties—negotiations in the context of others, and the dyadic aspects of negotiation behavior (Thompson et al, 2010).

When we explore the ways negotiators refer to changes, we must investigate relevant aspects and definitions in their personality that affect the process. Personality concerns compositions in an individuals' behavior that re-emerges in various situations. Personality traits are labels that summarize those compositionss (Gelfand et al, 2006) personal flexibility and bargaining style represent different and wide aspects of both sides of the negotiation by which different attitudes of both sides affect the subjective value each side claims from the process and the outcomes of the negotiation. Psychological flexibility refers to the ability to be open, present-focused, and to change or persist in behavior according to changing internal and external circumstances (Ben-Itzhak et al, 2014). The Psychological Flexibility Questionnaire (PFQ) was chosen as a valid questionnaire for this purpose. Thomas-Kilmann Instrument (TKI) is a valid psychometric test to measure negotiators' profile within the two-dimensional space of assertiveness and cooperativeness (Thomas and Kilmann, 1977, 1988, 1992, 2002) (Wachowicz & Wu, 2010). In a four-factor model of subjective value (SV), negotiators subjectively evaluate success on four dimensions. As such, the umbrella construct of SV represents an integrative framework that connects existing lines of negotiation research on related topics such as trust, justice, relationships, and outcome satisfaction (Curhan et al, 2006). Besides striving for a satisfying instrumental outcome (e.g., reaching goals), negotiators strive for a positive self-view as a negotiator (e.g., feeling competent, living up to one's principles), a good relationship with the counterpart, and an effective negotiation process. The SV resulting from a negotiation may feedback, positively or negatively, into future objective outcomes (Elfenbein, et al, 2008).

Hypothesis

Based on the theory discussed above, the following hypotheses are proposed:

H1- There is a positive relationship between *Psychological Flexibility* and *Subjective Value Inventory*: the higher the level of flexibility in personality traits, the higher the likelihood of satisfaction from the negotiation.

H2- There is a relationship between the *Assertiveness and Cooperativeness* and the *Subjective Value Inventory*.

H3- There is a relationship between *Assertiveness and Cooperativeness* and *Psychological Flexibility*.

H4- The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by *Assertiveness and Cooperativeness* ‡.

H4.1- The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- competing

H4.2- The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- collaborating

H4.3- The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- compromise

H4.4- The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- avoiding

H4.5- The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- Accommodating

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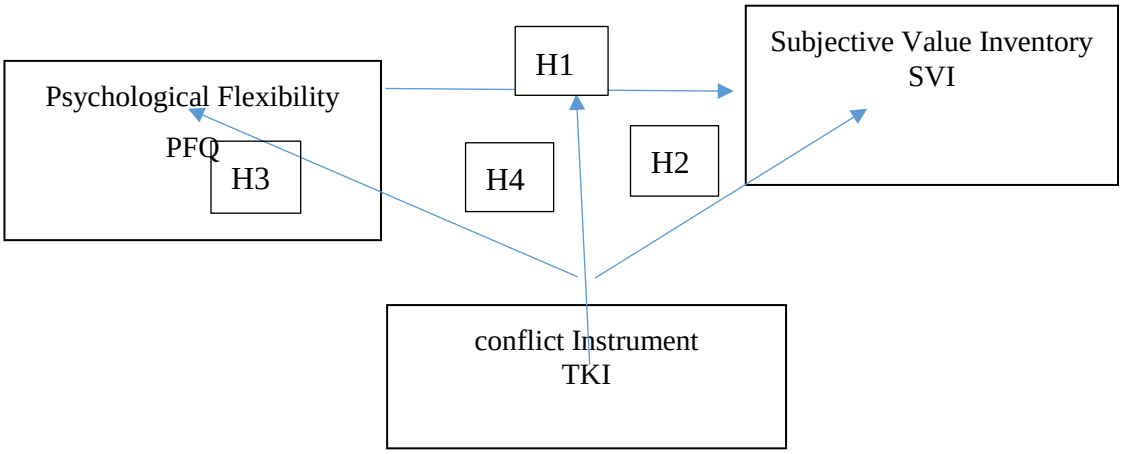

Figure 1. Research Model with Hypotheses

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3. METHODOLOGY

In the line with the study assumptions (H1,H2,H3,H4 Hypotheses), the three well-established reflective scales from the literature were used to measure the constructs (PFQ-5 items, TKI-5 items, SVI-4 items). The conceptual model is presented in figure 1, and a questionnaire was applied to collect the data, as detailed below. In the first part, PFQ and TKI were used as Independent variables and SVI as dependent. In the second part, TKI was used as a moderator variable between PFQ and SVI. Different characteristics were chosen as control variables, in the demographic field (gender, age, education) and in the professional field (role, seniority in the current position, and years of experience in the field).

Measuring scales:

PFQ: The research questionnaire used the Likert scale (1-6). The variable and dimensions were calculated by averaging the scores in the items of each dimension, creating a new scale of the quasi-interval type whose range is between 1-6.

SVI: The research questionnaire used the Likert scale (1-7). The variable and dimensions were calculated by averaging the scores in the items of each dimension, creating a new scale of the quasi-interval type whose range is between 1-7.

TKI: The conflict-instrument-questionnaire: The five dimensions of the variable were created by plotting the number of times the respondent marked certain answers. In the AVOIDING dimension the score range is 1-13, while in the other dimensions 1-12. The measurement scale is an interval scale.

Table 1 Measuring scales:

Variable		**scale**	**Questionnaire Range**	**Variable scale**
PFQ	Psychological Flexibility Questionnaire	Likert	1-6	Quasi-interval
SVI	Subjective Value Inventory	Likert	1-7	Quasi-interval
TKI	conflict-instrument-questionnaire	Nominal/count	1-12/1-13	Interval

Population

The target population of the study were people who work in the high-tech industry, and as part of their role are engaged in managing negotiations with customers and/or suppliers.

Data collection and sample

A sample of respondents from the High-tech arena who by virtue of their position have access to customers or suppliers were invited to take part in the study. In the first stage, about 17 people whom the researcher knew and met the above basic criteria were contacted and asked to fill out a questionnaire. Also, a link to a questionnaire was published in two users on the LinkedIn network, and it is estimated that around 5-10 more respondents came from this source. 39 participants completed the questionnaires. As mentioned, the population suitable for the study is a very specific population. Therefore, in order to reach only those respondents who meet the criteria set by the researcher (high-tech industry, a role that negotiates with customers or suppliers), it was necessary to use a personal acquaintance network (intentional sampling) and expand it through the second circle of acquaintances (snowball sampling). For sample characteristics see Appendix.

Instrument and procedure

Quantitative analysis was used to perform hypothesis testing, by using a four-chapter closed structured questionnaire as a data collected instrument.

Findings

Hypothesis number 1: There is a positive relationship between *Psychological Flexibility* (PFQ) and *Subjective Value Inventory* (SVI): the higher the level of flexibility in personality traits, the higher the likelihood of satisfaction from the negotiation. To examine whether there is a correlation between Psychological Flexibility and Subjective Value Inventory, Spearman correlation coefficient was calculated, as shown in Table 2.

Table 2 Spearman coefficient between Psychological Flexibility and Subjective Value Inventory

	Subjective Value Inventory				
Psychological Flexibility	Instrumental Outcome	Self	Process	relationship	SVI-SUM
positive perception of change	**.462****	**.309**	**.377***	**.580****	**.533****
characterization of the self as flexible	.060	.072	.133	-.006	.003
characterization of the self as open and innovative	.087	.027	.120	.252	.177
a perception of reality as dynamic and changing	.262	.281	.188	.277	.300
a perception of reality as multifaceted	.164	.014	.023	.036	.034
PFQ-SUM	.143	.058	.171	.159	.144

(**) p<0.01; (*) p<0.05

The table shows a clear trend according to which only the *positive perception of change* dimension (in the PFQ variable) has significant positive correlations with the *Subjective Value Inventory* (rs=.53 p<.01), as well as *International outcome* (rs=.46; p<.01), *Relationship* (rs=.58; p<.01) and *process* (rs=.38; p<.05). This implies that the higher the level of positive perception of change of the respondent, the higher the probability that he will express a higher level of Subjective Value Inventory. For the other dimensions of Psychological Flexibility, no significant correlations were found with the Subjective Value Inventory. It is important to emphasize that sample size (N=39) has a large effect on the level of significance in the Spearman test, and although there are some correlations in the range 0.20–0.30 they are not statistically significant.

Based on the findings it can be determined that the hypothesis was confirmed only in the positive perception of change dimension and was rejected in the other dimensions of Psychological Flexibility.

Hypothesis number 2: There is a relationship between the *conflict instrument* and the *Subjective Value Inventory*.

To examine whether there is a correlation between Subjective Value Inventory and Conflict Instrument, Spearman correlation coefficient is calculated, as shown in Table 3.

Table 3 Spearman coefficient between Subjective Value Inventory and Conflict Instrument

	conflict-instrument				
Subjective Value Inventory	competing	Collaborating	compromise	avoiding	Accommodating
Instrumental Outcome	-.170	.154	.128	-.092	-.031
Self	-.135	.012	.108	.011	.093
Process	-.192	.082	.250	-.002	-.150
Relationship	-.242	.159	.274	-.044	-.155
SVI-SUM	-.286	.174	.252	-.061	-.077

The table shows that there are no significant correlations between *Subjective Value Inventory* and *conflict instrument*. Based on the findings, it appears that the hypothesis was rejected.

Hypothesis number 3: There is a relationship between the *conflict instrument* and the *Psychological Flexibility***.**

To examine whether there is a correlation between Psychological Flexibility and Conflict Instrument, Spearman coefficient is calculated, as shown in Table 4.

Table 4
Spearman coefficient between Psychological Flexibility and Conflict Instrument

	conflict-instrument				
Psychological Flexibility	competing	Collaborating	Compromise	avoiding	Accommodating
positive perception of change	-.059	.104	.055	-.028	-.074
characterization of the self as flexible	-.084	-.071	.012	.234	.016
characterization of the self as open and innovative	**-.353***	.211	.261	-.152	.030
a perception of reality as dynamic and changing	-.112	.165	.053	-.087	.076
a perception of reality as multifaceted	.018	-.047	-.058	.111	-.017
PFQ – SUM	-.182	.047	.074	.036	.104

(*) p<0.05

The table shows only one significant negative correlation between the characterization of the self as open and innovative (in the PFQ variable) and the competing dimension (rs=-.35; p<.05): this means that those who characterize themselves as open and innovative will not take a competitive approach as a means of conflict resolution. Apart from the significant correlation between competing and characterization of the self as open and innovative, the hypothesis was rejected.

Hypothesis number 4: The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by a conflict instrument.

The above hypotheses (4.1-4.5) were tested in several stages, as detailed. In the first stage, I divided the respondents into two groups in each of the five styles of conflict instrument. The division was made according to the value closest to the median, so that two representative groups could be obtained, given the fact that the

sample is small. Table no 4 below shows the distribution according to the classification of groups as low/high in each of the styles of conflict instrument.

Table 5

	Competing		**collaborating**		**compromise**		**Avoiding**		**Accommodating**	
	N	%	N	%	N	%	N	%	N	%
Low	24	61.5	20	51.3	20	51.3	18	46.2	21	53.8
High	15	38.5	19	48.7	19	48.7	21	53.8	18	46.2

In the second stage, I performed Spearman Coefficient analysis between the independent variable - Psychological Flexibility, and the dependent variable - Subjective Value Inventory, in each subgroup (low/high) separately. I performed the comparative analysis 5 times, depending on the number of conflict instrument factors. To examine whether the conflict instrument moderates the relationship between Psychological Flexibility and Subjective Value Inventory, I compared the correlations in the high/low groups, as shown in the following tables.

Hypothesis number 4.1: The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- competing

Table 6 Spearman coefficient between Psychological Flexibility and Subjective Value Inventory, among a low competing group compared to a high competing group

competing	low	high	low	high	low	high	Low	high	low	high
	Instrumental Outcome		Self		Process		relationship		SATIS_SUM	
positive perception of change	.420*	.486	.162	.555*	.434*	.350	.740**	.304	.535**	.641*
characterization of the self as flexible	.026	-.004	-.061	.303	.204	-.164	.037	-.156	.027	-.025
characterization of the self as open and innovative	.061	-.131	-.072	.107	.054	.172	.166	.501	.022	.475
a perception of reality as dynamic and changing	.214	.127	.217	.496	.153	.210	.205	.276	.189	.421
a perception of reality as multifaceted	.040	.363	-.174	.484	-.007	.016	-.147	.252	-.161	.390
PFQ_SUM	-.018	.149	-.149	.426	.137	-.009	.047	.158	-.035	.310

(**) p<0.01; (*) p<0.05

In all pairs of correlations marked in red, significant differences were found between the correlations, indicating that the competing dimension moderates the relationship between Psychological Flexibility and Subjective Value Inventory. In the group of "high competing", the correlations between the dimensions of Psychological Flexibility and the self-dimension are positive and significant, while among the "low competing" group the correlations between the variables are low or do not exist at all. That is, competing is found as an intervening variable in the relationship between Psychological Flexibility and Subjective Value Inventory. In people characterized by a high level of competing, a positive correlation between Psychological Flexibility and Subjective Value Inventory is more likely. The gaps in the correlations indicate that competing is an intervening variable in the relationship between Psychological Flexibility and Subjective Value Inventory. Given the findings, it can be determined that the research hypothesis was partially confirmed, since the gaps in correlations exist with respect to about half of the dimensions and not all of them.

Hypothesis number 4.2: The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument-collaboration

Table 7 Spearman coefficient between Psychological Flexibility and Subjective Value Inventory, among a low collaborating group compared to a high collaborating group

collaborating	low	high	low	high	low	high	Low	high	low	high
	Instrumental Outcome		Self		Process		relationship		SATIS_SUM	
positive perception of change	.340	.510*	.415	.139	-.058	.615**	.386	.734**	.278	.654**
characterization of the self as flexible	-.165	.259	-.189	.288	-.183	.531*	-.438	.576**	-.442	.543*
characterization of the self as open and innovative	-.176	.246	-.247	.215	-.142	.369	.047	.447	-.073	.338
a perception of reality as dynamic and changing	.003	.312	-.113	.602**	-.228	.468*	-.003	.307	-.142	.498*
a perception of reality as multifaceted	.153	.269	-.256	.366	-.216	.357	-.175	.304	-.208	.349
PFQ_SUM	-.060	.287	-.221	.274	-.227	.570*	-.194	.546*	-.264	.537*

(**) p<.01; (*) p<0.05

In all pairs of correlations marked in red, significant differences were found between the correlations, indicating that the collaborating dimension moderates the relationship between Psychological Flexibility and Subjective Value Inventory. The table shows that there is a clear trend of differences in the correlation pairs. In the "high collaboration" group there are relatively high positive correlations between all dimensions of Psychological Flexibility and Subjective Value Inventory, while in the "low collaboration" group the correlations are low and, in some cases, negative. This means that collaboration moderates the connections between Psychological Flexibility and Subjective Value Inventory. The condition for a significant positive relationship between Psychological Flexibility and Subjective Value Inventory is a high level of collaboration in conflict management. It can therefore be determined that the research hypothesis was confirmed.

Hypothesis number 4.3: The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument-compromise

Table 8 Spearman correlation coefficient between Psychological Flexibility and Subjective Value Inventory, among a low compromise group compared to a high compromise group

compromise	low	high	low	high	low	high	Low	high	low	high
	Instrumental Outcome		Self		Process		relationship		SATIS_SUM	
positive perception of change	.637**	.315	.530*	.044	.366	.377	.669**	.513*	.692**	.380
characterization of the self as flexible	-.007	.127	.031	.023	-.018	.293	-.205	.264	-.164	.183
characterization of the self as open and innovative	-.103	.115	-.124	-.057	.165	.017	.257	.192	.174	.127
a perception of reality as dynamic and changing	.341	.151	.360	.199	.477*	.031	.529*	.116	.554*	.187
a perception of reality as multifaceted	.244	.081	.122	-.112	.266	-.156	.105	-.038	.185	-.052
PFQ_SUM	.223	.071	.080	-.108	.245	.093	.188	.157	.216	.100

(**) p<.01; (*) p<0.05

In all pairs of correlations marked in red, significant differences were found between the correlations, indicating that the compromise dimension moderates the relationship between Psychological Flexibility and Subjective Value Inventory. The table shows that there is a trend of differences in the correlation pairs. In the "low compromise" group there are relatively high positive correlations between Psychological Flexibility and Subjective Value Inventory, while in the "high compromise" group the correlations are very low or do not exist at all. This means that compromise moderates the connections between Psychological Flexibility and Subjective Value Inventory. The condition for a significant positive relationship between Psychological Flexibility and Subjective Value Inventory is a low level of compromise in conflict management. It can therefore be determined that the research hypothesis was confirmed only partly.

Hypothesis number 4.4: The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- avoiding.

Table 9 Spearman coefficient between Psychological Flexibility and Subjective Value Inventory, among a low Avoiding group compared to a high Avoiding group

Avoiding	low	high	low	high	low	high	Low	High	low	high
	Instrumental Outcome		Self		Process		Relationship		SATIS_SUM	
positive perception of change	.436	.462*	.061	.586**	.536*	.114	.611**	.559**	.566*	.562**
characterization of the self as flexible	-.092	.282	-.230	.348	.135	.156	-.030	-.024	-.083	.043
characterization of the self as open and innovative	.091	-.004	-.156	.172	.235	.029	.061	.235	.042	.250
a perception of reality as dynamic and changing	-.088	.636**	.148	.517*	.022	.237	.095	.381	.077	.482*
a perception of reality as multifaceted	-.127	.434*	.082	.054	0.000	-.009	.111	-.063	.027	.002
PFQ_SUM	-.139	.370	-.208	.338	.135	.171	-.021	.216	-.078	.279

(**) p<.01; (*) p<0.05

In all pairs of correlations marked in red, significant differences were found between the correlations, indicating that the Avoiding dimension moderates the relationship between Psychological Flexibility and Subjective Value Inventory. The table shows that there is a trend of differences in the correlation pairs. In the "high

avoiding" group there are relatively high positive correlations between dimensions of Psychological Flexibility and Subjective Value Inventory, while in the "low avoiding" group the correlations are low or do not exist at all. This means that avoiding moderates the connections between Psychological Flexibility and Subjective Value Inventory. The condition for a significant positive relationship between Psychological Flexibility and Subjective Value Inventory is a high level of avoidance in conflict management. It can therefore be determined that the research hypothesis was confirmed partially.

Hypothesis number 4.5: The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument-accommodating

Table 10 Spearman coefficient between Psychological Flexibility and Subjective Value Inventory, among a low Accommodating group compared to a high Accommodating group

Accommodating	low	high	low	high	low	high	low	high	Low	high
	Instrumental Outcome		Self		Process		relationship		SATIS_SUM	
positive perception of change	.602**	.273	.521*	.080	.416	.260	.596**	.599**	.699**	.325
characterization of the self as flexible	.104	-.081	.314	-.220	.064	.148	.078	-.136	.143	-.175
characterization of the self as open and innovative	.098	.120	.288	-.233	-.026	.368	.219	.266	.207	.178
a perception of reality as dynamic and changing	.184	.340	.436*	.011	.206	.205	.337	.350	.431	.213
a perception of reality as multifaceted	.139	.154	.195	-.247	-.096	.233	.130	-.033	.152	-.037
PFQ_SUM	.206	.052	.358	-.378	.087	.384	.259	.194	.309	.062

(**) p<.01; (*) p<0.05

In all pairs of correlations marked in red, significant differences were found between the correlations, indicating that the Accommodating dimension moderates the relationship between Psychological Flexibility and Subjective Value Inventory. The table shows that there is a trend of differences in the correlation pairs. In the "low Accommodating" group there are relatively high positive correlations between dimensions of Psychological Flexibility and Subjective Value Inventory, while in the "high Accommodating" group the correlations are very low or do not exist at all.

This means that Accommodating moderates the connections between Psychological Flexibility and Subjective Value Inventory. The condition for a significant positive relationship between Psychological Flexibility and Subjective Value Inventory is a low level of Accommodating in conflict management. Given the findings, it can be determined that the research hypothesis was partially confirmed, since the gaps in correlations exist with respect to about half of the dimensions and not all of them.

The relationship between respondent characteristics and research variables

To test whether there are differences in the rankings of men and women in the research variables, I used the **t-test** for independent samples. The findings indicate that there are no significant differences between men and women in all the variables examined. A similar statistical test was conducted to examine whether there are differences between Israelis and non-Israelis, as well as whether there are differences between those with a bachelor's degree compared to higher degrees. In these tests, too, no significant differences were found between the groups.

The correlation between the age and experience of the respondents and the research variables was examined using the **Pearson correlation** and with **Spearman Nonparametric correlation** coefficient test. No significant correlations were found, however, I found 3 correlations at the significance level between 0.05-0.10, as detailed: a positive correlation between a *perception of reality as dynamic and changing* and age (r=.29; p=.07) and experience (r=.29; p=.07), and a positive correlation between *a perception of reality as multifaceted* and age (r=.28; p=.09). These findings show a relationship between age and professional experience regarding the level of flexibility in the above two dimensions.

The relationship between the respondent's role at work and Psychological Flexibility, Subjective Value Inventory, and conflict instrument was examined using **one-way ANOVA** test. No significant differences were found, meaning that the employee's role does not affect the style of coping in conflict situations, as well as on Psychological Flexibility, and Subjective Value Inventory.

Hypothesis

	Hypothesis	**Confirmation**
H1	positive relationship between *Psychological Flexibility* and *Subjective Value Inventory*: the higher the level of flexibility in personality traits, the higher the likelihood of satisfaction from the negotiation	Partially
H2	relationship between the *Assertiveness and Cooperativeness* and the *Subjective Value Inventory*	Rejected
H3	relationship between the *Assertiveness and Cooperativeness* and the *Psychological Flexibility*	Rejected

H4	The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by *Assertiveness and Cooperativeness*	
H4.1	The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- competing	Partially
H4.2	The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- collaborating	Confirmed
H4.3	The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- compromise	Partially
H4.4	The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- avoiding	Partially
H4.5	The relationship between Psychological Flexibility and the Subjective Value Inventory is moderated by conflict instrument- Accommodating	Partially

4. DISCUSSION AND CONCLUSIONS

Due to the tremendous economic and social changes, negotiation research has dramatically grown both in breadth and depth in previous years (Li et al, 2006). Business negotiation research necessitates studies that are focused on anticipated continued interactions between bargaining parties, since negotiations are based on the ongoing relationships in the business market, what (Heide and Miner, 1992; Roering, 1977, cited in Patton and Balakrishnan, 2010). While studying continued relations between parties, we must have a greater understanding of the negotiators themselves. In this study, I tried to understand clearly the triangular connection between flexibility, bargaining style, and subjective value inventory for negotiators. The study's findings reveal a few interesting insights. Those with a positive perception of change tend to perceive high subjective value. Bonds arise in business relationships as the two concomitant parties mutually acquire meaning in their reciprocal acts and interpretations because of the negotiator's perceptions (Håkansson & Snehota, 1995, cited in Corsaro & Snehota, 2012). It was found that of all the components of flexibility, the positive perception of change is the only one that predicts satisfaction among the parties.

Negotiators can come up with more productive solutions that can meet not only the delight of both sides but also increase the total value of the agreement in the frame of reference to integrative negotiation (as opposed to distributive) (Galinsky and Mußweiler, 2001; Park et al., 2013, cited in Barchi & Greco, 2018). Successful negotiations are inherently connected to the negotiator's ability to create alternatives (Thompson, 2005 cited in Barchi & Greco, 2018). From the five elements of flexibility, those who consider themselves as open and innovative tend to be less competitive and with a higher potential to lead an integrative negotiation. This unique combination sheds new light on negotiation in the high-tech sector. The findings indicate that among bargaining styles, collaboration appears to have a strong

moderating effect on the connections between Psychological Flexibility and Subjective Value Inventory. Those with a collaborative approach tend to combine elements of flexibility to achieve higher subjective value from the negotiating process and outcome. These findings of Hypothesis H4 clarifies the findings of Hypothesis H1, H2, and H3 that show that those with a positive perception of change tend to perceive high subjective value (H1) Those who see reality as dynamic tend to have high self-satisfaction (H1). Those who perceive themselves as open and innovative tend to have a less competitive perception in negotiation (H3). A collaborative approach towards solutions tends to use more elements of flexibility to create more value.

5. LIMITATIONS AND IMPLICATIONS FOR FUTURE STUDY

Given the presented results, the limitations of the study should be addressed. The small sample size does represent a significant limitation. It would require repeating the study on a larger scale to conduct a statistically significant quantitative data analysis.

The quantitative study was conducted on participants from the high-tech sector, engaged in ongoing business negotiations, from the selling and the buying side. It is interesting to examine research results in front of dyads of negotiators around ongoing negotiations.

My qualitative findings suggest that additional research is required for an examination of the issue of compromise, along with being a pragmatic approach and mediating flexibility to satisfaction, whether it is a more competitive or more cooperative approach. Also, does it tend to strengthen ties between the parties to negotiations and how is it reflected in the various stages of business negotiations. Qualitative research will be able to answer at least some of these questions.

REFERENCES

1. Adnan, M. H. M., Hassan, M. F., Aziz, I., & Paputungan, I. V. (2015). *Protocols for agent-based autonomous negotiations: A review*.3rd International Conference on Computer and Information Sciences (ICCOINS). Kuala Lumpur, Malaysia: IEEE: 622–626.
2. Barchi, M., & Greco, M. (2018). Negotiation in Open Innovation: A Literature Review. *Group Decision and Negotiation*, *27*(3), 343–374. https://doi.org/10.1007/s10726-018-9568-8
3. Ben-Itzhak, S., Bluvstein, I., & maor. (2014). *The Psychological Flexibility Questionnaire (PFQ): Development, Reliability, and Validity*.WebmedCentral PSYCHOLOGY 2014;5(4): WMC004606
4. Carmon, Z., & Ariely, D. (2000). Focusing on the Forgone: How Value Can Appear So Different to Buyers and Sellers. *Journal of Consumer Research*, *27*(3), 360–370. https://doi.org/10.1086/317590
5. Corsaro, D., & Snehota, I. (2012). Perceptions of Change in Business Relationships and Networks. *Industrial Marketing Management*, *41*(2), 270–286. https://doi.org/10.1016/j.indmarman.2012.01.002
6. Curhan, J. R., Elfenbein, H. A., & Xu, H. (2006). What do people value when they negotiate? Mapping the domain of subjective value in negotiation. *Journal of Personality and Social Psychology*, *91*(3), 493–512. https://doi.org/10.1037/0022-3514.91.3.493
7. Fells, R., Rogers, H., Prowse, P., & Ott, U. F. (2015). Unraveling Business Negotiations Using Practitioner Data. *Negotiation and Conflict Management Research*, *8*(2), 119–136. https://doi.org/10.1111/ncmr.12050
8. Gelfand, M. J., Major, V. S., Raver, J. L., Nishii, L. H., & O'Brien, K. (2006a). Negotiating Relationally: The Dynamics of the Relational Self in Negotiations. *Academy of Management Review*, *31*(2), 427–451. https://doi.org/10.5465/amr.2006.20208689
9. Gelfand, M. J., Major, V. S., Raver, J. L., Nishii, L. H., & O'Brien, K. (2006b). Negotiating Relationally: The Dynamics of the Relational Self in Negotiations. *Academy of Management Review*, *31*(2), 427–451. https://doi.org/10.5465/amr.2006.20208689
10. Hakansson, H., & Snehota, I. (1995). *THE BURDEN OF RELATIONSHIPS or WHO'S NEXT*. https://www.escholar.manchester.ac.uk/api/datastream?publicationPid=uk-ac-man-scw:2n491&datastreamId=FULL-TEXT.PDF
11. Hindriks, K., Jonker, C., & Tykhonov, D. (2007). *Analysis of Negotiation Dynamics*.Part of the Lecture Notes in Computer Science book series (LNCS, volume 4676)
12. Kilmann, R. H., & Thomas, K. W. (1977). Developing a Forced-Choice Measure of Conflict-Handling Behavior: The "Mode" Instrument. *Educational and Psychological Measurement*, *37*(2), 309–325. https://doi.org/10.1177/001316447703700204
13. Li, M., Tost, L. P., & Wade-Benzoni, K. (2006). The dynamic interaction of context and negotiator effects: A review and commentary on current and emerging areas in negotiation. *International Journal of Conflict Management*, *18*(3), 222–259. https://www.academia.edu/186845/The_dynamic_interaction_of_context_and_negotiator_effects_A_review_and_commentary_on_current_and_emerging_areas_in_negotiation
14. Patton, C., & Balakrishnan, P. V. (Sundar). (2010). The impact of expectation of future negotiation interaction on bargaining processes and outcomes. *Journal of Business Research*, *63*(8), 809–816. https://doi.org/10.1016/j.jbusres.2009.07.002
15. Saorín-Iborra, M. C., & Cubillo, G. (2019). Supplier behavior and its impact on customer satisfaction: A new characterization of negotiation behavior. *Journal of Purchasing and Supply*

Management, *25*(1), 53–68. https://doi.org/10.1016/j.pursup.2018.03.002

16. Schaerer, M., Teo, L., Madan, N., & Swaab, R. I. (2020). Power and negotiation: review of current evidence and future directions. *Current Opinion in Psychology*, *33*(Volume 33, Pages 47-51), 47–51. https://doi.org/10.1016/j.copsyc.2019.06.013
17. Schuster, C., Majer, J. M., & Trötschel, R. (2020). Whatever we negotiate is not what I like: How value-driven conflicts impact negotiation behaviors, outcomes, and subjective evaluations. *Journal of Experimental Social Psychology*, *90*(90). https://doi.org/10.1016/j.jesp.2020.103993
18. Sigurðardóttir, A. G., Hotait, A., & Eichstädt, T. (2019). Buyer and Seller Differences in Business-to-Business Negotiations. *Negotiation Journal*, *35*(2), 297–331. https://doi.org/10.1111/nejo.12289
19. Thompson, L. L., Wang, J., & Gunia, B. C. (2010). Negotiation. *Annual Review of Psychology*, *61*(1), 491–515. https://doi.org/10.1146/annurev.psych.093008.100458
20. Wachowicz, T. and W., S, & Wu, S. (2010). Describe the ways of Negotiators' strategies and their concessions. *Https://Www.researchgate.net/Publication/280884024*.

General note regarding hypotheses 4.1-4.5: The current study model is exploratory. In the professional literature I have not found any study that examined a model that places the conflict instrument as an intervening variable in the relationship between Psychological Flexibility and the Subjective Value Inventory. Thus, I have no theoretical basis for assuming directional hypotheses, and therefore I will examine in the study the questions regarding whether the 5 dimensions of conflict instrument variables interfere with the relationship between the independent variable and the dependent variable.

Supplementary data

Sample characteristics

Table 1 The Sample Characteristics

Vars.	**Values.**	**N**	**%**
Gender	Male	30	76.9
	Female	9	23.1
Country	Israel	29	74.4
	Others (*)	10	25.6
Age	28-45	12	30.8
	46-55	19	48.7
	56-64	8	20.5
Education	BA	13	33.3
	MA, MBA, JD	26	66.7
Role	sale	22	56.4
	procurement	3	7.7
	Product Architect	5	12.8
	else	9	23.1
Experience	1-10 years	10	25.6
	11-20 years	16	41.0
	21-30 years	13	33.3

(*) Others: includes – Canada, UK, USA, Singapore

The sample included 39 people, most of them from Israel (74.4%) and some of them from other countries (as listed at the bottom of the table). Most of the sample consists of men (76.9%) compared to a female minority (23.1%). The average age in the sample is 49.5 years (SD = 7.67), the age range is 28-64. About one-third have a BA degree, and two-thirds have a master's degree or higher. More than half of the respondents in the sample are employed as salespeople (56.4%), 12.8% of them product architects, 7.7% procurement, while 23.1% in other positions. I asked the subjects how many years of experience they have in the industry: about a quarter of them with 1-10 years of experience, 41.0% with 11-20 years, while of 33.3% have 21-30 years in the field. The average is 18.2 years (SD = 8.86), in the range of 1-30 years.

CASE STUDY

REBS Review of Economic & Business Studies

Volume 14, Issue 1/2021, pp. 77-93
ISSN-1843-763X
DOI: 10.47743/rebs-2021-1-0004

USING UTILITY THEORY TO FRAME CHALLENGES AND SOLUTIONS TO EMPLOYEE MEANINGFULNESS

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Abstract: *In recent years, researchers, especially in human resource development, have categorized meaningful work as an important job characteristic. Though meaningful work has largely been examined in western cultures, the topic is becoming increasingly important in eastern societies as well. Prior literature typically frames meaningful work as a psychological construct or human resource function that focuses on an employee's well-being. However, economic utility theory is absent from most discussions of meaningful work. I frame meaningful work using utility theory to highlight various challenges that organizations face when trying to improve meaningful work. Based on this theoretical framework, I provide practical, realistic solutions to foster human resource development and meaningful work. Organizations that better understand the challenges faced when addressing meaningful work will likely find success in implementing impactful solutions.*

1. INTRODUCTION

Researchers investigating employee well-being have long studied compensation satisfaction (e.g., Lawler 1981) benefits satisfaction (e.g., Heneman and Schwab 1985), supervisory leadership (Rice et al. 2020), and health and safety employment conditions (Viscusi and Evans 1990) among other benefits. In more recent years, researchers, especially in human resource development, have categorized meaningful work as an important job characteristic (Bailey et al. 2019). Meaningful work is a topic of interest for employers, employees, and policy advocates alike due to a shift in worker preference for more meaningful work. In fact, meaningful work is so important that over 90% of workers are willing to sacrifice financial benefits in order to achieve greater meaning at work according to a recent study (Achor et al. 2018).

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Prior research investigating meaningful work has focused on western cultures, but the topic is becoming important in eastern cultures as well (Chaolertseree and Taephant 2020). Much of the research in eastern cultures examines worker meaningfulness in the context of spirituality (e.g.,Gupta et al. 2014; Pardasani et al. 2014; Pradhan and Pradhan 2016) but the importance of meaningful work in non-spiritual contests is emerging as well such as in Taiwan (e.g., Chen et al. 2016), Vietnam (Vu 2020), and China (Ling et al. 2019).

Though the increased importance of meaningful work is apparent, improving employee well-being via increased meaningfulness remains a challenge for many employers in both eastern and western cultures (see Bailey et al. 2019). Finding solutions to vexing problems is often futile without fully understanding the nature of the challenge or problem. Thus, the purpose of this paper is to 1) utilize economic theories to detail the challenges that employers face when attempting to increase employee job meaningfulness, and 2) offer solutions to help mitigate these challenges. Understanding economic theory, specifically as it relates to *utility* theory for employees, should help employers improve meaningfulness in their organizations.

In economic theory, utility is something of value based on an individual's personal preferences (Broome 1991). Though money often provides a person with utility, money is *not* synonymous with utility. In the context of employment, financial compensation, job security, and schedule flexibility can provide workers with utility (Rosen 1986). And given the willingness to forego financial compensation in exchange for increase meaning at work (Achor et al. 2018), meaningful work, therefore, provides utility to many employees.

Utility theory is critical to understand the challenges employers face when trying to increase employee meaningfulness. This paper highlights four corollaries that organizations should consider when trying to improve meaningfulness for employees: 1) People construct meaning at work in different ways, and not everyone desires a meaningful career; 2) Meaningfulness does not exist in isolation from other sources of utility; 3) Employee utility functions change over time, including the utility for meaningful work; and 4) The division of labor necessarily requires the existence of careers that are traditionally low meaning. In the abstract, enhancing meaningfulness at work seems like an attractive recommendation, but success is only achieved when these challenges are properly addressed.

With a clearer understanding of the challenges to improve employee meaningfulness, organizations can then explore realistic, impactful solutions, which include the following: 1) Clearly communicate culture and values to attract values-

consistent employees. Research shows that employees with differing values from their employer have lower job satisfaction (Cennamo and Gardner 2008) while employees who share their organization's values report higher satisfaction and commitment to the organization (Paarlberg and Perry 2007). 2) Provide different pathways to address low-meaning work. Because of differing utility functions, a forced path toward increased meaningfulness may actually result in *lower* employee meaningfulness (Isaksen 2000). 3) Carefully choose employee-enhancement initiatives. Though organizations can improve employee well-being in countless ways, an organization should implement the initiatives most consistent with its values and strategic decisions (Malbašić et al. 2015).

4) Consider cafeteria benefit plans. Cafeteria benefit plans provide employees with a menu of benefit options (Barringer and Milkovich 1998), so employees can select the benefits that help maximize their personal utility functions including meaningfulness. Furthermore, such plans can increase *organizational justice* and perceived fairness (Laundon et al. 2019). 5) Consider a cafeteria-style approach to job functions. A cafeteria-approach to job functions may increase employee initiative and persistence to the extent that job functions better align with employees' values and utility preferences (Moely et al. 2008).

This paper makes an important contribution by providing a framework based on economic theory whereby organizations can better understand both challenges and solutions to improve employee meaningfulness. Without such an understanding, not only may efforts to improve employee meaningfulness be ineffective, but in some cases, prior research suggests that such efforts could backfire (e.g., Everett 2011; Isaksen 2000). As eastern cultures increasingly face challenges with workers long experienced in western cultures, the intersection and economics and worker meaningfulness will likely become increasingly important.

2. Literature Review

2.1. Meaningful work in eastern and eastern cultures

Research investigating meaningful work has largely centered on western cultures, but the topic is becoming increasingly important in eastern cultures as well (Chaolertseree and Taephant 2020). Much of the documented benefits of meaningful work in western societies—such as lower absenteeism (Soane et al. 2013) and higher job satisfaction (Allan et al. 2019)—would likely be realized in eastern societies as well. As eastern economies increasingly face many employee challenges as western economies, such as turnover (Eriksson et al. 2014), the intersection of economic

theory and employee job satisfaction including work meaningfulness becomes increasingly important.

2.2. Basics of utility theory

As defined in economics, *utility* is something of value based on an individual's personal preferences (Broome 1991). Utility is not simply monetary or financial value, but rather, anything of value, such as emotional, spiritual, or social value. One foundation of utility theory is individuals take actions to arrive at their desired outcomes according to their personal preferences, or in other words, individuals seek to maximize utility (Rothbard 1956). Thus, when faced with a decision—employment or otherwise—individuals make decisions that they anticipate will maximize their utility according to their personal preferences and values (i.e., their utility functions) (Broome 1991). Difficulties that individuals, including workers, face when trying to maximize utility include imperfect information and an incomplete understanding of their personal utility functions. For example, a worker may choose employment that maximizes compensation that results in low meaningfulness without realizing the utility that meaningful work provides them.

From an economic perspective, all paid work is valuable work. The economic transaction of a worker providing a good or service involves another party giving up money in exchange for that good or service (Waldman 1984). Thus, the party paying the worker to provide a good or service must, by definition, benefit, or find meaning, in the acquisition of the good or service. Since all paid work is meaningful to the party paying for the goods or services, a distinction can be made between meaningful work to the employer versus meaningful work to the employee. Internally meaningful work provides some intrinsic value to the worker, which in economic theory, is a form of utility. Framing efforts to increase employee meaningfulness at work in the context of utility theory provides a clearer understanding of the hurdles that organizations face.

3. Theoretical Propositions: Utlity and Meaningful Work

3.1. Personal utility preferences including meaningful work

Consistent with utility theory, research repeatedly shows that workers obtain value from means other than financial compensation. For example, working conditions, job security, and flexible schedules affect financial compensation, which provides evidence that workers find utility (disutility) with the presence (absence) of

these job characteristics (Rosen 1986). The emergence of the "gig economy" in recent years, where workers sacrifice some pay for complete control over their schedule (Kaplan and Schulhofer-Wohl 2018), highlights the utility that non-monetary job features provide to some workers.

Workers who are motivated by the mission of their employer—such as not-for-profit organizations—require less financial compensation due in part to a "warm glow" that comes from the personal involvement with these organizations (Besley and Ghatak 2005). Thus, individuals who agree with the *cause* of their employer find utility in their work through meaningfulness, and they are willing to work for value-consistent employers at lower levels of compensation. Other research shows that over 90% of workers would sacrifice some pay for additional meaning at work (Achor et al. 2018).

Though strong evidence exists that meaningfulness provides utility, such evidence does *not* predict an individual worker's desire to seek out meaning at work. The importance of meaningful work—especially in light of all other sources of utility through employment—differs from person to person. Some people find great utility through meaningfulness while others find little or no utility from meaningful work (Dik et al. 2009). Again, what constitutes meaningful work varies from person to person based on their individual utility function.

Individual workers' differing utility functions is also manifested in the benefits offered by their employer (Dencker et al. 2007). Rational individuals explicitly or implicitly consider all aspects of a job when making employment decisions, and tradeoffs between sources of utility must be considered. For example, health and safety in the workplace provides utility, but the utility is *not* absolute or universal due to individual preferences. Viscusi and Evans (1990) confirm that individuals have differing utility functions for health and safety at work, and these utility functions differ based on the employee's current health status. They also find that optimal level of insurance coverage is *not* the same for all employees due to differing utility preferences. Thus, even for basic needs such as health (see Srinivasan 1977), utility differs from person to person. Because the utility provided by *all* features of employment—including compensation, healthy, safety, flexibility, etc.—varies among employees, the logical implication is that meaningfulness at work varies among employees. These research findings lead to the following proposition:

Proposition 1: *People construct meaning at work in different ways, and not everyone desires a meaningful career*

3.2. Marginal utility and meaningfulness

The utility provided by any single action is not fixed regardless of the individual's utility function. Rather, marginal utility is the relevant measure when analyzing the utility provided by a decision (Rothbard 1956). Marginal utility is the utility provided by the next specific action, and marginal utility decreases over time (Greene and Baron 2001); thus, the utility of a decision must be examined in the context of the next available action. For example, consider the utility of eating a scoop of ice cream. The utility provided by eating the first scoop of ice cream is different than eating the ninth scoop of ice cream in one sitting. Thus, regardless of an individual's utility function, the utility provided by eating a scoop of ice cream is not absolute or fixed, and in fact, diminishing marginal utility occurs in most situations.

Utility theory and marginal utility are applicable in employment situations as manifest in organized labor contract negotiations. As part of negotiations, a union must communicate its objectives (i.e., utility preferences) with management (Pencavel 1991). Negotiations reveal the marginal utility for elements of the contract. For example, unions do not maximize financial benefits ("rents") for its members, but unions forego some financial benefits because of other utility preferences, such as working conditions (Clark and Oswald 1993). Thus, there are times in contract negotiation when the marginal utility provided by additional financial benefits is *less* than the marginal benefit provided by other nonfinancial elements of the union contract. Otherwise, unions would negotiate only for financial benefits.

Though union membership in the United States has steadily declined, reaching 10.3% in 2019 (Shierholz 2020), utility theory equally applies to employment contracts – whether formal or informal – to nonunion employees. As with other decisions, individuals make employment decisions consistent with their desires to maximize their utility, including the decision whether or not to pursue meaningful work.

Why might some workers not find utility through meaningful work? First, some workers find other work characteristics more important. In economic terms, the marginal utility of other factors (e.g., compensation, benefits, working conditions) is greater than the marginal utility provided by meaningful work. Second, some workers find greater utility and meaningfulness in areas of life outside of work, such as family, church, community service, and hobbies (Stulberg 2017). Thus, the marginal utility provided by meaningful work is less than the utility provided by non-work endeavors.

Even for careers with inherent meaningfulness, some individuals seek additional meaningfulness through job selection. For example, some doctors

willingly forego additional profits in order to increase the quality of care for their patients (Kolstad 2013). Lagarde and Blaauw (2014) find that nurses with a generous personality are more likely to take jobs in underserved, hardship communities. They also find that intrinsically motivated healthcare providers are not influenced by financial incentives, suggesting that meaningfulness provides utility that additional compensation does not.

If the utility provided by meaningfulness was consistent among employees, then economically challenged and rural communities would have too much demand for educators and healthcare providers. Instead, incentives are offered in the United States (Rosenblatt and Hart 2000) and other countries (e.g., Singh et al. 2015) to attract physicals to rural areas, and similarly, incentives are offered to educators to work in economically challenged communities (Shuls and Maranto, 2014). If utility including meaningfulness was constant, then homogeneity would exist for worker benefit preferences, but instead, research has long found that workers in the same industry have different preferences (e.g., Kocher et al. 2017; Farber 1978). Thus, as employers seek to improve meaningfulness for employees, the temptation to view employees as a homogenous group should be avoided, which leads to the second proposition:

Proposition 2: *Meaningfulness does not occur in isolation from other sources of utility*.

3.3. Instability of utility functions

An individual's utility function, including the desire for meaningful work, can change over time. Factors that may change the marginal utility for something include age, family situation, health changes, and disruptive life events.

For example, a phenomenon has emerged in recent years, primarily in western cultures, called *financial independence retire early* (FIRE). Individuals who follow the FIRE philosophy typically live a frugal lifestyle and invest heavily in order to accumulate the financial resources necessary to retire early (Grossan, 2018). Interestingly, a common theme of FIRE adherents involves current employment with little or no meaning with the goal or pursuing more meaningful activities in *retirement* (Herron 2019). Perrone et al. (2015) note that disillusionment with work can also motivate an individual to pursue FIRE. Regardless of the motivations, adhering to FIRE is a planned change in utility.

Another example of changing utility functions involves burnout. Burnout is manifested by exhaustion, decreased motivation, and/or cynicism as a result from prolonged stress (Maslach, and Leiter 2015). Researchers have studied burnout

extensively in traditionally high-meaningful careers such as teachers (e.g., Huberman 1993; Fore III et al. 2002) and physicians (e.g., Prendergast et al. 2016), as well as lower-meaningful careers such as information technology (Shropshire and Kadlec 2012). Besides personal consequences including changes to one's health, burnout often increases the likelihood of a career change (Rudman and Gustavsson 2011; Shropshire and Kadlec 2012). Thus, burnout is a common example that indicates a change in utility even in high-meaning careers.

Research shows that career changes also result in careers that create more meaning at work, such as individuals who become teachers later in life (Richardson and Watt 2005; Williams 2010). Some people change careers due to a *sense of calling* (Ahnet al. 2017), an expressed desire for more meaning (Wise and Millward 2005), or changes in value (Holmes and Cartwright, 1994). Though a career change is not rare events, the phenomenon illustrates the following proposition:

Proposition 3: *Values, preferences, and utility—including meaningfulness—frequently change.*

3.4. Division of labor and traditionally low-meaning jobs

The division of labor allows for specialization, and in fact, there are strong incentives for specialization (Rosen 1983). Even within the same household, "powerful forces" lead to the division of labor since such actions lead to greater utility (Becker 1985, 555). Though complex and large societies/economies create strong incentives for the division of labor, they also create interdependencies.

The large service economies in developed nations are only made possible because of the division of labor (cf., Walker 2004). Everyone who participates in a large economy is dependent on other members of society to fulfill even the most basic needs. For example, since only 1.3% of the U.S. population comprises the farming industry (Lepley 2019), most individuals are dependent on other for the basic need of food.

The division of labor leads in inequalities regarding work meaningfulness. Payscale.com (2018) conducted a survey regarding the meaningfulness of over 500 professions, and many professions ranked low in meaningfulness—such as actuaries, accountants, and auditors—are critical for a large society. Thus, solutions to increase worker meaningfulness cannot simply consist of advising individuals to choose careers that traditionally provide high meaningfulness. Thus, these findings lead to the following proposition:

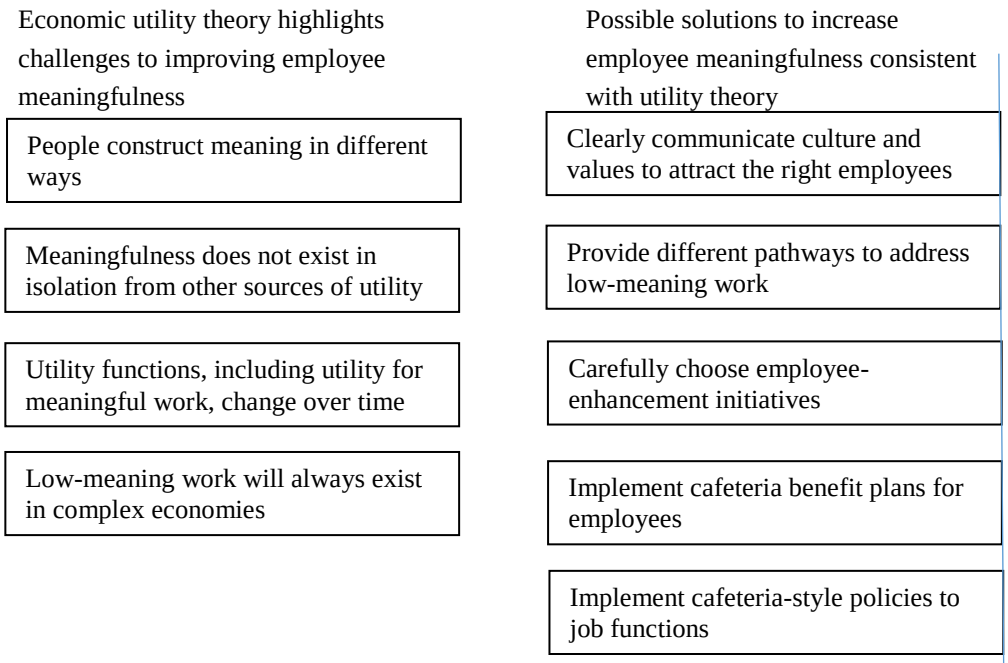
Proposition 4: *The division of labor requires traditionally low-meaning work to exist.*

4. Ethical Considerations and Solutions

Though increasing meaningfulness of work may sound ideal, ethical considerations must be discussed. Companies may have a variety of possible pro-employee initiatives that would increase the utility for workers. Examples include enhancing maternity and paternity leave, lowering employee health insurance costs, improving compensation, and increasing paid time off. Thus, given a list of all possible employment enhancement options, how should companies prioritize increasing meaningfulness? Additionally, what ethical considerations are involved in prioritizing some employees' utility for meaningfulness over employees who do not desire increased meaningfulness?

Efforts to provide benefits and increase meaningfulness may lead some employees to feel alienated or cynical (Everett 2011). Thus, efforts to increase meaningfulness could backfire in some situations, leading to *less* meaningfulness and lower employee well-being. I provide five solutions that organizations should consider to increase worker meaningfulness. Figure 1 summarizes the four propositions and five solutions provided by utility theory.

Figure 1 Meaningfulness challenges and solutions



Solution 1: *Clearly communicate culture and values to attract values-consistent employees.*

Though many aspects of diversity benefit an organization, differing values (i.e., utility functions) of employees increases complexity and may cause tension. Research shows that when an individuals' values differ from their employer's values, job satisfaction decreases, commitment to the organization decreases, and intention to leave the organization increases (Cennamo and Gardner 2008). In contrast, employees who share their organization's values have more higher satisfaction and commitment to the organization (Paarlberg and Perry 2007; Meglino and Ravlin 1998). Thus, organizations benefit to the extent that they attract employees who hold similar key values and dissuade employees who hold differing values.

Employee self-selection is important to achieving a more homogenous workforce as it relates to key values. To foster this process, organizations should clearly communicate to potential employees its mission statement, values statements, codes of contact, and other information related to workplace culture. Research shows that such communication can help attract values-consistent employees and dissuade values-inconsistent individuals from applying to an organization (Dineen and Noe 2009; De Goede et al. 2011). Thus, in addition to job-

related skills, employers should proactively assess a job candidate's *fit* in relation to the organization's ethics and values.

Solution 2: *Provide different pathways to address low-meaning work.*

Isaksen (2000) examines meaningfulness in "the drudgery of repetitive work" using the view of Frankl (1985) that individuals have a strong capacity to construct meaning even when facing extremely negative external circumstances. Isaksen provides categories by which employees may find meaning in repetitive work, such as through social interactions, autonomy, pleasure in learning, and a sense of accomplishment. The author draws an important conclusion*: "Organizational rigidity in the options for constructing meaning will tend to increase the frustration and lower the number of people who actually experience meaning in their work"* (p. 102). Thus, due to individual differences, a forced path toward meaning will likely fail for most workers. Instead, organizations would be better served offering a menu of paths toward meaningfulness.

Ulrich and Ulrich (2010) note that workers must "craft" work to be meaningful, and this process is dependent on workers' personal values. In less-than-desirable work situations, workers can still find meaning if their work aligns with their personal values, and supervisors can greatly facilitate this process through multiple pathways toward increased meaningfulness.

Solution 3: *Carefully choose employee-enhancement initiatives.*

As noted above, employees differ regarding their utility and preferences for employment benefits (Dencker et al. 2007). Utility for meaningfulness also differs among employees, and employees who derive utility from meaningfulness may differ on what constitutes an increase in meaning at work. Though employees' differing utility functions could present ethical challenges for an organization as it prioritizes improvements to working conditions, solutions exist.

Organizations should use clearly-defined values to make strategic decisions (Malbašić et al. 2015), and organizations should prioritize employee welfare initiatives that align most closely to the corporate culture, ethics, and values. In other words, organizations should favor employees' utility preferences that are most consistent with these values. Employees would view such actions as reinforcement of the corporate culture, ethics, and values.

Solution 4: *Consider providing cafeteria benefit plans.*

Cafeteria benefit plans allow employees to choose individual benefits from a variety of options (Barringer and Milkovich 1998). This flexibility allows employees to make choices that maximize their benefits according to their unique utility function. In other words, cafeteria plans can serve as an aid to help employees maximize meaningfulness. Cafeteria plans provide additional ethical benefits: they increase *organizational justice* and perceived fairness (Laundon et al. 2019).

Solution 5: *Consider a cafeteria-approach to job functions*

Organizations can take a *cafeteria* approach to employment conditions including meaningfulness, similar to cafeteria-style benefit plans where employees choose benefits from a variety of options. Organizations could offer employment options that enhance meaningfulness among other benefits, and employees can select job characteristics that align most closely with their values and utility preferences. This approach could benefit both employees and the company since research suggests that work activities that individuals find as personally important and interesting increases persistence and initiative (Moely et al. 2008).

A cafeteria approach to employment conditions provides a solution to another problem: employees' changing utility preferences. As workers' utility preferences change whether due to employment or personal factors, organizations with a culture of aligning employees' utility preferences with job functions can better adapt and retain quality employees. And given that employee turnover results in significant costs to many organizations (Kacmar et al. 2006), a cafeteria approach to job functions could potentially result in cost savings for some organizations.

5. Discussion and Conclusion

The meaningfulness of work is an important job characteristic that has gained more attention is recent years (e.g., Bailey et al. 2019) in both eastern and western cultures (Chaolertseree and Taephant 2020). Ethical organization may desire to improve job meaningfulness for employees, but providing solutions faces many challenges. In fact, efforts to improve employee meaningfulness may backfire in some cases (e.g., Everett 2011; Isaksen 2000).

Utility theory is long-studied economic theory applicable across a variety of situations. Utility theory highlights the importance of individual preferences based on differing values, which suggests that a one-size-fits-all approach to increasing meaningfulness at work is unlikely to succeed (see Isaksen 2000). This paper presents four propositions, and the failure to acknowledge these propositions rooted

in economic theory will likely hinder an organization from improving employee meaningfulness. These propositions are: 1) People construct meaning at work in different ways, and not everyone desires a meaningful career; 2) Meaningfulness does not exist in isolation from other sources of utility; 3) Employee utility functions change over time including the utility for meaningful work; and 4) The division of labor necessarily requires the existence of careers that are traditionally low meaning.

With the framing of meaningful work using utility theory, organizations can develop ethical, impactful solutions. Such solutions include clearly communicating values to attract the right employees, providing different pathways to address low-meaning work, carefully choosing employee-enhancement initiatives, implementing cafeteria benefit plans, and utilizing a cafeteria-style approach to job functions. Not only would such actions provide more meaningful work to employees, but organizations would likely experience cost savings due to reduced turnover (cf., Kacmar et al. 2006).

Though the challenges to providing worker meaningfulness are likely robust across organizations, solutions will vary depending on the organization. In general, larger organizations will likely have the flexibly to implement some of the proposed solutions, such as cafeteria benefit plans and cafeteria-style work arrangements. However, all organizations regardless of size can focus on recruiting employees with similar values and who *fit* within the organization.

Future research can expand on the theoretical foundations provided in this paper. For example, future projects can examine the relative utility provided by meaningfulness for a variety of employees in both eastern and western organizations. Such information could help organizations provide more utility for employees including meaningfulness. Future research could also examine which options to increasing employee meaningfulness yield the most effective results. Because of limited resources, optimizing meaningfulness based on such constraints could provide further guidance to organizations.

REFERENCES

1. Achor, S, A Reece, GR Kellerman and A Robichaux (2018) 9 out of 10 people are willing to earn less money to do more-meaningful work. *Harvard Business Review* November 6.
2. Ahn, J, BJ Dik and R Hornback (2017) The experience of career change driven by a sense of calling: An interpretative phenomenological analysis approach. *Journal of Vocational Behavior 102*, 48–62.
3. Allan, BA, C Batz-Barbarich, HM Sterling and L Tay (2019) Outcomes of a meaningful work: A meta-analysis. *Journal of Management Studies* 56(3) 500–527.
4. Bailey, C, R Yeoman, A Madden, M Thompson and G Kerridge (2019) A review of the empirical literature on meaningful work: Progress and research agenda. *Human Resource Development Review 18*(1), 83–113.
5. Barringer, MW and GT Milkovich (1998) A theoretical exploration of the adoption and design of flexible benefit plans: A case of human resource innovation. *Academy of Management Review* 23(2), 305–324.
6. Becker, GS (1985) Human capital, effort, and the sexual division of labor. *Journal of Labor Economics* 3(1), 533–558.
7. Besley, T and M Ghatak (2005) Competition and incentives with motivated agents. *The American Economic Review 95*(3), 616–636.
8. Broome, J (1991) Utility. *Economics and Philosophy* 7, 1–12.
9. Cennamo, L and D Gardner (2008) Generational differences in work values, outcomes, and person-organisational values fit. *Journal of Managerial Psychology* 23(8), 891–906.
10. Chaolertseree, S and N Taephant (2020) Outcomes of meaningful work with a focus on Asia: A systematic review. *The Journal of Behavioral Science* 15(3), 101–116.
11. Chen, H-C, Y-P Lee, I-H Chen and H-L Wu (2016) The meaningfulness of managerial work: Case of Taiwanese employees. *Chinese Management Studies* 10, 138–154.
12. Clark, A and A Oswald (1993) Trade union functions: A survey of union leaders' views. *Industrial Relations* 32(3), 391–411.
13. De Goede, MEE., AEM Van Vianen and U-C Klehe (2011) Attracting applicants on the web: PO fit, industry culture stereotypes, and website design. *International Journal of Selection and Assessment* 19(1), 51–61.
14. Dencker, JC., A Joshi and JJ Martocchio (2007) Employee benefits as context for intergenerational conflict. *Human Resource Management Review* 17(2), 208–220.
15. Dik, BJ, RD Duffy and BM Eldridge (2009) Calling and vocation in career counseling: Recommendations for promoting meaningful work. *Professional Psychology: Research and Practice 40*(6), 625–632.
16. Dineen, BR and RA Noe (2009) Effects of customization on application decisions and applicant pool characteristics in a web-based recruitment context. *Journal of Applied Psychology* 94(1), 224–234.
17. Erikkson, T, Q Zhihua and W Wang (2014) Firm-level innovation activity, employee turnover and HRM practices—Evidence from Chinese firms. *China Economic Review* 30, 583–597.
18. Everett, A (2011) Benefits and challenges of fun in the workplace. *Library Leadership and Management* 25(1), 1-10.
19. Farber, HS (1978) Individual preferences and union wage discrimination: The case of United Mine Workers. *Journal of Political Economy*, *86*(5), 923–942.

20. Fore III, C, C Martin and WN Bender (2002) Teacher burnout in special education: The causes and the recommended solutions. *The High School Journal* 86(1), 36–44.
21. Frankl, V (1985) The unheard cry for meaning. New York: Simon & Schuster.
22. Greene, J and J Baron (2001) Intuitions about declining marginal utility. *Journal of Behavioral Decision Making* 14(3), 243–255.
23. Grossan, A. (2018) FIRE-d up for early retirement. *Journal of Accountancy.* August 1. Available at https://www.journalofaccountancy.com/issues/2018/aug/planning-for-early-retirement.html
24. Heneman III, GG and DP Schwab (1985) Pay satisfaction: its multidimensional nature and measurement. *International Journal of Psychology* 20, 129–141.
25. Holmes, T and S Cartwright (1994) Mid-career change: The ingredients for success. *Employee Relations* 16(7), 58–72.
26. Huberman, M (1993) Burnout in teaching careers. *European Education* 25(3), 47–69.
27. Isaksen, J (2000) Constructing meaning despite the drudgery of repetitive work. *Journal of Humanistic Psychology* 40(3), 84–107.
28. Kolstad, JT (2013) Information and quality when motivation is intrinsic: Evidence from surgeon report cards. *American Economic Review* 103(7), 2875–2910.
29. Kocher, MG, O Poulson and DJ Zizzo (2017) Social preferences, accountability, and wage bargaining. *Social Choice & Welfare* 48, 659–678.
30. Lagarde, M and D Blaauw (2014) Pro-social preferences and self-selection into jobs: Evidence from South African nurses. *Journal of Economic and Behavior & Organization* 107*(*A), 136–152.
31. Laundon, M, A Cathcart and P McDonald (2019) Just benefits? Employee benefits and organisational justice. *Employee Relations: The International Journal* 41(4), 708–723.
32. Lawler, EE (1981) *Pay and organization development*. Reading, MA: Addison-Wesley.
33. Lepley, S. (2019) 9 mind-blowing facts about the U.S. farming industry. Markets Insider. May 30. Available at markets.businessinsider.com/news/stocks/farming-industry-facts-us-2019-5-1028242678#
34. Ling, T, T Akkadechanunt and S Sirakamon (2019) Meaningful work and job performance among nurses in medical university hospitals, the People's Republic of China. *Nursing Journal* 46(4), 211–224.
35. Maslach, C and MP Leiter (2016) Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry* 15(2), 103–111.
36. Malbašić, I, C Rey, and V Potocan (2015) Balanced organizational values: From theory to practice. *Journal of Business Ethics* 130, 437–446.
37. Meglino, BM and EC Ravlin (1998) Individual values in organizations: Concepts, controversies, and research. *Journal of Management* 24(3), 351–389.
38. Moely, BE, A Furco and J Reed (2008) Charity and social change: The impact of individual preferences on service-learning outcomes. *Michigan Journal of Community Service Learning* 15(1), 37–48.
39. Paarlberg, LE and JL Perry (2007) Values management: Aligning employee values and organizational goals. *The American Review of Public Administration* 37(4), 387–408.
40. Pencavel, J (1991) *Labour Markets under Trade Unionism.* Oxford: Blackwell.
41. Perrone, L, MH Vickers and D Jackson (2015) Financial independence as an alternative to work. *Employee Responsibilities and Rights Journal* 27, 195–211.

42. Rice, DB, NC Young, D Johnson, R Walton and S Stacy (2020) Overall justice and supervisor conscientiousness: Implications for ethical leadership and employee self-esteem. *Business Ethics, the Environment & Responsibility* 29(4), 856–869.
43. Richardson, PW and HMG Watt (2005) I've decided to become a teacher: Influences on career change. *Teaching and Teacher Education* 21(5), 475–489.
44. Rosen, S (1983) Specialization and human capital. *Journal of Labor Economics* 1(1), 43–49.
45. Rosen, S (1986) The theory of equalizing differences. In *Handbook of Labor Economics*, Vol 1., 641–692, eds. Ashenfelter, O., and Layard, R. Amsterdam: North Holland.
46. Rosenblatt, RA and LG Hart (2000) Physicians and rural America. *Western Journal of Medicine* 173(5), 294–295.
47. Rothbard, MN (1956) Toward a reconstruction of utility and welfare economics. In *On freedom and free enterprise: Essays in honor of Ludwig von Mises*, ed. Sennholz, M. Princeton, NJ, 224–262.
48. Rudman, A and JP Gustavsson (2011) Early-career burnout among new graduate nurses: A prospective observational study of intra-individual change trajectories. *International Journal of Nursing Studies* 48(3), 292–306.
49. Shierholz, H (2020) The number of workers represented by a union held steady in 2019, while union membership fell. Economic Policy Institute. Available at https://files.epi.org/pdf/183317.pdf.
50. Shropshire, J and C Kadlec (2012) I'm leaving the IT field: The impact of stress, job insecurity, and burnout on IT profesionals. *International Journal of Information and Communication Technology Research* 2(1), 6-16.
51. Shuls, J and R Maranto (2014) Show them the mission: A comparison of teacher recruitment incentives in high need communities. *Social Science Quarterly* 95(1), 239–252.
52. Singh, D, J Negin, M Otim, CG Orach and R Cumming (2015) The effect of payment and incentives on motivation and focus of community health workers: Five case studies from low- and middle-income countries. *Human Resources for Health* 13(58), 1–12.
53. Soane, E, A Shantz, K Alfes, C Truss, C Rees and M Gatenby (2013) The association of meaningfulness, well-bring, and engagement with absenteeism: A moderated mediation model. *Human Resource Management* 52(3), 441–456.
54. Srinivasan, TN (1977) Development, poverty, and basic human needs: Some issues. *Food Research Institute Studies* 16(2), 11–28.
55. Stulberg, B (2017) Your job can't be the only meaningful thing in your life. *New York Magazine*. March 27. Available at https://www.thecut.com/article/how-to-find-meaning-outside-of-work.html.
56. Ulrich, D and W Ulrich (2010) Getting beyond engagement to creating meaning at work. *Harvard Business Review*, June 2. Available at https://hbr.org/2010/06/getting-beyond-engagement-to-c.
57. Vischsi, WK and WN Evans (1990) Utility functions that depend on health status: Estimates and economic implications. *The American Economic Review* 80(3), 353–374.
58. Vu, MC (2020) How the contextual constraints and tensions of a transitional context influence individuals' negotiations of meaningful work—The case of Vietnam. *The International Journal of Human Resource Management*, in press.
59. Waldman, M (1984) Job assignments, Signaling, and Efficiency. *The RAND Journal of Economics*, 15(2), 255–267.

60. Walker, RA (2004) Is there a service economy? The changing capitalist division of labor. In *Reading Economic Geography*, eds. Barnes, T. J., Peck, J., Sheppard, E., and Tickell, A. Blackwell, Malden, MA.
61. Williams, J (2010) Constructing a new professional identity: Career change into teaching. *Teaching and Teacher Education* 26(3), 639–647.
62. Wise, AJ and LJ Millward (2005) The experiences of voluntary career change in 30-somethings and implications for guidance. *Career Development International* 10(5), 400–419.

SURVEY

REBS Review of Economic & Business Studies

Volume 14, Issue 1/2021, pp. 97-113
ISSN-1843-763X
DOI: 10.47743/rebs-2021-1-0005

WORKPLACE ISOLATION IN THE GROWTH TREND OF REMOTE WORKING: A LITERATURE REVIEW

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Abstract: *With the rising popularity of remote working, employees has been received many sbenefits, for example, benefits of travel expenses or job performance. Nevertheless, people also have to face to workplace isolation that is a critical challenge of remote work settings. Previous researches discussed about remote work isolation by the form of quantitative researches, or mentioned a small part of the article, so they did not give an overview. Thus, the aim of this essay is to offer a systematic review of literature on workplace isolation in remote working situation, focus on gaining a common understanding about how workplace isolation happened and what its consequences are to the workers. By collating and synthesizing existing literature as well as applying popular theory of social exchange and job characteristics, its causes and effects was clarified. In doing so, It is hoped that it would enrich the knowledge, even attract interest of other scholars and eventually expand this body of essay.*

Keywords: *Workplace isolation; remote working; remote work; remote work isolation; isolation at work; review on isolation.*

1. INTRODUCTION

1.1. Why is the Current Essay undertaken?

Nowadays, remote working is becoming more and more increasingly popular. According to a survey of 18,000 business professionals across 96 international companies by Switzerland-based IWG, Browne (2018) identified that 70% of people globally work remotely at least once a week. Since 2020, the unprecedented outbreak

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of the COVID-19 pandemic has required millions of people across the world into being remote workers (Kniffin et al., 2020). Remote working has become the "new normal," almost overnight (Wang et al., 2020). In the future, according to the forecast of Global Workplace Analytics, 25-30% of the workforce will be working at home on a multiple-days-a-week basis by the end of 2021.

It is understandable because remote working brings many advantages to all parties, especially business, employees. To businesses, one of the most advantages is helping businesses to minimize operation costs while at the same time offering employees an opportunity to manage their work and families better. (Muhammad Siddique et al., 2014). To employees, for instance, a ConnectSolutions study found that 77 percent of remote workers get more done in fewer hours (Alton, 2017). The increase was due "to fewer distractions like meetings, conversations, and noisy coworkers" (Alton, 2017).

Nevertheless, the negative aspects of remote working can't be ignored. The increase in remote working leads to a large number of individuals working from home, where there is a lack of daily face-to-face interactions with co-workers (Wei et al., 2019). This lack also represents one of the main differences between working in ordinary times and remote working in the time of COVID-19 (Toscano, 2020). The issues of workplace isolation are seen as major and critical problems that employers will have to deal with, that could disengage them from their work and ultimately disrupt their performance and well-being (Collins, Hislop, and Cartwright, 2016; Marshall et al., 2007).

In fact, in the non-stop growth trend of remote working, we all may face to the problem of isolation. Thus, previous researchers have discussed its implications on workers. However, the previous research papers were mostly quantitative ones, or only mentioned a small part of the article, so they did not give an overview of the causes and consequences of remote work isolation. Furthermore, studies have not really put workplace isolation in the new post-covid-19 situation to analyze. Based on these available researches and the above reasons, with the purpose of gaining a common understanding about how workplace isolation happened in remote working situation and what its consequences are to the workers, "**Workplace Isolation in the Growth Trend of Remote working"** is practical and necessary to undertake.

1.2. Methodology

On the subject of the research methodology, an iterative strategy of expert consultation and literature searching is used. The conceptual frame-work was also validated through lecturer consultation. The author searched the Web of Science database using terms suggested by the lecturer and subsequently identified further

relevant studies through review articles and by reading full texts and reference lists of included studies. In addition, the latest documents and studies were prioritized to use to ensure the current essay to be up to date.

According to the fundamental previous research, 2 groups of causes leading to the workplace isolation were found, including supervisor - co-workers related and job characteristics related. Likewise, 2 groups of its effects on remote workers were also found, including mental problems and job performance. To clarify these points, the conceptual framework for this essay is mainly grounded in the social exchange theory of Emerson (1976), job characteristics model of Hackman and Oldham (1980). Research model is demonstrated as the below picture:

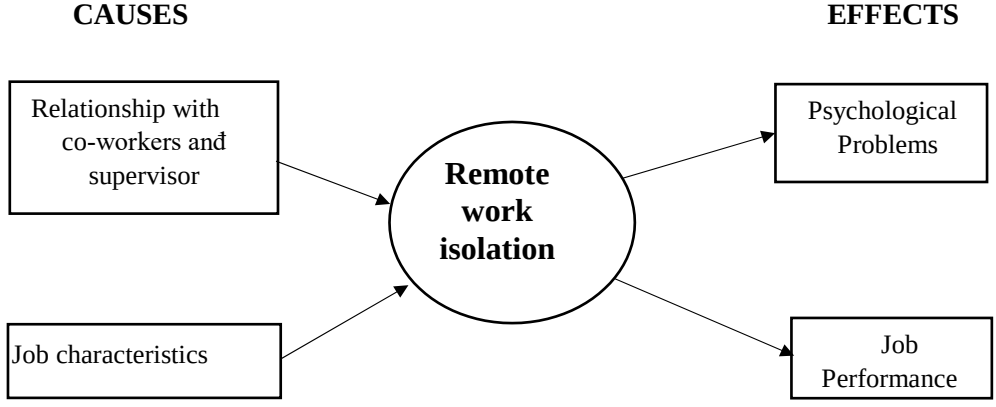

Diagram 1. Proposed Research Mode

Source: according to the author's synthesis

2. DEFINITIONS

2.1. Remote working

The concept of remote working is not new to many businesses in both domestic and international level and It was labeled in many ways. Revenio and Almalinda (2019) defined remote working as a work completed in an environment other than the employer workplace. Afterward, its definition was widened *as a flexible work arrangement whereby workers work in locations, remote from their business, the worker has no personal contact with co-workers there, but is able to communicate with them using technology* (Wang, 2020).

Workplace isolation

One of the major impacts of remote working to employees is the workplace isolation which can be defined as a circumstance when a remote worker experiences the belief of being ignored (Bandara, W. M. H. K., and Senanayaka, S. G. M. S. D., 2020). It means that although individuals have the subjective intention to become members of the group, they are still ignored and crowded out of the organizational support network. The particular issue of workplace isolation was that when this situation happens, remote workers may face to loneliness and encounter a decrease in their performance on the job (Gallup, 2017).

Based on the above opinions, in this literature review, author defines *workplace isolation as simply the state of being disconnected emotionally and physically from colleagues and work, and it leads to psychological problems or negative emotions such as lack of security, loneliness stress.*

Sahai (2020) suggested that ***workplace isolation*** can be of *three types*: *professional isolation, social isolation* and *physical isolation:*

- *Professional isolation* is defined as reduced opportunity of promotion and other rewards that are available in the organization (Kane, 2014, Grantland, 2020).
- *Social isolation* is the deprivation of informal interactions and relationships with colleagues and friends in the organization (Kane, 2014, p.6; De Jong Gierveld et al., 2016; Syed A. Raza et al., 2021).
- *Physical isolation* is defined as employees' experience of working in settings in which they are not co-located with fellow organization members. (Bandara, W. M. H. K., and Senanayaka, S. G. M. S. D., 2020, Wang, 2020).

3. CAUSES OF WORKPLACE ISOLATION

The inevitability of isolation from remote working have been mentioned in previous researches. By document synthesis and analysis, It is argued that there are 2 groups of causes leading to the workplace isolation: supervisor and co- workers related and job characteristics related.

3.1. Cause 1: Supervisor/Leadership and Co-workers related

Strongly related to the social isolation – type 2 of workplace isolation mentioned above, the inevitability of isolation can be explained based on the relationships in the workplace.

Firstly, related to the supervisor, Gallatin (2018) in a qualitative research concluded that supervisor and low trust between remote worker and supervisor can

lead to the workplace isolation. Continuously, remote worker's trust isconsidered to be strongly impacted by the leadership (Munir et al., 2016). In other words, the purpose of leadership is building the trust of workers about the operation strategy to make them follow the task assigned and act as the organizational goals. However, It is more difficult to build the trust of remote workers because the geographical distance creates the difficulty in communication, precisely in emotion expression. For example, If there are no the intonation of voice and facial expression, remote workers will not know exactly which tasks are urgent and which can be completed later. Subsequently, It is disadvantaged to completetasks better and in a systematic manner, increase the professional isolation.

In the growth trend of remote working, researchers have discussed about the transformational leadership which emphasizes the giving job autonomy over specific jobs, the inspiration and setting a moral example for workers (Gözükara, İ. and Şimşek, O. F., 2015). Thus, in the case that the distance working environment requires employees to proactively work, this leadership style is suitable for remote working and increasingly needs to be focused on improvement. Transformational leadership is a complicated leadership method, requires supervisor to take maximum advantages of technology media for job arrangement and communication. Moreover, the less supervisor is democratic with access to information and willing to keep an open communication, the more the working isolation increases (Montgomery et al., 2016).

Secondly, Gallatin (2018) also asserted that workplace isolation results from her/his perceptions of lack of availability of support and recognition, missed opportunities for informal interactions with co-workers, for example, having meaningful conversation with them, and not being part of the group. For remote workers, they have less chance to meet and interact with co-workers, thus, these situations occur more commonly.

This state can be supported by social exchange theory of Emerson (1976) that the majority of the scholars has examined as the conceptual foundation of remote work isolation.

Firstly, to have a grasp on the theory, social exchange theory proposes that social behavior is the result of an exchange process that Emerson described as "the economic analysis of noneconomic social situations" (Emerson, 1976, p. 336). The purpose of this exchange is to maximize benefits and minimize costs. Redmond (2016) explained the different elements of social exchange theory: (1) Costs involve things that are seen as negatives to the individual such as having to put money, time, and effort into a relationship; (2) The benefits are things that the individual gets out of the relationship such as fun, friendship, companionship, and social support.

According to this theory, people weigh the potential benefits and risks of social relationships to secure their self-interest. When the risks outweigh the rewards, people will terminate or abandon that relationship (Redmond, 2016).

Thus, in this essay, the exchange would be considered to occur between remote workers and their colleagues or organization (Emerson, 1976). For example, as mentioned above about transformational leadership, transformation leaders trust their employees and reversely, that trust also inspires employees to do their jobs well (Islam et al., 2020). This also makes perfect sense when looking at social exchange theory.

Specifically, in this case, for remote workers, the lack of interaction forces them to put more effort to get the rewards (support, recognition…), then they decided to take time to themselves instead of putting much effort to the relationship with co-workers. It leads to the distance between people and then remote work isolation, from physical to psychological isolation. More seriously, this could lead to an increasing negative emotional spiral of workplace isolation, as coworkers of isolated remote workers, may likely withdraw as a result of their (accurate) perception that the isolated employees are less affectively committed, thus offering even less connection for the isolated employees (Hakan O. and Sigal B., 2018). That makes the workplace isolation to become more serious.

In fact, both companies and employees have adopted quickly to the work environment since the outbreak of the COVID-19 pandemic, especially thanks to the technology support. For instance, Corporate Vice President for Microsoft 365 - Jared Spataro (2020) indicated that before the pandemic, Microsoft had released an announcement that Microsoft Teams owns 44 million daily active users. However, just a short time later, when COVID-19 truly became a global pandemic, Microsoft Teams recorded a 70% increase in the number of online video calling service users, reaching an average of 75 million daily active users, even more than 200 million Microsoft Teams meeting participants in a single day, generating more than 4.1 billion meeting minutes (data in 08/2020). It shows that the technology support helps people around the world, included Viet Nam, to "chat, calls, meetings, and collaboration", reduce the lack of working interaction, then gradually reduce the state of workplace isolation.

3.2. Cause 2: Job characteristics related

With the increase in task virtuality, workplace isolation also increases (Orhan et al., 2016). The relationship between job characteristics and remote work isolation has also discussed in many researches (see Srivastava et al., 2013, Mc Carthy et al., 2017). Specifically, there are jobs that match the form of remote working such as programmer, freelancer copywriter, digital marketer,… that mainly lead to the physical isolation. Reversely, almost kinds of jobs still require face-to-face

interaction. Thus, if they have to work virtually, they have to take time to get used to the new form of work and that leads to working difficulties, even professional and social isolation.

This state can be supported by Job Characteristics Model (JCM) of Hackman and Oldham (1980). Applying this model in this case is showed below:

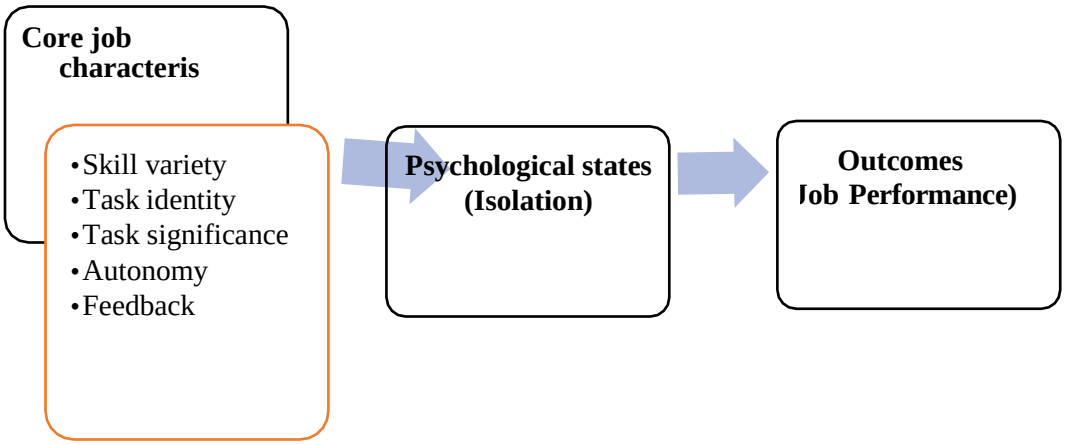

Diagram 2. JCM

Source: According to the author's synthesis

As the names imply, the JCM was designed to evaluate and improve the "jobs" of those employed by others. The primary purpose is to diagnose existing jobs and evaluate the effects of job changes on employees for mental states and outcomes such as motivation, productivity, and satisfaction (Hackman and Oldham, 1980; John H. Batchelor et al., 2014). For this reason, the JCM is applied in this essay to explain the effect of job change (from traditional to remote working) on workplace isolation of remote workers.

According to the research of Panagiota Koutsimani et al. (2019), the tenets of this approach are the core job characteristics have an influence on critical psychological states, which in turn influence personal and work outcomes, given the strength of the employee's growth needs.

- The core job characteristics are skill variety, task identity, task significance, autonomy, and feedback (Hackman and Oldham, 1980).
- Critical psychological states are experienced meaningfulness knowledge of results. of work, experienced responsibility for outcomes or work (Hackman and Oldham, 1980).

- Personal and work outcomes are high internal work motivation, high quality work performance, high satisfaction with work, and low absenteeism and turnover (Hackman and Oldham, 1980).

However, in this part, the first period of the above process will be mainly discussed: 5 core job characteristics lead to psychological states that is the workplace isolation.

First, *skill variety* refers to the degree to which a job requires a variety of different activities in carrying out the work, which involves the use of a number of different skills and talents of the employee (Hackman and Oldham, 1980). In this case, remote workers are required to use technology media, not only communication apps such as Zoom, Microsoft Teams, Skype, but also online working platform such as Office 365, job management software. Meanwhile, a large number of workers did not have proper equipment and resources to work from home and this situation is nearly inextricable and costly to solve (Vasic, 2020). Since COVID-19 pandemic, traditional workers have to quickly get acquainted to many e-platforms to avoid the working disruption as well as workplace isolation.

Secondly, *task identity* is defined as the degree to which the job requires completion of a whole and identifiable piece of work – that is to say, doing a job from beginning to end with a visible outcome (Hackman and Oldham, 1980). Normally, traditional worker's tasks may be assigned directly at the office so that employees can exchange information, get answers to questions and ask the help of superiors and colleagues when running up against any problems. But in the new environment of remote working, the limit of communication makes this standard to be disrupted. Instead of using words in face-to-face meeting, people use texts or through calls. Hence, it can lead to misunderstanding of information about their tasks. Even through the task identity does not change remarkably, if remote workers do not clearly understand the tasks, that also impacts on psychological states.

Thirdly, *task significance* represents the degree to employees feel which the job has a substantial impact on the lives or work of other people, whether in the immediate organization or in the external environment (Hackman and Oldham, 1980). However, since COVID-19 pandemic, employees who work from home or perform quarantine have less face-to-face interaction with both colleagues and customers. Thus, It is inconvenient for them to observe their task's impact.

Forth, *autonomy* represents the extent to which the job allows the employee substantial freedom, independence, and discretion in scheduling the work and in determining the procedures to be used in carrying it out (Hackman and Oldham, 1980). In fact, the job autonomy is along with the grow trend of remote working and It is also

the main point of transformational leadership mentioned above (Gözükara, İ. and Şimşek, O. F., 2015). Gözükara (2015) indicated that job autonomy plays a vital role for transformational leaders to enhance the effectively management of their remote workers. In contrast, if job autonomy is too much, it will make employees lose their direction when doing their job and need help. Accordingly, they will feel isolated.

Fifth, *feedback* refers to the extent to which performing the work activities required by the job results in the employee obtaining direct and clear information from the job about the effectiveness of her or his performance (Hackman and Oldham, 1980). Feedback related to workplace isolation, especially professional isolation. If remote workers receive positive feedback such as reward, recognition, theywill feel that although working remote, they are still respected and cared about, then they will make more effort at work. Reversely, remote working creates the lack of communication, difficulty to express emotion so that the *feedback* is not communicated clearly. It may lead to the workplace isolation. This situation is also supported by social exchange theory of Emerson (1976).

To conclude, 5 above dimensions, if achieved, will create the meaningfulness and interestingness as well as the responsibility at work (Hackman and Oldham, 1980). However, in the face of the COVID-19 pandemic, the above criteria were changed dramatically, workers could not respond promptly, but had to take time to find out, as explained. As a result, psychological state was affected, precisely, led to remote work isolation.

4. EFFECTS OF WORKPLACE ISOLATION

Previous researches have discussed about isolation and its effects, but almost focused on social isolation that happens in COVID-19 quarantine situation and workplace isolation that happens in traditional working environment such as bullying. (John W. and Sons, 2020; Toscano, 2020; Syed A. Raza et al., 2021). Reversely, few studies have focused on workplace isolation in remote work situations. However, through synthesis and analysis of accessible documents, 2 critical effects on remote workers were also found, including psychological problems and job performance.

4.1. Effect 1: Psychological Problems

Workplace solation is known to cause psychosocial problems, especially for those recognized as vulnerable (John Wiley, Sons, 2020). To illustrate, lasting workplace isolation gradually increases loneliness, which is a crucial risk factor for

mental disturbances, including anxiety, depression, and addiction disorders (Takahiro A. Kato et al., 2020).

Mental disturbances

Rohde N. et al. (2016) found that the only small increases in feelings of isolation are likely to have large negative consequences on mental health problems. Likewise, Vasic (2020) in a quantitative research indicated that in factors researched, workplace isolation influences the most mental stress and anxiety. A recent systematic review (Brooks et al., 2020) also evealed that remote workers reported various mental health problems, such as work-related stress symptoms, anxiety, insomnia, and physical, emotional exhaustion.

An example about work-related stress mentioned, if remote workers are not able to seek and get feedback, share and receive information, and ask and offer help, especially from their e-leader, work-related stress and insecurity will happen. They need to feel and they know that their efforts and work performance must be noticed, measured, and appraised. Generally, inadequate measuring of work performance and lack of information in remote working imposes additional stress on workers (Vasic, 2020). Besides, to reduce remote work isolation, technology tools have been used for communication such as e-mails. As a result, the bulk of e-mails, which makes us to overloaded with information, also leads to the work- related stress. This kind of stress occurs when an employee tries to process the amount of information when there is the inability to perform because of the limited human information processing capacity (Delpechitre et al., 2019, p. 321).

Another example, because remote workers must increase the use of communication software on phones and computers, insomnia may also happen (Tamura et al., 2017; Shoukat, 2019; Almusa, 2021). Long lasting insomnia can cause fatigue, depression, irritability, and reduced concentration of attention. Transient or prolonged sleep deprivation also affects the ability to work, easily cause accidents while driving or operating machinery. To conclude, even work- related stress or insomnia is lasting, remote workers will be exhausted, both physically and emotionally. Thus, creating the right habits is necessary to keep the remote working to not affect our health (Mikhail K., 2021).

Internet addiction

Takahiro A. K. et al. (2020) discussed about the internet using in remote work isolation. The Internet and its related social media platforms are believed to be useful tools to combat social isolation and physical distance during the contact restrictions (Lemenager et al., 2020). However, there is little evidence about the effectiveness of

substituting direct contact among people by communication via the Internet. Indeed, Internet have the two-sided impact to users and one of the outstanding problems is internet addiction (Sharma M. K. et al., 2020).

In this case of remote working, workers tend to approach social media most in Internet tools to communication with co-workers in the effort of reducing the workplace isolation. This leads to the social media addiction. Starting from using more social networks to update information about work through communication applications, participating in online group meetings, remote workers gradually get used to life without the Internet. Meanwhile, the Internet is a virtual world containing a lot of interesting information flows, thus, being attractive for users, even makes them to be hooked on, no matter the disadvantages (Glaser et al., 2019).

Studies also reported that excessive use or addiction of social media has found to be correlated with depressive symptoms, self-esteem, general and physical appearance anxiety and body dissatisfaction because users expose negative information or comments (Sherlock M, Wagstaff DL, 2019; Glaser P, Liu JH, Hakim MA, et al, 2019). In addition, remote wokers spend more time on using technology devices instead of going to the traditional office. As a result, eye diseases, osteoarthritis pain are also easily acquired. Also, the ability to communicate in real life can be affected if remote workers become accustomed to using the vulgar and this develop into daily habits in the use of language (Sharma M. K. et al., 2020). This issue requires people, especially youngers, to try tousing social media in moderation to avoid effects of such additive behaviors.

Effect 2: Job Performance

Job performance is defined as the ability of an individual to behave in such a manner that enables an organization to achieve its objectives. To achieve a organizational objectives, there are many methods for each employees to use, so that job performance can also be assessed in many different ways and one of its important predictors is workplace isolation (Muhammad et al., 2014). Simply, in the workplace where the isolation is serious, job performance is not high.

The effects of workplace isolation on job performance can be supported by some popular theory, firstly, the Job Characteristics Model of Hackman and Oldman (1980). Looking at the Diagram 2, the second period of the above process can be explained as follows: psychological states affect to outcomes. In this case of remote working, the JCM supported that workplace isolation affects to job performance. In other words, work performance is also the leader’s desire to achieve after impacting on employees' psychology and that is the purpose of building the JCM.

To explain deeply why workplace isolation affects to job performance, Affective Events Theory of Weiss and Cropanzano (1996) is applied. The theory indicated that remote workers react emotionally to things that happen to them at work, and this reaction influences their job performance. Their reaction includes not only positive, but also negative psychological states such as workplace isolation, which results from the dramatical change from traditional to remote working environment.

Previous researches showed that workplace isolation is not only to influence how employees feel, but also their level of workplace performance (Orhan et al., 2016; Hakan and Sigal, 2018; Itani et al., 2019). For example, according to Mulki and Jaramillo (2011) in a quantitative research, workplace isolation could have a 21% decrease in a remote worker's performance. Indeed, no employee is in an island, to working effectively, employees always need the companion, the combination and support of co-workers. For remote workers, this kind of interaction is more limited as they are forced to communicate through using e-platforms, thus, leads to the lower job performance. Next, not everyone has proper equipment and resources to work from home and moreover, knows how to use technology proficiently (Vasic, 2020). This situation is costly and time-consuming for training (Vasic, 2020). This creates the disruption at word and also influences their job performance.

Another interesting explanation based on the core definition of workplace isolation was discussed by Hakan and Sigal (2018). Turning back to the definition, workplace isolation was defined as a status of being disconnected emotionally and physically from colleagues and work, and it leads to psychological problems such as lack of security, loneliness or stress. Remote workers deal with this estrangement and lack of security will trigger both attentional deficits and relational withdrawal from the work place. In other words, they are less affiliative to their business, leading to lowered performance (Hakan and Sigal, 2018).

However, these above disadvantages mainly occur in the case of spending too much time on remote working or facing to the dramatical change of working environment (from tradition to remote working). Evidence mentioned shows that more time spent on remote working increases the negative impact of workplace isolation on job performance. However, if sensible usage of technology tools, there is bright side that the experience of isolation increased their performance because it allowed for less distraction and more focus (Hickman, 2019). In other words, more face-to-face interaction and combination with accessing to communication enhancing technology reduces the negative impact of workplace isolation on job performance.

5. DISCUSSION AND CONCLUSION

1.3. Discussion

Isolation in the workplace is becoming so popular in the current era. Despite of several advantages, this working environment has some emergent problem like workplace isolation that need to be considered. This essay is an attempt to enlighten the important factors, including co-workers, supervisors and job characteristics that lead to in remote worker's isolation based on social exchange theory of Emerson (1976) and job characteristics model of Hackman and Oldham (1980) respectively. Moreover, 2 main effects of isolation were discussed to workers, including mental health and job performance.

In general, by synthesizing and analyzing popular theory and updated documents, the essay draws some conclusions as follows:

About the causes, factors related to supervisors, co-workers and job characteristics were mentioned.

Firstly, the lack of interaction leads to the lack of meaning conversation with co- workers and the lack of receiving feedback of supervisors. That requires remote workers to make more effort to get the "rewards". Thus, if they do not see the equity, they will take time to themselves instead of trying to get on well. The transformational leadership was discussed as the new trend and the most suitable leadership style for remote working. That emphasizes the giving job autonomy over specific jobs, the inspiration and setting a moral example for workers (Gözükara, İ. and Şimşek, O. F., 2015).

Secondly, job characteristics was asserted to extremely impact on workplace isolation. When changing the form of working from traditional to remote working, the job design has to promptly meet the requires of 5 core characteristics, including skill variety, task identity, task significance, autonomy, feedback. However, indeed, it is time consuming to get used to sudden environmental changes, especially since the outbreak of COVID-19. Therefore, workplace isolation is inevitable; however, over time, if effectively taking advantages of technology support, the workplace isolation in remote working will be significantlyreduced.

About the effects, effects related to psychological problems and job performance were mentioned.

Firstly, psychological problems were discussed and focused on mental health and internet addiction. Problem related to mental health includes: (1) work-related stress (as the lack of exact job assessment and the overloaded information from e-mail); (2) insomnia (as the excessive use of electronic devices) and (3) the long lasting of these two situations turn to lead to emotional exhaustion. Also, Internet

addiction, especially social media addiction was reported to easily happen in remote working environment. Internet addiction leads to not only mental problem such as depression, self-esteem, body dissatisfaction, but also the ability to communicate in the real life.

Next, because the lack of co-worker's support and the lack of using technology ability, the disruption at work may occur. Besides, the lack of remote worker's affiliation to their business also leading to lowered performance (Hakan and Sigal, 2018). However, if sensible usage of technology tools, there is bright side that the experience of isolation increased their performance because it allowed for less distraction and more focus (Hickman, 2019).

1.4. Conclusion

The extant literature on workplace isolation has yielded insights into what can cause workplace isolation (including supervisor and coworker support, job characteristics, and other organizational variables), what is its negative impact on outcome variables (including psychological problems and job performance) and various mechanisms through which it can impact outcome variables. This field of research is still in its nascent stage in the organizational literature, with immense potential to drive new and exciting directions. The purpose of the current review is to bring coherence to the disparate literature by uncovering the causes, mechanism and effects underpinning workplace isolation. Employees can use this essay to enhance their understanding the causes and effects of remote work isolation and find out by-self how we can adopt for successful functioning of employees work and overcome workplace isolation.

With the rising popularity of remote working, available technologies to support this working environment, this mode of work is being considered as future of work. Workplace isolation can also occur amongst those who work in traditional work settings and have implication on outcome variables. The time is ripe for a deep-dive into this area of research and it is sincerely hoped that this review can provide an organizing framework and encourage scholars to understand, explore and broaden the literature on workplace isolation.

REFERENCES

1. John Wiley, Sons. (2020). Life in the pandemic: Social isolation and mental health. *Journal of clinical nursing*, 2756–2757.
2. Almusa, H. A. (2021). Insomnia and social network use among secondary school female students in Abha Sector. *Middle East Journal of Family Medicine, 19*(2).
3. Bandara, W. M. H. K., and Senanayaka, S. G. M. S. D. (2020). The Impact of workplace Isolation on Job Satisfaction of Academics in Sri Lanka during Covid-19 Pandemic. *Journal of Management and Tourism Research (JMTR)*, 24-37.
4. Collins, Hislop, & Cartwright. (2016). New Technology Work and Employment. *31*(2), 161-175.
5. Emerson, R. M. (1976). Social Exchange Theory. *Annual Review of Sociology, 2*, 335-362.
6. Gallatin, K. A. (2018). Teleworker Isolation: Possible Effects of Workplace Relationships and Support. *ProQuest Dissertations Publishing*.
7. Glaser P, Liu JH, Hakim MA, et al. (2019). . Is social media use for networking positive or negative? offline social capital and internet addiction as mediators for the relationship between social media use and mental health. *N Z J Psychol, 47*, 12-18.
8. Gözükara, İ. and Şimşek, O. F. (2015). Linking transformational leadership to work engagement and the mediator effect of job autonomy: A study in a Turkish private non-profit university. *Procedia-Social and Behavioral Sciences*, 963-971.
9. Grantland, J. D. (2020). Rural Counselors' Use of Technology to Address Professional Isolation. 51.
10. Hakan Ozcelik & Sigal Barsade. (2018). Work loneliness and employee performance. *Academy of Management Journal, 61*(6), 2343–2366.
11. Hickman, A. (2019). Workplace Isolation Occurring in Remote Workers. *Walden Dissertations and Doctoral Studies*.
12. Islam, M. N., Furuoka, F., & Idris, A. (2020). Mapping the relationship between transformational leadership, trust in leadership and employee championing behavior during organizational change. *Asia Pacific Management Review*.
13. John H. Batchelor et al. (2014). The Job Characteristics Model: An extension to entrepreneurial motivation. *Small Business Institute Journal , 10*(1), 1-10.
14. K. Lister and T. Harnish. (2012). The State of Teleworking in the US: How Individuals, Businesses, and Government Benefit. *Teleworker Research Network*.
15. Kane, L. M. (2014). Telework and Organizational Citizenship Behaviors: The Underexplored Roles of Social Identity and Professional Isolation. *CUNY Academic Works*.
16. Koutsimani Panagiota, Montgomery Anthony, Georganta Katerina. (2019). The Relationship Between Burnout, Depression, and Anxiety: A Systematic Review and Meta-Analysis. *Frontiers in Psychology, 10*, 284.
17. Lemenager, T., Neissner, M., Koopmann, A., Reinhard, I., Georgiadou, E., Müller, A., Kiefer, F., & Hillemacher, T. . (2020). COVID-19 Lockdown Restrictions and Online Media Consumption in Germany. *International journal of environmental research and public health*.
18. Marshall et al. (2007). Workplace isolation: Exploring the construct and its measurement. *Psychology and Marketing, 24*(3), 198.
19. Mc Carthy et al. (2017). Job characteristics and mental health for older workers. *Occupational Medicine, 67*(5), 394-400.

20. Muhammad Siddique et al. (2014). A Review of Causes and Consequeces of Workplace Isolation. *Special Issue on Entrepreneurship and Business Management, 2*(3), 137–141.
21. Redmond, M. (2016). Social Exchange Theory. *Human Communication Theory*.
22. Revenio J. & Almalinda J. (2019). Rationalizing remote working concept and its implications on employee productivity. *Global journal of advanced research, 6*(3), 95-100.
23. Revenio Jalagat, Almalinda Jalagat. (2019). Rationalizing remote working concept and its implications on employee productivity. *Global journal of advanced research, 6*(3), 95.
24. Rohde N. et al. (2016). Estimating the mental health effects of social isolation. *Applied research in quality of life, 11*(3), 853-869.
25. Sahai, S. (2020). Workplace Isolation: A Systematic Review and Synthesis. *International Journal of Management, 11*(12), 2745-2758.
26. Sharma M. K. et al. (2020). Influence of social media on mental health: a systematic review.
27. Sherlock M, Wagstaff DL. (2019). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well being in women. *Psychol Pop Media Cult, 8*, 482–490.
28. Shoukat, S. (2019). Cell phone addiction and psychological and physiological health in adolescents. *EXCLI journa*, 47-50.
29. Srivastava et al. (2013). Linking job characteristics and mental health among middle level Indian managers: Testing the mediating role of psychological empowerment. *Psychological Studies, 58*(2), 188-200.
30. Syed A. Raza et al. (2021). Social Isolation and Acceptance of the Learning Management System (LMS) in the time of COVID-19 Pandemic: An Expansion of the UTAUT Model. *Journal of Educational Computing Research, 59*(2), 183–208.
31. Takahiro A. Kato et al. (2020). Forced social isolation due to COVID-19 and consequent mental health problems: Lessons from hikikomori.
32. Tamura, H., Nishida, T., Tsuji, A., & Sakakibara, H. (2017). Association between excessive use of mobile phone and insomnia and depression among Japanese adolescents. *International journal of environmental research and public health*.
33. Toscano, F. (2020). Social Isolation and Stress as Predictors of Productivity Perception and Remote Work Satisfaction during the COVID-19 Pandemic: The Role of Concern about the Virus in a Moderated Double Mediation. *Sustainability* , 2.
34. Vasic, M. (2020). Challenges of teleworking during the Covid-19 pandemic. *Anali Ekonomskog Fakulteta U Subotici, 56*(44), 63-79.
35. Wang, B. et al. (2020). Achieving Effective Remote Working During the COVID-19 Pandemic: A Work Design Perspective. *Applied Psychology: An international review, 70*(1), 16-59.
36. Wei et al. (2019). Understanding interactions in face-to-face and remote undergraduate science laboratories: a literature review. *Disciplinary and Interdisciplinary Science Education Research*, 1-14.

Internet Sources

37. Alton, L. (2017). Are Remote Workers More Productive Than In-Office Workers? [online] Forbes. Available at: https://www.forbes.com/sites/larryalton/2017/03/07/are-remote- workers-more-productive-than-in-office-workers/#24f9c61331f6 [Accessed 8 April 2021].

38. Jared Spataro (2020). 2 years of digital transformation in 2 months, Microsoft, Available at: https://news.microsoft.com/en-my/2020/05/04/2-years-of-digital-transformation-in-2-months/ [Accessed 7 April 2021].
39. Kate Lister (2020). Work-At-Home After Covid-19 - Our Forecast, Global Workplace Analytics. Available at: https://globalworkplaceanalytics.com/work-at-home-after-covid-19- our-forecast [Accessed 8 April 2021].