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EDITORIAL

A total of four original scientific papers and two review papers, as well as the Letter of Appreciation to the Reviewers of the manuscripts submitted to the Journal's Editorial Board in 2020, are published in the Issue 2 Volume 23 Year 2021 of the *Economic Horizons* scientific journal.

Considering the relevance of economic growth and the key factors determining that growth, the author *Lilianne Isabel Pavón Cuéllar* indicates the importance of the financial inclusion that enables economic entities to solve liquidity limitation problems more successfully, on the one hand, and direct savings towards more productive investing, on the other. Based upon the conducted empirical research studies, the hypothesis that economic growth does not only depend on forming physical and human capital and the sustainable utilization of its natural resources, but also on financial inclusion, is tested. The research study has shown that financial inclusion does not only represent the desired results expressed through the economic growth rate, but also that it is the basic component of the sustainability of economic growth and development at the same time.

In compliance with the attitude that knowledge workers are the core of the modern organization, the authoress *Anna Pietruszka-Ortyl* analyzes knowledge worker cooperation culture on the example of the information-technological sector in Poland. Respecting the specificities of the mentioned sector, the author indicates the fact that the knowledge workers working in its enterprises are also specially positioned, which reflects on the incentive system and the formal influence managers exert on

their activities. Identifying knowledge workers' preferences for organizational culture, the author concludes that providing support to organizational culture is of crucial significance when the motivation of the knowledge workers who should make their own contributions inside the organization itself with their own competencies is concerned.

Based on the data obtained from the 77 nonfinancial firms listed on the Nigerian Stock Exchange for the period from 2013 to 2019, *Ochuko Benedict Emudainohwo* tests the attitude that managers' incentives are brought into connection with salary management. With respect to the effect of salary management, the author concludes that a firm's profitability and size make a strong positive influence, whereas non-debt tax shield and operational cash flows have a strong negative influence on salary management. Pursuant to the mentioned conclusion, the author suggests that external interest groups should observe those factors that influence the assets, the non-debt tax shield and operational cash flows, and when expanding firms are in question, the same should focus their attention to the factors influencing salary management.

Respecting the attitude that the quality financial reporting based on the contemporary achievements made in accounting regulations and practice implies, inter alia, the application of the international financial reporting standards (IFRS) as well, the coauthors *Dejan Spasic, Mutaz A. Abouagla* and *Vojislav Sekerez* test the thesis that the mentioned standards are unacceptable in a developing country with a specific business culture on the example of Sudan. Examining accountants' attitudes in the industry sector towards the barriers to the introduction of and the possible benefits of introducing IFRS in Sudan, the coauthors have shown that Sudanese accountants are highly

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aware of the need for and the benefit of adopting the IFRS. The research study has, however, shown that accountants in Sudan simultaneously also demonstrate a high degree of skepticism given the numerous limits which they consider would make the introduction of the IFRS more difficult.

Starting from the attitude that the employees of an enterprise may be satisfied with communication as one of the processes performed inside the enterprise to a greater or lesser extent, the coauthors *Biljana Djordjevic, Sandra Milanovic* and *Jelena Stankovic* do research in its implications for employees' satisfaction with the job they are doing. Given the fact that job satisfaction may initiate employees' numerous other positive consequences with respect to their attitudes and behavior, the coauthors consider that an increase in employees' satisfaction with internal communication is one of the ways to achieve greater job satisfaction. The results of the empirical research study carried out in the Republic of Serbia's enterprises on a sample of 202 employees show that there is a bivariate positive correlation between communication satisfaction and job satisfaction. Pursuant to the results obtained in the research study, it is recommended that human resource managers should respect the attitude that employees will be satisfied with their job if their communication with their superiors is open and sincere.

By doing research in the effect of structural disturbances in the Nigerian economy, the coauthors *Adedayo Emmanuel Longe, Caleb Olugbenga Soyemi, David Adeiza Agbanuji, Oladayo Omitogun* and *Idowu*

Jacob Adekomi explain both asymmetry and the period of the analyzed disturbances yet placing an emphasis on the oil price asymmetry. They also emphasize the fact that both positive and negative changes in the oil price and energy use have a negative significant influence on Nigeria's economic growth in the short run. On the other hand, however, the consumer price index has a positive and significant influence on economic growth in the short run. The study concludes that, irrespective of changes in the crude oil price, it still has an equal influence on Nigerian economic growth.

On behalf of the Editorial Board and on my own behalf, I hereby express my gratitude to the authors of the contributions published in this Issue of the Journal and to the reviewers whose critical comments and suggestions made to the authors have significantly contributed to the improvement of the submitted manuscripts.

Issue 2 Volume 23 Year 2021 contains the Letter of Appreciation to the Reviewers of the manuscripts submitted to the Editorial Board of the Journal in the year 2020, of which those that had positively been rated in the double-blind peer-review process were published as original scientific and review papers in the Issues 1, 2 and 3 Volume 22 Year 2020 of the Journal.

The publication of the *Economic Horizons* journal is supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, Decision No. 451-03-73/2021-14/2 as of 19th May 2021.

Editor-in-Chief
Vlastimir Lekovic

Vlastimir Lekovic is a full professor of the Faculty of Economics of the University of Kragujevac, in retirement. He earned his Ph.D. at the Faculty of Economics of the University of Kragujevac in the scientific field of general economics and economic development. He teaches the teaching disciplines of Institutional Economics in the master's studies, and Scientific Research Methodology and Market Regulation Policy in the doctoral studies. The key areas of his scientific research interest are the economic system, the economic policy, and institutional economics.

Original scientific paper

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FINANCIAL INCLUSION AS A PILLAR OF SUSTAINABLE GROWTH: INTERNATIONAL EXPERIENCE

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As proposed by the current theoretical framework, the fact that the economic growth of a country depends not only on the formation of physical and human capital and the sustainable exploitation of its natural resources, but also on the financial inclusion that allows economic agents to find solutions to liquidity restrictions and channel savings towards productive investment is exhibited in this paper. By matching multiple databases, static and dynamic panel estimates are developed, verifying the robustness of results and the endogenous nature of economic growth. The current research demonstrates that social inclusion is not only the desired result of economic growth, but a required input for its future sustainability.

Keywords: financial inclusion, sustainable economic growth

JEL Classification: G21, O40

INTRODUCTION

The economic growth study explores inputs accumulation and their interrelationship with the product under the influence of the existing sociopolitical framework. In this context, and with the goal of suggesting the unconventional elements that might affect such a process, the subject matter of this research is financial inclusion and its possible connection with economic growth. Currently, access to financial products is a global priority: more than 50 nations have adopted an important strategy in this regard, and, under the United Nations' Sustainable

Development Goals, it is considered to be the key factor against poverty. In this context, the paper is aimed at showing that, as the current theoretical framework proposes, the economic growth of a country depends not only on the formation of physical and human capital and the sustainable exploitation of its natural resources, but also on the financial inclusion that allows economic agents to find solutions to liquidity restrictions and channel savings towards productive investment.

The questions raised in this research study and intended to seek answers are as follows: How is financial inclusion measured and why is it different from financial penetration? If there is a significant relationship between both of them, what are the most common channels through which financial

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inclusion boosts economic growth? The hypothesis to be tested is as follows: the economic growth of a country depends not only on its physical and human capital formation and the exploitation of its natural resources, but also on the financial inclusion that allows economic agents to solve liquidity constraints and channel savings towards productive investment.

In order to obtain the results that might generally be applied both of a temporary nature and transversely as well, the study takes into account a sample of 40 countries during an 11-year period, leading to the use of panel modeling. Additionally, the specialized literature shows that these relationships occur bidirectionally, thus suggesting that the starting point is from the static panel that detects them, and that they are finally estimated by the dynamic panel, which reflects the endogenous character of growth according to the current theory of economics, simultaneously constituting a satisfactory econometric framework which allows the verification of the robustness of the selected explanatory variables.

The models are estimated according to the Cobb-Douglas production function that incorporates financial inclusion in addition to the traditional factors outlined in the scientific literature in order to distinguish the effects of the variable of interest from those of control. This will enable the verification of whether the Solow residual present in all the estimated economic growth models is reduced by the introduction of a variable of this kind, which is used the most in the development study framework, or not. Meanwhile, the importance of savings and their correct channeling towards capital formation in a broad sense is corroborated as the core economic dynamism gear. This would also lead to the affirmation of the United Nations (UN, 2016) that outlines that equity and social inclusion are not only a desirable result of economic growth, but an essential input for its sustainability, which is the main argument of this research study.

This paper is divided into three sections. In Section One, the theoretical framework for economic growth and its connection with the inclusion concept, with an emphasis on financial inclusion, is briefly reviewed.

In Section Two, the research methodology justifying the techniques applied in order to estimate the macro-econometric models included herein is presented, whereas in Section Three, the empirical data are described and the results are discussed so as to ultimately establish generalized conclusions at the international level, still taking into consideration the limits present in this type of analysis and seeking to provide recommendations and possible future lines of research.

THE THEORETICAL FRAMEWORK: ECONOMIC GROWTH AND FINANCIAL DEVELOPMENT

Classical economics sought to discover the natural, demographic, technological, political, social, cultural, and moral characteristics of the society that had managed to accumulate wealth and improve the life of its population. In the mid-19th century, the marginalist revolution defrosted analysis into the microeconomic sphere - the efficient allocation of resources and their utility.

The study of macroeconomics was paused until the Great Depression and the emergence of the Keynesian theory, which analyzes short-term phenomena, such as the economic cycle and its stabilization. It was until the 1930s that the authors such as J. Schumpeter (1934) inspired E. Domar (1946) to develop the formal growth theory from the Keynesian analysis by studying savings and capital accumulation.

In this context, the papers by R. Solow (1956) and T. Swan (1956) appeared, the models predicting the economies converging to the steady state where capital accumulation is stopped. Convergence prediction originates from the only engine to grow from exogenous technological progress in these return diminishing models. Empirical evidence plays against this idea of sigma convergence (the speed at which a country approaches its steady state), so the neoclassical hypothesis is nuanced by being replaced with beta convergence (a logarithm-based dispersion in *per capita* income between countries), which

conditions it to the economies of similar demographic parameters, institutional or natural resources, among other things (Sala-I-Martin, 2006).

In line with this literature, the fact that sustainable growth requires the development, accumulation, and distribution of not only efficient, but equitable as well, quality physical, human and social capital and taking care of its natural resources through savings and its correct channeling to investment is being emphasized now. This expanded vision of capital arises from the context of global inequality and unprecedented environmental deterioration, which shows that economic growth is only the first step towards achieving greater wellbeing. Thus, the growth and development the study frameworks gradually merge into one (Pavón, 2019).

The study of the link between savings, loans, investment and economic growth goes back to W. Bagehot (1873), J. Schumpeter (1934) and, years later, to the authors such as R. McKinnon (1973). However, endogenous growth theories are those that allow a more rigorous analysis of the importance of financial development (Levine, 1991), which, as allowed by econometrics, progressively discovers its endogenous and asymmetric nature. Years later, the Great Recession (2007) questions the benefits attributed to financial deepening into the economy, raising the possibility that its relationship with growth may be positive, but yet with a turning point, beyond which financial excess subtracts resources from other sectors, even inducing over-indebtedness and recurring financial crises (Minsky, 1982).

The financial development no longer based upon its size should then be assessed against the Gross Domestic Product (GDP), but the same should be performed based upon its coverage for the population, i.e. financial inclusion.

Even though there are several definitions of financial inclusion, there is a consensus that it refers to the process of promoting affordable, timely and adequate access to financial products and services and broadening their use by all society segments through the implementation of the tailored existing and innovative approaches, including the financial

education and technological readiness focused on promoting financial wellbeing, systemic stability and economic and social inclusion as well, thus contributing to sustainable economic development (Sarma, 2008; OECD, 2018; Pavón, 2019).

Broadly speaking, financial inclusion implies access to transaction accounts and savings, pension funds, mobile money, insurance, and loans as well. Nevertheless, savings accounts numbers and commercial bank borrowers are only available in databases, both being available for each number of inhabitants. Likewise, the use of these variables is justified not only by the importance of commercial banking in the provision of the basic financial services, but also due to those being a prerequisite to access to more sophisticated products (Sarma, 2008).

Apart from the fact that access to finance allows the channeling of savings towards investment, it also provides support to governments in meeting their development goals by managing liquidity constraints imposed on economic operators, promoting collection efficiency and reducing crime and informality (Pavón, 2019). Furthermore in the productive field, it relieves the market frictions that make external funds difficult to obtain and facilitates corporate entrepreneurship and development, their invaluable sources of innovation, thus indirectly contributing to greater dynamism (Banerjee & Newman, 1993). For financial service providers, greater access to finance supports diversification, improves their expected benefits, and expands their potential customers, allowing them to counteract the lowest benefits recorded in the corporate and governmental spheres (Chauvet and Jacolin, 2017).

Given the foregoing, financial inclusion is the source of growth and social inclusion intended to achieve “a decent life for all” as conceived by the United Nations in their Millennium Declaration (2000) and as attested by the 2030 Agenda for Sustainable Development (UN, 2016).

RESEARCH METHODOLOGY

The theoretical model

The theoretical framework for economic growth and financial inclusion having been studied, the models that allow the testing of the relationship between them are built in this section. For this purpose, the neoclassical production function and the R. Solow (1956) and T. Swan (1956) model are taken as the starting point, the contributions of R. J. Barro and X. Sala-I-Martin (1995) subsequently being included, simultaneously incorporating the variables to the model that reflect human capital according to R. E. Lucas Jr (1988) approaches, and capital or natural resources (Sala-I-Martin, 2006). Finally, the financial development variables are integrated following the study of N. G. Mankiw, D. Romer and D. Weil (1992), due to their importance as a means to transfer savings to productive investment or, in other words, capital formation. Including such variables also allows the assessment of whether the financial system influences countries' productive activity as its dimension increases or not, or whether it does so more effectively through greater inclusion or not.

This research study is based on the neoclassical production function, where the economy's product increases as its productive inputs, in its simplest version labor (*L*) and capital (*K*), do in each given period, namely as follows:

$$Y_t = F(K_t, L_t) \tag{1}$$

The production factors are partially replaceable, which means that, in addition to its being continuous and sufficiently differentiated, the function *F* meets Inada's conditions, namely:

$$\frac{dY_t}{dK_t} > 0 \quad \frac{dY_t}{dL_t} > 0 \quad \frac{d^2Y_t}{d^2K_t} < 0 \quad \frac{d^2Y_t}{d^2L_t} < 0 \tag{2}$$

$$\lim_{L_t \rightarrow 0} \frac{dY_t}{dL_t} \rightarrow \infty \quad \lim_{K_t \rightarrow 0} \frac{dY_t}{dK_t} \rightarrow \infty$$

$$\lim_{L_t \rightarrow \infty} \frac{dY_t}{dL_t} \rightarrow 0 \quad \lim_{K_t \rightarrow \infty} \frac{dY_t}{dK_t} \rightarrow 0 \tag{3}$$

where

$\frac{dF}{dX}$ is the first partial derivative of *F*(*x*) to *x* and

$\frac{d^2F}{d^2X}$ is the second partial derivative of *F*(*x*) to *x*.

Therefore, the marginal product of the rival production factors is positive, though declining.

Additionally, as is often assumed in this type of analysis for simplification purposes, this aggregated production function has constant returns to scale, so the following condition is met:

$$\lambda Y_t = \lambda F(K_t, L_t) = F(\lambda K_t, \lambda L_t) \tag{4}$$

$$\forall \lambda > 0$$

According to this property, production simultaneously increases in the same proportion as the inputs involved in it.

To arrive at a dynamic growth model like the R. Solow (1956) and T. Swan (1956), in addition to the starting hypotheses on which the static function of neoclassical production is based, certain additional assumptions are also required.

On the demand side of a simple economy without the government or external sectors, production (*Y_t*) is either consumed (*C_t*) or invested (*I_t*). On the income side, the private sector is made up of families and businesses, either consumed or saved (*S_t*). Combining both identities, it follows:

$$Y_t = C_t + I_t = C_t + S_t \tag{5}$$

Subtracting consumption on both sides:

$$I_t = S_t \tag{6}$$

$$C_t = cY_t \tag{7}$$

$$S_t = sY_t \tag{8}$$

$$C_t = (1-s)Y_t \tag{9}$$

$$0 < c < 1 \quad 0 < s < 1$$

where c is a marginal propensity to consume and s to save. Both remain constant in the model and the assumption is empirically validated at least in the short run. The δ capital depreciation rate is also assumed to be constant, so the investment made by companies can be used to increase the capital stock or replenish its depreciation:

$$I_t = \left(\frac{dK_t}{K_t} \right) + \delta K_t \quad (10)$$

Applying all the previously defined constraints in the production function and matching it to demand:

$$Y(t) = F(K_t, L_t) = C_t + I_t \quad (11)$$

Replacing C_t and I_t with their respective value:

$$Y(t) = (1-s)Y_t + \left(\frac{\delta K_t}{K_t} \right) + \delta K_t \quad (12)$$

Then, net investment is represented by:

$$\left(\frac{dK_t}{K_t} \right) = sY_t - \delta K_t \quad (13)$$

where, together with the capital stock at the time t , it constitutes the capital acquired in the $t+1$ period, assuming s and δ to be the constants. In this model, investment is:

$$S_{K_t} = \left(\frac{\delta K_t}{K_t} \right) + \delta K_t = s_K Y_t \quad (14)$$

$$0 < s_K < 1$$

Besides, the population increases over time at a constant rate n , an assumption for simplification purposes, since in reality, population growth tends to slow down as countries advance in development; so, it would be an endogenous variable to the model, but in a scenario lasting for a longer term than that used in this study, as suggested by R. J. Barro and X. Sala-I-Martin (1995):

$$\frac{dN_t}{dt} \frac{1}{N_t} = n \quad (15)$$

This model is typically represented by the Cobb-Douglas production function with constant returns to scale:

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha} \quad (16)$$

$$\alpha < 1$$

where Y_t , K_t and L_t represent the product, physical capital, and labor, respectively, and A_t is the level of economic and technological efficiency, the function of the institutional framework, innovation processes, and technological progress. In short- and medium-term scenarios, the growth rate of this productivity factor is often regarded as an exogenous variable, but the model estimated in this paper is more restrictive, assuming the constant A to demonstrate that net capital investment in a broad sense and financial inclusion each provide economies with a growth path (Durán, 2018). This assumption is reasonable as it has been proven that the institutional framework and technological development change at a relatively slow pace (North, 1990, 71-72):

$$A_t = A \quad (17)$$

However, A continues to influence the model production function, but not its growth. In order to estimate the economic growth model potentially comparable between countries, it is necessary to express its variables in *per capita* terms and simplify modeling, L is assumed to be equal to the total population N , meaning that the entire population is taken into consideration and that the whole population contributes to an increase in production.

$$y_t = \frac{Y_t}{L_t}; kt = \frac{K_t}{L_t} \quad (18)$$

where y_t is the product *per capita* and kt is the working capital ratio given A . Leveraging the existence of constant returns to in the production function, the following is obtained:

$$y_t = \frac{Y_t}{L_t} = F\left(\frac{K_t}{L_t}, \frac{L_t}{L_t}\right)$$

$$y_t = F(kt, 1) \tag{19}$$

The next step is the capital concept expansion by adding the variables suggested by R. Solow (1956) and T. Swan (1956) and following R. Levine (1991) in addition to physical capital (K_t), as human capital (H_t) natural capital (RN_t) and financial development (F_t) following T. Beck, A. Demirgüç-Kunt and R. Levine (2007):

$$y_t = A\Omega t^\infty L_t^{1-\alpha} \tag{20}$$

$$\Omega t = K_t + H_t + RN_t + F_t \tag{21}$$

In this model, investment in different productive inputs is represented as follows:

$$S_{K_t} = s_K Y_t; S_{H_t} = s_H Y_t; S_{RN_t} = s_{RN} Y_t$$

$$S_{F_t} = s_F Y_t \tag{22}$$

$$0 < s_K; s_H; s_{RN}; s_F < 1$$

S_{K_t} ; S_{H_t} ; S_{RN_t} ; S_{F_t} and S_{F_t} symbolize investment in physical capital, human capital, the preservation of natural resources, and financial development, respectively, so savings should be distributed among these rival investments:

$$S_t = S_{F_t} + S_{K_t} + S_{H_t} + S_{RN_t} + S_{F_t} \tag{23}$$

$$S_t = s_{Y_t} \quad 0 < 1 < s$$

taking the Cobb-Douglas function, keeping the assumptions and given A:

$$y_t = \frac{Y_t}{L_t} = \omega t^\alpha \tag{24}$$

$$\frac{dy_t}{d\omega t^\alpha} = \infty \omega t^{\alpha-1} \tag{25}$$

where, given the A factor productivity level, ωt it is expanded capital *per capita*, which includes all forms of capital:

$$\omega t = kt + ht + rnt + ft \tag{26}$$

All forms of capital are similarly accumulated in this simplified model. Net investment in human capital *per capita* can be expressed as investment per person minus that necessary to maintain the acquisition of human capital and counteract its depreciation rate represented by the loss of knowledge arising from oblivion and obsolescence derived from advances in science. In turn, net investment in natural resources *per capita* results from additional investment in the preservation of natural resources *per capita*, as these are deteriorated by their exploitation and population growth. Finally, investment in financial coverage *per capita* is the additional investment necessary to maintain financial deepening or financial inclusion and counteract its depreciation rate represented by technological obsolescence and wear of its access channels.

This reaches the production function that positively depends on physical capital, human capital and natural capital. Also, the higher the level of financial deepening or inclusion (the one with higher significance given the economic efficiency), the greater the growth of the economy. Applying logarithmic differences in the production function, economic growth can be expressed as the different input function, where coefficients represent elasticities:

$$\frac{dY}{dt} \cdot \frac{1}{Y_t} \tag{27}$$

By development, the temporal trajectories of these variables *per capita* can be described by the following equation when A is fixed as in this model:

$$\ln \ln y_t = \alpha \ln \omega t \tag{28}$$

However, since an economy's different types of capital actually grow at different rates and given the fact that their depreciation also differs from one another ($\delta_{\omega t} = \delta_K + \delta_H + \delta_{RN} + \delta_F$; $\delta_K \neq \delta_H \neq \delta_{RN} \delta_F$) it is desirable that

the logarithm of broad capital *per capita* should be broken down into its various components given A, so that each of them has a different coefficient. Although and while being simplistic, this decomposition is useful when this paper is concerned if interest is considered to rely on the sign and significance of the different inputs of this extended production function, not on the interpretation of its coefficients, which would be more complex.

$$\ln yt = \zeta \ln kt + \varphi \ln ht + \rho \ln rnt + \mu \ln fit = a \ln ot \quad (29)$$

The estimated model

In order to make an estimation of the theoretical model, the panel data methodology is used. In the first phase, the Breusch and Pagan test is performed so as to evaluate whether the panel data are preferred to the pool data or not. Once individual effects have been checked, their treatment is defined as either fixed or random and the heteroscedasticity and autocorrelation detected by the Wald and Wooldridge tests are respectively corrected using an estimated static panel with the Standard Errors Corrected for Panel methodology (*xtpcse*):

$$\widetilde{\ln yt} = \xi \ln \widetilde{kt} + \varphi \ln \widetilde{ht} + \rho \ln \widetilde{rnt} + \mu \ln \widetilde{fit} + \mu_{it} \quad (30)$$

where the variables expressed in the logarithm and in real and *per capita* terms represent the product of the *i* country in the time $t(\widetilde{y}it)$; the formation of the physical capital of the *i* country in the time $t(\widetilde{h}it)$; the human capital of the *i* country in the time $t(\widetilde{h}it)$; the natural resources of the *i* country in the time $t(\widetilde{rnt}it)$; the financial development of the *i* country in the time $t(\widetilde{f}it)$ and the disturbance term (μ_{it}). While this model already includes a dynamic component represented by savings and investment, it is necessary to move towards a more complex methodology in order to model the intertemporal dependence on economic growth.

For the dynamic estimation, the Generalized Method of Moments (GMM) is used, namely the *xtabond2* D. Roodman model (2006). To rule out the over-identification of the model, the Hansen test is performed, since the weight heteroscedastic matrix

has been used in the estimation of the model, valid for the estimators with a robust variance and in two stages, the more efficient estimate that avoids its bias. It is also verified that the errors are not serially correlated using the *Arellano and Bond test*.

To prevent a possible over-identification of the model that might arise from the limited number of the countries included in the sample once different databases have been integrated, a mechanism suggested in the specialized literature is used, which consists of restricting the number of the lags of the dependent variable to be used as the instruments to 2 (Stata, 2019). The finally estimated equation is as follows:

$$\begin{aligned} \widetilde{\ln y}it &= \eta \ln \widetilde{y}_{i,t-1} + \xi \ln \widetilde{k}_{it} + \varphi \ln \widetilde{h}it + \\ &\quad \rho \ln \widetilde{rnt}it + \mu \ln \widetilde{f}it + \varepsilon_{it} \\ \varepsilon_{it} &= \mu_i + v_{it} \quad \mu_i = v_{it} = E(\mu_i v_{it}) = 0 \end{aligned} \quad (31)$$

where variables are in the logarithms and expressed in real and in *per capita* terms. The disturbance term (ε_{it}) includes two orthogonal components: fixed effects (μ_{it}) and idiosyncratic disturbances (v_{it}). In the simplest possible way, this captures double causality between growth and its determinants, according to the endogenous growth literature. The results are presented in the next section.

EMPIRICAL DATA, ANALYSIS, AND DISCUSSION OF RESULTS

In this section, the recent trends in the world economy and financial inclusion are described and their interactions are then analyzed estimating the models and confirming whether they maintain a significant statistical relationship for the sample and the study period controlling for other factors.

Empirical evidence: Economic growth and financial inclusion

Over the past decade, industrialized countries have suffered from the consequences of the financial

crisis, and the disappointing recovery gives rise to the concerns that B. Eichengreen (2015) calls secular stagnation, the idea that poor demand and productivity stagnation condemn advanced countries to chronically slow growth. Even when the global economy grew 3.4%, this figure was due to dynamism perceived in emerging countries, such as China and Asian tigers, and slow growth in other Latin American countries and the Caribbean: the average 0.3% per annum between 2014 and 2019 (ECLAC, 2020). The COVID-19 pandemic has highlighted the global inability to take the position of solidarity, and the growing inequality inside and between countries that has accompanied it, which has given rise to social instability, migratory flows, populist responses, and protectionist and xenophobic reactions as well.

This global turbulence also reflects popular discontent with the prevailing economic order caused by the labor frictions derived from technological change and the prominence of new players, aggravated by the inability of governments to alleviate them. Since the Great Recession of 2008, for example, the benefits attributed to the gradual “financialization” of the economy have been questioned and greater inclusion has been proposed instead. According to the figures from the Global Findex survey (Demirgüç-Kunt, Klapper, Singer, Ansar & Hess, 2018), bank accounts are currently the main access to the more sophisticated financial services that allow more comprehensive financial inclusion. In general, this has improved in recent years although the performance of its various indicators differs. While the number of ATMs, current accounts, and loans is growing, commercial bank branches are continuing at the levels like those of 2013 in emerging countries and have even fallen in the United States and Europe. This trend reflects the cost-cutting measures of banks, as well as the gradual deepening of digital financial services. In Mongolia, for example, the volume of operations through mobile banking and the Internet quadrupled between 2015 and 2018 (IMF, 2020).

According to the World Bank (2020), more than 70% of adults worldwide have a financial account. However, coverage broadly varies from one place to another, while in Europe and Central Asia, everyone has an

account and 35% of adults have a bank loan; in Sub-Saharan Africa, these figures do not reach 25% and 5%, respectively. Advances in financial inclusion are also heterogeneous: between 2014 and 2017, a total of 515 million adults opened an account; whereas the countries such as Georgia or Namibia recorded significant progress, on the one hand, Burma or Pakistan did not make any, on the other.

The progress made in gender equality and loans to small & medium-sized enterprises (SMEs) is disappointing. There has been no change in the gender gap since 2011: 72% of men own a bank account in comparison with only 65% of women, this gap increasing by two percentage points for developing countries (Demirgüç-Kunt *et al*, 2018). In a similar fashion, the International Monetary Fund’s Business Surveys show that bank funding to SMEs has been stagnating at 6% of the GDP since 2015 (IMF, 2020).

Selecting the sample and the model variables

In this section, the two selected empirical models estimated for the period from 2009 to 2019 with a sample of 40 countries (Albania, Argentina, Saudi Arabia, Bangladesh, Belize, Brazil, Colombia, Costa Rica, Croatia, Ecuador, Egypt, El Salvador, Estonia, The Philippines, Ghana, Hungary, Israel, Italy, Latvia, Malaysia, Mali, Moldova, Namibia, Pakistan, Paraguay, Peru, Poland, Dominican Republic, the Republic of North Macedonia, Rwanda, Senegal, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, the United Arab Emirates, and Uruguay) are presented. The sources of information are the World Bank (2020) and the IMF (2020). The integration of the series from different sources forces us to dismiss series, years and countries, and estimate some data using linear extrapolation (Armstrong & Collopy, 1993). Below is a brief synthesis of this variable selection process.

The first step was to define the dependent variable based on the specialized literature: the real GDP in *per capita* terms adjusted by the purchasing power parity and chosen due to its expanded use as an indicator in economic growth research.

In regard to the explanatory indicators, the control variables used were the workforce with at least high-school education as a percentage of the total labor force and as the human capital proxy and consistently the most significant among many others in all the estimates; the real stock of physical capital and, as the natural capital proxy, the real *per capita* income obtained from its exploitation whose sustainability is implicit in its annual growth stability and, therefore, in the sign and significance of its coefficient. First, an attempt was made to include the representative variables of social capital, the formal (institutions) and the informal (cultural traits) ones. In addition to the problems derived from the availability of information, however, its scarce significance seems to confirm, as pointed out by D. North (1990, 71-72), that the social capital represented by the restrictions designed by the human beings that shape the interaction and reflect the culture of a society are transmitted to individuals throughout their lives and change at a relatively slow rate, which makes them explanatory but to a very small extent in the growth models with a relatively short period of analysis, such as that of this research. Another possible explanation for the low significance of this category of the variables reflects in its high correlation with the other ones in the model, as suggested by A. Bassanini and S. Scarpetta (2001).

Finally, the variable of interest is included in the model, that variable being the financial development indicator. After multiple estimates, coverage was the indicator significantly above financial penetration: depositors with commercial banks per 1,000 adults, which refers to the number of the deposit account holders with commercial banks and with the other resident banks operating as the commercial banks nonfinancial resident corporations (public and private) and households. For many countries, the data cover the total number of the deposit accounts due to a lack of information on the account holders. The major deposit types are checking accounts, savings accounts, and time deposits. This is the most broadly used indicator of the basic financial inclusion (Sarma, 2008).

In this regard, it should be noted that, even though the other available indicator of financial coverage per inhabitant - borrowers from the commercial banks as

per 1,000 adults - might more accurately have reflected the use of financial products, it revealed inconsistent results among the countries, possibly because it might also reflect the liquidity or solvency problems faced by both individuals and companies, as indicated by B. S. Bernanke and M. Gertler (1989), for which reason the same had to be discarded.

The results of the empirical analysis and discussion

For a static analysis, an *xtpcse* panel was estimated with the Prais-Winsten equation (Stata, 2019) upon detecting the first-order autocorrelation and heteroscedasticity.

The estimate is presented in Table 1. The model passes the tests for the nonexistence of the omitted or redundant variables and not the over-identification tests. In the static model, the high explanatory power of financial inclusion confirms those insights found by the authors such as S. P. Sinclair (2001), among others. As expected, the significance of the education variable confirms the importance of human capital, indicated by the authors such as C. Mulligan and X. Sala-I-Martin (2000). Also, the explanatory power of physical capital is consistent with the previous studies (Bassanini & Scarpetta, 2001). Finally, the model shows that the existence of natural resources, even more so their sustainable exploitation, has a positive and significant effect on economic dynamism, which is also consistent with the studies by P. M. Romer (1990), among others.

The dynamic estimation by *xtabond2* is carried out by conducting a robust analysis and in two steps, the results ultimately being similar to those obtained in the static panel. Once the absence of the over-identification of the model has been analyzed, the results are validated, which allows the confirmation of its robustness and more clearly expresses the endogenous character of economic growth.

As shown in Table 2, the explanatory power of the model and its components is high, except in the case of the constant that is included in the Table as the results are not altered.

Table 1 Static PCSE panel results

Variables (expressed in real terms and per capita)			
Dependent:			
$\widetilde{\ln y_{it}}$	(domestic product)		
Explanatory		Coefficient	SE (hetero corrected)
C	(constant)	2.31230 **	0.03447
$\widetilde{\ln \tilde{k}_{it}}$	(physical capital)	0.00297 ***	0.00220
$\ln \tilde{h}_{it}$	(human capital)	0.00325 ***	0.00624
$\widetilde{\ln r_{it}}$	(natural capital)	0.49082 ***	0.00262
$\widetilde{\ln f_{it}}$	(financial inclusion)	0.01416 ***	0.00575
R ²			0.9998
Wald			
Chi ²		87 397.09	
Prob > Chi ²		0.0000	
Hausman			
Chi ²		772.25	
Prob > Chi ²		0.0000	
Observations		440	
Countries (panels)		40	

Regression Prais-Winsten xtpcse het c (ar1). * Significant at 10%; ** 5% and *** 1%.

Source: Author

In other words, greater financial inclusion promotes economic growth by allowing economic agents, particularly lower-income families and smaller companies, to alleviate their liquidity constraints and thrive. This increased economic activity in turn leads to greater financial inclusion, a product of a larger number of access channels, more comprehensive financial education and literacy, and the income levels that promote greater banking, among other factors. In a similar fashion, a greater accumulation of physical capital and human capital and the existence and sustainable exploitation of natural resources induce a greater economic activity, which in return allows greater investment in these productive factors. The results coincide with those obtained by P. M. Romer (1990), among others.

CONCLUSION

For more than one whole decade, the performance of the world economy has manifested deep disparities between countries and the stagnation of the industrialized world. The trends such as

environmental damage, technological friction, and the prominence of new players in the global sphere have been exacerbated by governments' inability to deal with it and prepare their citizens to confront them. The Great Recession that put an end to the economic dynamism supported by a financial and real estate expansion, and the policies having been implemented since then, have entailed high social costs, such as the partial dismantling of social safety nets and greater job insecurity. The growing inequality within and between nations has been the fuel of global discontent, migration, populist governments, and protectionism.

The world requires high capital levels, which must equally be constituted because productivity gains will maintain the necessary momentum and social peace to create the virtuous circle that directs the global economy to sustainable growth and inclusive development to the extent that will enable a larger number of people to benefit from them. The recent literature has emphasized the productive nature of this new vision of progress: taking care of the environment and equity is not only the expected result of growth, but also an indispensable input for its sustainability.

Table 2 Dynamic panel results

Variables (expressed in real terms and <i>per capita</i>)		Coefficient	WC- Robust standard error
Dependent:			
$\widetilde{\ln y_{it}}$	(domestic product)		
Explanatory			
C	(constant)	3.33724	0.43836
$\widetilde{\ln y_{it-1}}$	(national product of the previous year)	0.14064*	0.08307
$\widetilde{\ln k_{it}}$	(physical capital)	0.03537**	0.01266
$\widetilde{\ln h_{it}}$	(human capital)	0.00174***	0.00151
$\widetilde{\ln rn_{it}}$	(natural capital)	0.30831**	0.02818
$\widetilde{\ln f_{it}}$	(financial inclusion)	0.01361***	0.00868
Test de Wald χ^2	Who ² 2 253. 88	Prob > χ^2	0.00000
Arellano Bond in	Ar (1)	z= 1.8409	Prob>z 0.0656
first differences	Ar (2)	z= 0.3214	Prob>z 0.7479
Observations/Groups		320/40	
Instruments		20	

Dynamic Panel Arellano Bond GMM - Two-Step-Robust Standard. *Significant at 10%; ** 5% and *** 1%

Source: Author

After the validation of the originally proposed hypothesis, the research study results provide the statistical evidence that economic growth positively and significantly depends on the accumulation of capital (physical, human, and natural), supported by the mobilization of the resources for productive investment through savings represented by financial inclusion. Social capital is the core part of this process although this has not explicitly been demonstrated in this study due to the scarce availability of the indicators and their low variability in the time horizon considered, but above all because it constitutes a prerequisite for promoting the infrastructure development, social inclusion (human capital and financial inclusion), as well as the sustainable exploitation of natural resources: all these factors are already included in the models estimated in the present study.

This paper, however, goes even further: by following the trajectory of the theoretical framework of economic growth, it starts from the estimation of the static panel based on R. Solow (1956) and T. Swan (1956)

and ends with the dynamic panel that incorporates the principles of the endogenous growth models. The estimation of both is consistent, which makes it possible to verify the robustness of the selected variables, which retains their individual and joint significances. Then, the most significant contribution made by this research study reflects in the provision of the quantitative evidence of the endogenous nature of economic growth and the importance of inclusive financial intermediation. By allowing economic agents to find solutions to liquidity restrictions and channel savings to productive investment, financial inclusion and social inclusion more broadly speaking result not only in the desired achievement of economic growth, but in the input required for its future sustainability, too. Hence, this paper confirms its leading role in the achievement of the Millennium Goals by being part of the Sustainable Development Goals (SDGs).

In contrast to traditional financial deepening (loans and/or deposits on Gross Domestic Product) and their eventual diminishing returns, financial inclusion can be a more feasible engine for economic growth

helping individuals to reduce their transaction costs and increase safety over cash or informal providers, promoting entrepreneurship, the business activity and social mobility through greater access to education, risk coverage and financial losses withstanding. As the OECD (2018, 9) points out, these benefits lead to the improvements of human and social development, economic growth, job creation as well as reductions in poverty and income inequality rates at the country level, whereas a diversified deposit base induces increased stability and creates a resilient financial system.

The methodology applied in this research study, as well as the integration of various databases, can be extrapolated to other study frameworks both geographically and temporarily. The reliability of the figures, as well as the diversity of the countries included in the analysis, provide relevant information in the theoretical and empirical fields. Its main value is to incorporate the unconventional indicators from different knowledge areas that interact so as to better understand the sources of growth and wellbeing.

This paper is limited with respect to the used definition of narrow or human capital that does not cover the different ways in which the same is formed in the formal and informal fields, nor does it include the quality of the years of study or the differences existing within the same country. Besides, the sources of information restrict the subject matter of the study to the countries for which data are moderately available, which could lead to a sample bias, although the excluded countries together correspond to both the industrialized and the emerging worlds.

The weaknesses attributed to the panel data analyses are an additional limitation to the paper, whereas the identification of the determinants and the general trends presupposes that the economies share the same function and its relative stability over time.

In the end, the financial inclusion indicator used in the paper (namely the depositors with the commercial banks as per 1,000 adults) is the indisputable limitation of this paper given the fact that it is focused on measuring access more than the depth of use of these services. This research study had to settle for

this proxy due to a lack of the more precise financial inclusion indicators of the international scope, given the fact that the alternative available indicator connected with access to loans could not be used as it translated not only the inclusion of individuals and firms, but also their financial problems.

This paper, however, is the starting point towards a deeper understanding of the financial inclusion process and the different channels through which it internationally contributes to economic dynamism. Although some of this information is already available for some countries to use, it will be necessary to wait for a few years to generate the time-series cross-sectional data that enable its statistical treatment.

Hence the following research questions are considered as relevant for future studies How are the different stages of financial products used by individuals and companies accurately measured? Which of these financial products and services more effectively contribute to economic growth and through which channels do they make such contribution?

It is crucial for designing a public policy that such a policy should more precisely identify the different indicators that define financial inclusion and represent the different levels of the intensity of the use of the instruments of this kind. A more detailed study should also be carried out, separating individuals from companies, people by their respective gender and age, or firms by their respective size and sector, the information that exists, but in an incipient manner, requiring a few years to obtain the cross-sectional and time-series data that enable their statistical treatment.

Even though few reliable indicators have been established to assess its impact so far, the digital age has had the COVID-19 pandemic constituted as an inducer of low-cost financial inclusion and an opportunity for more inclusive future growth as an unprecedented accelerator. On the supply side, the provision of financial services has been expanding driven by the product development that intensifies competition, reduces transaction costs and promotes regulatory arbitrage. On the demand side, recent trends in labor markets have been drivers of entrepreneurship and the home office, and have been

creating new preferences for access to and the use of financial services.

Governments can promote financial packages on the digital platforms that provide users with the same, starting with opening an account, allowing access to more sophisticated low-cost products, such as loans, loan information societies, factoring and financial leasing, among other things. They may also include interactive diagnostic tools, as well as financial education courses. These programs can be realized through the entities that operate as intermediaries, such as business development centers, development banks or local agencies, no matter whether they are public or private.

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COOPERATION CULTURE AMONGST KNOWLEDGE WORKERS: A CASE STUDY OF THE IT SECTOR IN POLAND

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The knowledge workers who form the core of the crew of a modern organization have emerged. They have a unique position in an enterprise, which complicates the incentive system building process and managers' formal impact on their activities. With a „deep-smarts” status, they adopt the attitudes that restrain or even intentionally hide knowledge flow. Providing support to organizational culture is crucial for motivating knowledge workers to contribute to an organization with their knowledge. This research paper is mainly aimed at identifying knowledge workers' preferences for organizational culture. The paper focuses on indicating the directions of the development of Polish IT companies' organizational culture in line with the attitudes of the professionals aiming to stimulate their involvement in the implementation of specific knowledge diffusion subprocesses. The paper is based upon the empirical research conducted on a sample of 105 IT sector knowledge workers in Poland in 2020.

Keywords: organizational culture, knowledge worker, knowledge diffusion, cooperation, IT sector

JEL Classification: D23, D64, D83, D91

INTRODUCTION

As a result of global changes in economic and social life and in how business is done, a modern employees' permanent learning and knowledge sharing model was formed (Costomitis, 2018). Knowledge society emerged and professionalized

itself (Tammelin, Koivunen & Saari, 2017) and the representatives of new professions (i.e. knowledge workers (Drucker, 1999) or cognitive workers (Berardi, 2013)) simultaneously also appeared.

These individuals are an organization's most important resource (Kucharska & Erickson, 2020), because they have the most valuable, highly contextualized, specialist and uniquely personalized knowledge (Drucker, 1999; Olsen, 2016) which is critical intellectual capital at the firm level. Therefore,

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they have a privileged position in enterprises essentially relying on the sum of their knowledge (Olsen, 2016) and managers focus their efforts on stimulating the processes of the conversion of individual knowledge into organizational knowledge. Their goal is to assimilate personalized knowledge into as many employees and other stakeholders as possible. They also aim to retain it and prevent losses emerging at the departure of key specialists (Sumbal, Tsui, Durst, Shujahat & Ali, 2020).

Knowledge workers are fully aware of their position in the organization and the values they generate. Therefore, they are more demanding than other employees (Olsen, 2016), which complicates the structure of an adequate incentive system (Lee & Lim, 2015) and reduces the power of managers' formal influence. As "deep-smarts" (Sumbal *et al*, 2020), they often live "informal life" and are not tied to any particular organization (Imafidon, 2009). They consider knowledge as power and may not be willing to entirely share their assets (Jayasingam, Govindasamy & Singh, 2016). Then, they may deliberately limit knowledge diffusion, or they may even deliberately conceal knowledge (Arain, Bhatti, Hameed & Fang, 2019). This is especially true when speaking about tacit knowledge (Holste & Fields, 2010) and concerns mainly knowledge sharing (Heo, Toomey & Song, 2019). Therefore, detailed tasks for managers to perform include providing professionals with the optimal development conditions and triggering the attitudes of openness and voluntary cooperation with all stakeholders. It is these premises that made it pertinent to understand the behavioral outcomes of the knowledge worker (Jayasingam *et al*, 2016).

Essentially, organizational culture is the most powerful tool for understanding people's behavior in companies (Slijepčević & Kristić, 2019) and links to employees' beliefs, values and attitudes. It is an intangible resource determining the effectiveness of knowledge management in a company (Sun, Wang & Gu, 2019), including the inclination to share knowledge (Bošković & Stojanović-Aleksić, 2018) and the organizational innovation level at the same time

(Pietersen, 2017). Organizational culture is a factor beyond the level of a company's organizational capital and, consequently, the value of the entire organization. It also determines job satisfaction and job quality. Therefore, organizational culture is recognized as a stimulus for organizational knowledge flow, an organization's competitive position and market success (Sun *et al*, 2019).

Stimulating knowledge workers' productivity also measured by specialists' active participation in the knowledge diffusion process is the main challenge for managers (Jabagi, Croteau, Audebrand & Marsan, 2019), which may even be more challenging than what is portrayed in knowledge management theories (Jayasingam *et al*, 2016). It can assume a formula consisting of the four subprocesses - knowledge acquisition (obtaining knowledge from a variety of internal and external sources), knowledge disclosure (its targeted transfer), knowledge dissemination (converting specific knowledge into a public resource) and knowledge sharing - a two-way knowledge transfer in the communication process (Mikuła, 2017).

Supporting organizational culture is vital in order to motivate knowledge workers to contribute their knowledge in an organization (Heo *et al*, 2019). Recognizing knowledge workers' attitudes at a very early stage will enable an organization to make better decisions and ensure end users' commitment throughout the development process (Al-Busaidi & Olfman, 2017). In turn, high-quality employee motivation can contribute to an organization's long-term success by supporting employees' well-being and performance (Jabagi *et al*, 2019). Therefore, it is reasonable to concentrate efforts on shaping such an organizational culture that meets the expectations of intellectual employees related to their desired comfort zone. Providing them with an optimal environment to perform their work in triggers an attitude of openness in terms of their knowledge diffusion, which contributes to the development of organizational knowledge resources and their conversion into structural capital, thus winning a proper competitive position of the entire organization and increasing its value.

The main research goal of the paper is to identify knowledge workers' actions and attitudes in terms of cooperation, aimed at professional knowledge diffusion rooted in enterprises' organizational culture specialists work in. In order to achieve the identified goal, the knowledge dispersion constituting subprocesses were analyzed. The weight of the individual components that create a cooperation's organizational culture across generations was also verified, with the generation's affiliation of the knowledge workers included in the survey adopted as a criterion. The study is also aimed at indicating which managerial activities and attitudes stimulate professional knowledge transfer and to what extent they are implemented.

In line with the set research goals, the following scientific hypotheses were adopted in the study:

- H1: When implementing knowledge diffusion individual subprocesses (knowledge acquisition, disclosure, dissemination and sharing), knowledge workers follow different rules for each of them.
- H2: In professional knowledge diffusion within various groups of knowledge agents (among specialists, between knowledge workers and the staff, between knowledge workers and cooperators), the hierarchy of values within individual collaboration principles is diversified.
- H3: The importance of specific values and rules governing cooperation in knowledge diffusion differ for the representatives of each generation of knowledge workers.

These theoretical assumptions led to the following research questions:

- What principles (norms and values) of a cooperation's culture describe the organizational behavior of the professionals focused on knowledge diffusion?
- Does knowledge workers' organizational behavior based upon the cooperation's culture differ among the groups of the knowledge agents participating in knowledge diffusion?
- What activities supportive of professional knowledge diffusion are undertaken by the management of the organization, and which activities should be taken?

In order to verify the formulated hypotheses and find answers to the research questions, the triangulation method was used: qualitative and quantitative studies were combined in order to indicate the relationships between the obtained results by focusing on a specific group of respondents - the knowledge workers of the IT sector in Poland.

The paper is structured into five interrelated sections. The following Section Two is dedicated to a literature review and contains a synthesis of the literature extant in the research field. In Section Three, the choice of the research methodology is discussed, and the research sample is described. Section Four deals with the research results and discussion thereof. This part is followed the Section Five, in which concluding remarks and recommendations, as well as a presentation of the limitations of the research study and the identification of the directions for further scientific research, are given. Finally, theoretical and practical contributions to the inferences in terms of shaping the culture of a cooperation optimal for knowledge workers are highlighted.

LITERATURE REVIEW

The term „knowledge worker” was probably introduced by P. Drucker (1999), who had postulated that knowledge workers and their productivity were the most valuable assets of the organization of the 21st century, because their work essentially implies converting information to knowledge (Lee & Lim, 2015) by using the own potential to add some value to the organization. Such value is created through their ideas, analyses, judgments, syntheses, and designs (Horribe, 1999) and the production of knowledge-based goods and services (Erickson, Jarrahi, Thomson & Sawyer, 2014). They apply theoretical and analytical knowledge acquired through formal education so as to develop new products or services in order to

facilitate continuous learning (Scott, 2005) using knowledge as an input needed to obtain a knowledge-based intellectual output (Razzaq, Shujahat, Hussain, Nawaz, Wang, Ali & Tehssen, 2019). Their work can be unpredictable, multidisciplinary, nonrepetitive, nonroutine and expert work, which involves design and technical expertise, idea generation and creative problem solving (Tammelin *et al*, 2017). K. Sveiby (1997) considered knowledge workers as those who were highly qualified and highly educated professionals. Therefore, formal education (Drucker, 1999) is assumed to be the condition needed to be met for entering this cognitive worker cohort (Berardi, 2005) and specialists are nowadays assumed to be the core employees of a modern and successful organization (Aydogmus, 2019).

The literature offers at least three different points of view, explaining what a knowledge worker is (Gaižauskiene & Tunčikiene, 2016). The term „knowledge user” usually works as a theoretical construct describing the role played by specific intellectual employees in the organization rather than reflecting their assignment in the organizational structure. Most often, it is a conceptual approach, which sees knowledge workers as the most important, unique employees for an organization because of their specific style of working with knowledge. Therefore, knowledge workers are often characterized in a descriptive manner, pointing to their peculiarities and their specific employee attitudes (Lee & Lim, 2015; Olsen, 2016). They have broad and unique expertise, as well as interpersonal competences. They focus on developing personalized, unique knowledge resources and are oriented towards building relationships and extensive professional contacts in order to exchange knowledge. They, however, work in hermetic trust circles, in two parallel worlds - the virtual and the real. In their case, interpersonal relationships and personal contacts are the most important (Holste & Fields, 2010). They look for specific groups of similar individuals, establishing practitioner (Butler, 2016) and expert (Razzaq *et al*, 2019) communities. Moreover, they are independent workers with an innovative attitude. They are self-reliant and mobile in their professional activities.

As a heterogeneous group, specialists can be classified into different categories of intellectual workers (Lee & Lim, 2015). The fact that they form peculiar cohorts is also emphasized (Aydogmus, 2019) because the effective and efficient management of knowledge workers (which should be unique) belongs to the most difficult problems faced by an enterprise (Drucker, 1999; Imafidon, 2009; Jabagi *et al*, 2019). As a consequence, a relationship between the organization and knowledge workers should be formed (Jayasingam *et al*, 2016) based on mutual commitment, mutual care, interdependence, reciprocity and fairness (Tsai, 2018). It is only then that they tend to share their unique knowledge and incorporate this form of individual knowledge into organizational knowledge (Jayasingam *et al*, 2016).

The unique role organizational culture plays in the knowledge-based economy stems from the special importance of social communication as a platform for creating a network of interpersonal and interorganizational collaboration for the implementation of *ad hoc* projects.

Organizational culture is predominantly considered to be an attribute strongly associated with the specificity of a concrete organization, grounded in the values, beliefs, and assumptions held by organizational members (Dabić, Lažnjak, Smallbone & Švarc, 2019). It is typically understood as a shared social understanding resulting in the organization's adherents' conjoint assumptions and cliches (Savović, 2017). Therefore, it is defined as a common system of the beliefs, values, norms and customs that control and designate the organization's personnel's appropriate attitudes and behaviors (Zhang, 2018; Cillo, Garcia-Perez, Del Giudice & Vicentini, 2019). Consequently, it refers both to deeper and more enduring values and norms and to its recognizable manifestations, such as rules used in business, the code of conduct, jargon, myths, ceremonies and rituals, as well as the popular, used and characteristic ways of implementing vital management activities. For these reasons, E. Schein (1985) treats organizational culture as a set of leading values and norms of conduct specific for a certain organization, based on the assumptions that enable to understand the nature of reality. It manifests in the

external, artificial creations, or artefacts, of a concrete culture. Hence, it seems reasonable to take actions designed to diagnose the organizational culture aimed at inferring both its overt layer in the form of cultural practice, including its visible behavior patterns difficult to decipher and its recognizable manifestations and its hidden layer in the form of a core (root), concerning unwritten rules, assumptions, expectations, and invisible mindsets (Rampersad, 2003).

Therefore, apart from the technological aspects that complement knowledge transfer space, it is recommended that efforts should mainly be made with a focus on shaping appropriate organizational culture and creating the right context for the implementation of this process using knowledge. It is desirable that the existing organizational culture evolve towards a culture promoting knowledge as a collaboration-oriented exchange of intangible resources, especially knowledge sharing, fostering employee involvement and building trust, promoting teamwork, liberating a sense of community and ownership, enabling efficient communication, preferring openness to change and a proactive attitude.

For such cooperative relationships where transfer, including knowledge sharing, is a necessary activity, collaboration culture is both the foundation and the carrier of relational capital. It leads to the emergence of its specific subtype - the culture of sharing (Sun *et al*, 2019) and liberating pro-operational attitudes of especially intellectual workers (Jayasingam *et al*, 2016). The subject literature suggests that, in the process of building organizational culture which would be conducive to knowledge sharing (Stojanović-Aleksić, Erić Nielsen & Bošković, 2019; Sun *et al*, 2019):

- how knowledge sharing relates to the company's goals must be indicated,
- solutions appropriate to the organization's character must be chosen (creating artifacts such as social meetings, a common language or dedicated websites),
- an appropriate incentive system must be introduced in order to encourage knowledge sharing,
- the development of contacts for knowledge sharing must be enabled,
- time for an exchange of ideas and information within communities of practice must be provided,
- knowledge sharing must be linked to the generally accepted and deeply entrenched fundamental values instead of desirable values, and
- the people who can encourage and spur others to knowledge sharing must be put at the forefront of projects and provided with all possible forms of support.

Shaping knowledge-based cooperation culture is the main task to be done by an organization's managers. Without their support and commitment, it is difficult to consciously and orderly trigger a desired employee behavior. This thesis is confirmed by the results of the conducted analysis of the subject matter literature that clearly indicates the fact that providing support to managers and encouraging knowledge sharing significantly contribute to an increase in knowledge exchange and in the intensification of all the subprocesses of its transfer (Trequattrini, Massaro, Lardo & Cuzzo, 2019).

RESEARCH METHODOLOGY AND THE SAMPLE

Gleaning information from the aforementioned arguments, the IT sector was studied as one of knowledge-intensive sectors dominated by services, which drives the new economy (Tsai, 2018), but yet suffers from problems related to ineffective knowledge dispersion, especially concerning professional knowledge. The point of reference was the perspective of an intellectual worker as a knowledge agent. Three groups of stakeholders participating in knowledge flow were designated: the specialists, the staff and the cooperators. A total of four subprocesses constituting knowledge diffusion were also identified:

- knowledge acquisition,
- knowledge disclosure,
- knowledge dissemination and knowledge sharing.

As a result, the main goal of the study was to identify the elements of organizational culture that constitute cooperation aimed at diffusing professional knowledge in terms of an internal and external exchange between professionals and between specialists and the staff. In particular, the focus was on the identification of the managers' supporting activities and attitudes stimulating professional knowledge transfer. Knowledge professionals as a group of peculiar cognitive cohorts were additionally assumed to significantly differ from each other in their respective attitudes, values and preferences for the cooperation culture building principles due to the generation's individual members' affiliation. In order to verify this thesis, a comparison was made between the X generation and the other, younger generations (Y and Z)¹.

A three-stage research procedure was applied, including a direct semi-structured individual interview (the interview scenario), FIGO (focus group online interviews - one focus for each knowledge diffusion dimension: between the knowledge workers, between the professionals and the staff, between the specialists and the external stakeholders), as well as CATI and CAWI.

The first stage in the form of the conceptualization phase was based on a critical analysis and the evaluation of the literature on professional knowledge transfer and the vital role of organizational culture for its effectiveness. This phase was supported by a semi-structured individual interview, with an interview scenario as the leading tool. As a result, the critical components of the organizational culture of the cooperation established between the IT professionals were identified and the preliminary research hypotheses were formulated. The second stage (the concept verification phase) is the stage at which a focus group online interview was conducted with the purpose of consulting the formula questions and scrutinizing the level of understanding the terms used in them, simultaneously adapting the language and terminology used in the research tool to the mental models of specific employee generations of the IT specialists. Thus, the final research hypotheses were formulated, and the research questionnaire was

independently constructed constituting the starting point for the third stage - the in-depth research phase, based on the computer-assisted telephone interview and the computer-assisted web interview. The questionnaire was constructed specifically to verify the hypotheses of this study and the same included the questions dedicated to indicating which of the values and norms, beliefs and assumptions, as well as attitudes and standard rituals (selected as a result of the earlier stages of the qualitative research) were significant, characteristic, typical and representative for the specific generations of the knowledge workers in the IT sector in the context of professional knowledge transfer within the framework of its subprocesses. The respondents were asked both in the context of the existing and in the context of the preferred components of organizational cooperation culture defined in the language and terminology consistent with the cognitive schemas and stereotypes they represented.

Based upon the questionnaire that consisted of the 33 questions based on a 7-point Likert scale, the survey in question was carried out in the spring of 2020. As many as 105 fully completed questionnaires were obtained out of the 397 forwarded research questionnaires. As a consequence, a total of 437 single variables were obtained. Some of them related to the analysis and diagnosis of the overt and the hidden layers of organizational cooperation culture characterizing the professionals as a group constituting the Polish IT sector knowledge workers' cohort. The others referred to the conditions, attitudes, beliefs and activities in the knowledge dispersion field in the context of the knowledge dispersion of the specialists included in the survey. In the context of exploring the hidden layer of organizational culture, i.e. in the context of exploring its core, a decision was made to verify the basic assumptions, the unwritten rules and the expectations, as well as the standards and values in force in the knowledge community. In the case of exploring the overt layer, a decision was made to check the applicable rituals and customary procedures, or the activities considered as fundamental by the specialists. Such optics remained in line with E. Schein (1985) or the H. Rampersad (2003) organizational culture component concept.

The respondents themselves were professionals² (17.14% of them were women and 82.86% were men) with higher education (93.3%), representing the generations X (74.3%), Y (22.85%) and Z (2.85%), with the established professional positions (46.67% were the specialists, 23.82% accounted for the managers, 19.05% held the position of the director, 10.46% were Board members) and an average seniority of 17 years.

To verify the hypothesis about the existence of the relationships between the variables, a significance test for Spearman's rank-order correlation coefficient was done. The null hypothesis stated in the test assumed no relationship at all between the variables ($H_0: p_s = 0$). The fact that the null hypothesis at the significance level of $\alpha = 0.05$ was rejected allowed the adoption of an alternative hypothesis stating that there was a relationship between the variables ($H_1: p_s \neq 0$) (Aczel & Sounderpandian, 2018)³.

On the other hand, to compare the importance of the particular behavior standards for the employees belonging to different generations, the Wilcoxon-Mann-Whitney test was done. It enabled us to verify the research hypothesis saying that the individual samples had been taken from the populations with the equal medians (at the significance level $\alpha < 0.05$). It implied the ranking of the values of the dependent variable (from the lowest to the highest) in the study groups, which was followed by a comparison of the study groups (Aczel & Sounderpandian, 2018). The prerequisite for doing the test was measuring the analyzed variables on at least the ordinal scale. Although no group equality was required for the Wilcoxon-Mann-Whitney test, the representatives of the generations Y and Z were combined into a single group due to the fact that only three representatives of the generation Z took part in the study. The fact that the null hypothesis was rejected allowed us to demonstrate the fact that there were statistically significant differences between the generations X, Y and Z in terms of the studied variables.

The first two hypotheses were tested by means of Spearman's correlation coefficient, whereas the third hypothesis was verified by means of the nonparametric Mann-Whitney U group comparison test.

RESEARCH RESULTS AND DISCUSSION

Initially, a decision was made that the organizational cultures in which the knowledge workers included in the survey were operating would be explored and that the fact whether they were really knowledge-oriented and collaborative cultures would be verified. For that particular reason, the current and the preferred behavior standards were subjected to examination. The largest number of the studied knowledge workers indicated as binding and desirable those features that proved that the organizational cultures of their respective companies had been evolving towards knowledge-based cultures, or that they already represented one of their types, which included conduct mainly based on values, continuous training and education, shared responsibility, seeing knowledge sharing as a value, an open door policy, an accommodating attitude and the focus on the key employees (Pietruszka-Ortyl, 2020).

The obtained results confirm the specificity of the IT sector based on intangible resources and the service economy. What causes a concern is the professionals' preferences for the „knowledge = power” principle, which suggests that some knowledge agents consider knowledge to be the basis of their power, which may significantly limit its diffusion. In addition, the specialists want a greater focus on the key employees, values, shared responsibility, and greater incentives to share knowledge. Thus, the obtained answers set the course of shaping the organizational cultures of the enterprises which the respondents work in.

The study results allowed a more advanced analysis of the values and principles constituting the cooperation culture amongst the knowledge workers. The relationship between the individual components of the knowledge diffusion subprocesses and the indicated norms and values of cooperation culture was sought (Table 1), and the differences in the hierarchy of the indicated principles originating due to the generation affiliation of the respondents were verified as well (Table 2)⁴.

In the case of knowledge acquisition, the professionals basically focus on the key employees. They strive to acquire knowledge only from experts, simultaneously

underestimating informal communication, the use of an open-door policy and customer orientation. These attitudes are not broadly accepted, probably not so due to the applied knowledge protection strategies. Limiting oneself to loyalty towards the own domain is part of internal competitive attitudes and is rooted in the evolutionary market approach, where the strategic business unit is a quasi-enterprise, and the organization is not holistically treated as a bundle of resources.

The use of limitations in free and uncontrolled knowledge diffusion is also confirmed by the negative correlations of each subprocess of knowledge exchange with the attitudes of openness, customer orientation (-0.2253; -0.2037; -0.2086) and the open-door policy (-0.2342; -0.2785; -0.3175; -0.3463) being their emanations. Knowledge disclosure and knowledge dissemination are facilitated by a rigid division into organizational units (0.3720; 0.4302), the focus on the key employees (0.3523; 0.3194), unrestricted access to management (0.3519; 0.4164), cross-functional teams (0.3385; 0.3319) and authority based on expertise (0.3141; 0.2407). Such results confirm the fact that specialists are the main carriers of knowledge in an organization and indicate a clear polarization of activities carried out and the attitudes held by

knowledge workers. Membership in specific cohorts triggers collaboration, and affiliation with specific organizational units exerts an influence on internal loyalty and strengthens trust. At the same time, it restricts cooperation, reducing the chance to generate the non-personalized, innovative organizational knowledge based upon different perspectives, which is characteristic of cross-functional teams.

As a professional knowledge diffusion component, the knowledge sharing subprocess is considered to be the most important in the subject-matter literature. When participating in it, intellectual workers primarily pay attention to unrestricted access to the management (0.4433), limiting themselves to the hermetic units (0.4051) of similar professionals (0.2682). They also confirm treating knowledge as the foundation for power (-0.2505) and conservatism in unrestricted knowledge sharing, which goes beyond the community of trusted specialists. On the other hand, the indication of the principle of evenly distributed responsibility in each of the knowledge diffusion subprocesses (0.2371; 0.2516; 0.3319; 0.2661) signals the upcoming change in and the pursuit of a culture of shared responsibility capable of inducing a culture of cooperation and, ultimately, a culture of sharing.

Table 1 Spearman's correlation rank matrix for the variables of the knowledge diffusion subprocesses and the principles of the culture of sharing

Behavior standards	Acquisition	Disclosure	Dissemination	Sharing
Rigid organizational division	0.1321	0.3720*	0.4302*	0.4051*
Unrestricted access to management	0.2063*	0.3519*	0.4164*	0.4433*
Focus on key employees	0.4373*	0.3523*	0.3194*	0.2682*
Sharing knowledge as a value	-0.1601	-0.1601	-0.2096*	-0.2505*
Expert power	0.1725	0.3141*	0.2407*	0.0806
Informal ways of communicating	-0.2561*	-0.2496*	-0.3106*	-0.3098*
Equally distributed responsibility	0.2371*	0.2516*	0.3382*	0.2661*
Cross-functional teams	0.0652	0.3385*	0.3319*	0.1263
Customer orientation	-0.2253*	-0.1678	-0.2037*	-0.2086*
Open-door policy	-0.2342*	-0.2785*	-0.3175*	-0.3463*

*p < 0.05

Source: Author

In addition, the respondents' preferences for the importance of the specific behavior standards emanating a knowledge dispersion-based cooperation culture were explored. The anti-principles of the cooperation culture based on knowledge exchange were introduced as controlling. The highly negative results of the correlation coefficients for the compared groups only confirm the adoption of the cooperation-oriented attitudes and activities and the emergence knowledge-based cooperation culture (Table 2). An attempt was made to compare the generation X's representatives' priorities (1965-1979: group X) against those of the generation Y's (1980-1989) and the generation Z's (1990-) representatives included in a single comparative group (the YZ group).

As dominant in the research study and highly represented on the IT knowledge-workers (especially managers) market, the generation X was adopted as the reference group. This is the age when the professional status, experience and autonomy in the workplace predispose one to a position of an intellectual worker in the organization. The preferences of this generation were compared with those of the representatives of the younger generations as knowledge agents involved in knowledge dispersion.

It was observed that, for the variables „Expert power”, „Equally distributed responsibility”, „Cross-functional teams” and the „What can I do for you? attitude”, the generations Y and Z had a higher mean value than the generation X. The situation is quite an opposite one for the variables „Outward orientation”, „Unrestricted access to managers” and the „What's in it for me? attitude”. Such results justify the conclusion that the generation X knowledge workers are more outward-oriented and look for knowledge sources outside their home organization, focusing on cooperation relations within a network. On the other hand, younger specialists look for knowledge resources within their own organizations, rejecting the hierarchy and preferring equally distributed responsibility and cross-functional teams, giving up expert authority at the same time. They demonstrate more egalitarian than elitist attitudes, promoting collaboration, community and sharing. These guidelines can be valuable especially for the generation X, who are usually in the managerial positions. Suggestive are similar results for the variables: the „What's in it for me?” attitude (a higher value for the generation X) and „What can I do for you?” (a higher value for the generations Y and Z). They prove that, regardless of the generation

Table 2 The Wilcoxon-Mann-Whitney test for two generation groups - the generation X (78 respondents) and the generations Y and Z (27 respondents)

Behavior standards	Sum of the ranks in the group X	Sum of the ranks in the group YZ	U	Z	p-value	Z corrected	p-value
Outward orientation	1867.50	3697.50	616.50	3.1967	0.0014	3.5883	0.0003
Unrestricted access to management	1887.00	3678.00	597.00	3.3396	0.0008	3.7860	0.0002
„What's in it for me?” attitude	1754.00	3811.00	730.00	2.3645	0.0181	2.5520	0.0107
Expert power	1062.00	4503.00	684.00	-2.7018	0.0069	-2.9759	0.0029
Equally distributed responsibility	1104.00	4461.00	726.00	-2.3938	0.0167	-2.6674	0.0076
Cross-functional assemblies	884.00	4681.00	506.00	-4.0068	0.0001	-4.4049	0.0000
„What can I do for you?” attitude	1152.00	4413.00	774.00	-2.0419	0.0412	-2.3453	0.0190

Source: Author

represented by the specialists, they are open to the cooperation based on an effective motivation system. Therefore, it is necessary to create a comprehensive model for managing professionals which will focus on their knowledge diffusion.

The unrestricted access to management rule significantly defined the course of all the analyzed knowledge diffusion subprocesses and was indicated as critical, regardless of the generational affiliation of the knowledge workers included in the survey. Therefore, efforts were made to identify the management areas in terms of stimulating knowledge diffusion, as well as the management's attitudes and actions aimed at exchanging knowledge, thus examining the scope of managerial support in the knowledge exchange processes. The respondents indicated the fact that the managers inspired and motivated them to exchange knowledge („He/she supports and encourages knowledge sharing” - 74.3%, „He/she encourages and inspires me to take action” - 80%, „He/she motivates me to cooperate” - 83.8%) by creating favorable conditions („He/she facilitates knowledge sharing” - 76.2%, „He/she supports employee development initiatives” - 76.2%, „He/she encourages collaboration” - 81.9%). To the smallest extent, they actively participate in the knowledge circulation processes (70.5% of the responses), which may hinder its flow in the hierarchical dimension. Superiors are not role models then although they should also play this role in knowledge-based organizations and encourage everyone to be open in knowledge dispersion by their own example.

Based on the comparative analysis of the actions taken and the activities suggested by the respondents, potential areas for improving management skills were also designated. The guidelines from the responses can be presented as directives: focusing on building trust (92.4%), introducing an appropriate motivational system encouraging knowledge dispersion (90.5%), selecting appropriate project leaders - the people who can cheer others up and enthuse others with the idea of knowledge sharing and provide all required support (88.6%) and enabling the development of the communities of practice (85.7%). The orientation towards shaping communication openness (41.9%) and networking is not the main priority (42.85%).

Such a point of view is probably related to the character of professional work. These activities are its indispensable element and specialists undertake and implement them regardless of the organizational context.

CONCLUSION

Time and an effort, especially time and an effort on the part of the management of organizations, are required for organizational culture to change. Managers must be convinced that it is worth shaping its development in such a way as to reach cooperation culture. However, achieving this level requires striving. It is much easier to change the organizational climate and, by shaping it, exert an influence on organizational culture in the long run. Therefore, it is first and foremost recommended that an atmosphere of coherence and openness supported by an appropriate social system infrastructure should be created.

The evolution towards reaching the level of knowledge-based cooperation culture imposes that we should remember that to start a culture like that, such culture should be a culture of knowledge sharing or cooperation based on the attitudes and values considered as key to cooperation culture. Participants in the knowledge transfer process must have a deep inner conviction that, according to the network perspective, knowledge dispersion implies a larger number of opportunities.

Based on the analysis, the hypotheses put forward in the study were confirmed. It was proven that, in the case of the individual knowledge diffusion subprocesses implementation and the various groups of knowledge agents participating in those subprocesses, professionals assign a different meaning to specific behavior standards. The critical importance of the support given by the managers who act as role models was also confirmed. Management should favor teamwork, help individuals improve and broaden their competences, and reward any initiative for voluntary knowledge diffusion at all levels as well.

The presented considerations provide specific tips on which components of cooperation culture should be developed, bearing in mind participants in the professional knowledge transfer process, as well as the partial process of its diffusion. The generation preferences for the particular knowledge exchange behavior standards that may significantly improve professional knowledge intergenerational diffusion were also taken into account.

The knowledge workers included in the survey were found not to be supportive of the idea of equal opportunities for all the stakeholders of the organization. They are aware of their key role in the enterprises which they work for due to their unique competences. Therefore, they support the activities focusing on the key employees, expecting such attitudes from their superiors and demonstrating such organizational behaviors themselves. They are simultaneously cooperation-oriented, but within their own groups, organizational affiliation and the level of competence being the barrier to their entrance. On the other hand, in order for professional knowledge diffusion to be effective and result in free, targeted circulation between all groups of knowledge agents, cooperation culture should transform into a culture of cooperation encompassing all organizational units and actors within the enterprise. The main value should be knowledge sharing and restricting protectionist attitudes in knowledge exchange. This is to be achieved by a properly designed motivational system promoting openness and active participation in knowledge dispersion, based on the guidelines obtained in the course of the research. It should be a component of a comprehensive knowledge worker management system, taking into account their value systems and attitudes also in the perspective of generational differences. It is then that it can be a model solution for most organizations, taking into consideration the main values, general and specific rules relating to knowledge diffusion. Knowledge, trust, openness and support should be the main values. As part of the general principles, they should be expressed in communication and mutual interactions, knowledge sharing, searching for diversity and continuous learning. In particular, these should be visible in intensifying direct contacts, leaving room

for spontaneous and informal events and behaviors, searching for and triggering constructive criticism and developing common mental models.

The paper theoretically and practically contributes to research in the social determinants of professional knowledge diffusion in terms of cooperation between knowledge workers as members of specific cohorts. It organizes theory and formulates practical guidelines in terms of shaping knowledge-diffusion-based cooperation culture optimal for cooperation between and among intellectuals. They are concisely articulated and discussed in the study conclusion formula. The paper also identifies the actions undertaken and attitudes expressed by management, which are desirable in terms of stimulating knowledge flow. Moreover, it outlines directions and provides leads for shaping the concrete elements of the organizational cooperation culture professed, desired and preferred by professionals, simultaneously highlighting the highly probable drawback areas.

There are many limitations to this research study due to its being narrow in character and its limited scope. Therefore, the results discussed herein should only be treated as an illustration because of the limited research sample. The research study neither identifies the unambiguous and evidently strong correlations between the explored variables nor does it clearly discern the directions of the studied dependences. Moreover, the analysis proved that some results could not be generalized for the entire population of IT knowledge workers in Poland, but the same can only be explored in the context of the verified respondent group. Nevertheless, they indicate which cooperation rules aimed at knowledge diffusion should be applied, which of the rules are effective, which rules should be implemented and supported as emerging, universally applicable standards. This knowledge of organizational cooperation culture amongst knowledge workers brings a crucial benefit for managers - it delivers informal means of creating organized activities (the language, social norms, the folklore, ceremonies), offers common mental models and a conceptual apparatus - being vital for professional knowledge dispersion throughout the organization, defines generational group boundaries,

the acceptance and rejection criteria in the context of voluntary knowledge flow.

The conducted preliminary explorations pose new research challenges and set directions for further scientific research to be done. One of them will be the identification of the relationship between the principles that constitute a comprehensive professional knowledge diffusion system and individual knowledge transfer subprocesses from the perspective of intergenerational differences and the implemented organizational functions. The other challenge is the diagnosis of the differences between the existing and the preferred organizational behaviors, which would determine the course of the evolution for knowledge-exchange-oriented organizational cooperation culture.

ENDNOTES

- 1 The representatives of the generations Y and Z were treated as a single research group for the following three reasons: 1) the representatives of the generation X are the largest research group with critical competences for the IT sector in Poland (Kmiotek & Kopertyńska, 2018), 2) the generation Y is reported to scientifically differ from the earlier generational cohorts (Mahmoud, Fuxman, Mohr, Reisel & Grigoriou, 2020), and 3) the generations Z and Y are found by scholars to share common characteristics (Wood, 2013).
- 2 The group of the respondents follows the division of the key employees into knowledge workers (e.g. IT specialists) and management professionals (e.g. managers), often cited in the literature (Olsen, 2016).
- 3 The interpretation of Spearman's rank-order correlation coefficient is analogous to the interpretation of the parametric Pearson correlation coefficient.
- 4 The study of the correlation between the specific principles and the subprocesses that constitute knowledge transfer, as well as a comparative analysis of the employee generations and their preferences against the individual norms and values of the cooperation culture aimed at knowledge diffusion confirmed the existence of only some dependences. Therefore the presentation of full results is deliberately avoided in the research study, the study only focusing on the relationships identified as statistically significant.

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DETERMINANTS OF EARNINGS MANAGEMENT: THE STUDY OF NIGERIAN NONFINANCIAL COMPANIES

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The extant literature links managers incentives to earnings management. It has globally accounted for the collapse of some well-known, established firms, since it depicts a low financial reporting quality. This study employed data from the 77 nonfinancial firms listed on the Nigerian Stock Exchange for the period 2013-2019 in order to examine the determinants of earnings management. The result showed strong evidence of an incentive to manage earnings. Profitability (Return on Assets - ROA) and the size of a firm have a strong positive impact on earnings management, while the non-debt tax shield and operating cash flows have a strong negative influence on earnings management. The study suggests that external stakeholders should observe a firm's factors influencing its assets, non-debt tax shield and operating cash flows (such as accelerating/delaying cash receipts/payment through the use of credit sales and granting discounts), these being the crucial factors influencing earnings management even when the firm is increasing in size. Management should minimally use the above-mentioned factors of a firm as an earnings management instrument.

Keywords: earnings management, nonfinancial firms, Nigerian Stock Exchange, stock returns

JEL Classification: G14, M41

INTRODUCTION

Earnings management uses acceptable accounting rules and procedures, as well as *evading* business practices, in order to achieve desired ends. It is a form of a financial report designed by management, presented so as to obtain a private gain of some

kind. There are two basic motives: opportunistic and efficient motives. Opportunistic motives are those implying that managers use their decisions to maximize their personal gains. In efficient motives, managers window-dress a financial report so as to signal information to the users of the report (Cudia & Dela Cruz, 2018, 120). The implication of both motives is that management do not present the firm's true economic position (Emudainohwo, 2020, 397). Rather, they mislead stakeholders, as well as prospective investors, by signaling false information about the firm's performance as if it were true (Beaver, 2002, 468).

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Earnings management practically violates the two primary qualities of the usefulness of a financial report for decision-making, as outlined in the Statement of Financial Accounting Concepts No. 2 (FASB, 2008), these two qualities being the relevance and reliability of the characteristics of information that make accounting information useful. Relevance, on the one hand, implies that the information contained therein will make a difference in arriving at a decision, and reliability, on the other, implies an expectation that financial information users' decisions are founded on good judgement based on trusted information. Thus, the earnings management strategy erodes the quality of a financial report.

Although there are authors who considered that earnings management was a reasonable and legal option to enhance the position of a firm, it can be dubiously employed (Osemene, Adeyele & Adinnu, 2018, 210). The processes involved in earnings management can be detrimental to stakeholders given a lack of transparency and the reduced reliability of reports. Thus, it broadens the information asymmetry gap to the users of financial reports. For the largest part, firms put the blame for earnings-management-related issues on the error and misinterpretation of reporting rules. Intentional collusions toward management incentives, however, are the reasons for that. Earnings management is a matter for stakeholders to be concerned about, because the institutional environment and corporate governance have not provided better legal protection and control restricting managers' actions.

Some factors driving managers' incentives to manage earnings are examined against said backdrop in the study. Focusing on Nigeria in this study is due to the fact that it is the most populous West African country, which boasts a large developing capital market, the biggest African economy and the 27th largest economy in the world in terms of the GDP and has industrialization potentials in terms of human capital and resources (World Economic Forum, 2020). Furthermore, Nigeria instituted a new corporate governance code in 2003 and another in 2011 so as to minimize persisting corporate governance challenges.

Consistently with prior studies, earnings management (the dependent variable) is proxied with discretionary accruals following the modified Jones model (Dechow, Sloans & Sweeney, 1995, 199) for this study. The independent variables (Table 1) are those variables that earlier studies have shown to exert an influence on managers' incentives for earnings management. The Heteroskedasticity Cross-Panel Feasible Generalised Least Squares (FGLS) model was used to analyze the objective of the study. The study found that profitability (ROA) and the firm size have a significant positive association with earnings management, whereas the non-debt tax shield and operating cash flows have a significant negative bearing on earnings management. The study contributes to the better understanding of earnings management in a developing economy, and perhaps to guiding investment decisions. The rest of the paper is organized as follows: in Section 2, the theoretical and empirical reviews are presented; Section 3 discusses the material and the method; Section 4 is the presentation of the results obtained in the study and discussion, while a conclusion is finally given in Section 5.

THEORETICAL AND EMPIRICAL REVIEWS

Signaling and agency theories are adopted in order to explain the research problems of the study. *Signaling theory* assumes that information is neither made freely nor is it equally available to economic agents. This results in an information asymmetry gap among managers and stakeholders. In the context of information, managers are the most informed and they have privileged information about the economic situation of the firm. Being privileged to know that information about the economic standing of the firm, managers can employ earnings management schemes so as to influence the quantity/quality and type of the information they want to signal to the different stakeholders who depend on the financial statement report of the firm for decision-making. By doing so, managers may choose to either reduce or increase such communicated information which may mislead or assist the user of the report, which may lead to a

challenging adverse selection situation prospective investors may be faced with.

On the other hand, *agency theory* is founded on the divergence of the interest and available information between managers and the owners of the firm, which assumes that managers' personal interests affect their decisions and activities. This influences them to seek to maximize their interest to the detriment of the interest of the owners of the firm. In order to manage this conflict, one of the owner's initiative is to motivate managers by compensating them proportionally to their performance. This creates a relationship between the managers' achievement and the compensation. This relationship is turned into an incentive to manage earnings upwards for a better remuneration. This implies that the information asymmetry gap is broadened between the manager and the owners of the firm when scheming earnings management.

The probability of bankruptcy and earnings management

Bankruptcy is when the profit-making power of a firm is reduced, and the probability of paying back a debt has fallen (Altman, 2013, 429). It is the probability that a firm will go into default. The bankruptcy of firms may probably cause huge economic and social losses to their stakeholders and/or may lead to an inefficient allocation of capital (Kumar & Ravi, 2007). Although cost reduction is a normal efficiency practice, not earnings management *per se*, firms facing bankruptcy are more likely to reduce certain costs when in financial distress (Hassanpour & Ardakani, 2017, 216-217). In the future, distressed companies would not be able to fulfil their obligations (Ghazali, Shafie & Sanusi 2015, 195), which may lead to filing for bankruptcy or reorganization. Such companies have a probability of bankruptcy and prefer making more accounting changes than the companies that are less likely to go bankrupt (Ghazali *et al*, 2015, 195).

I. Lisboa (2019, 80) showed that distressed firms engaged in earnings management. S. Hassanpour and M. N. Ardakani (2017, 217-218) examined the

effect of prebankruptcy financial distress on earnings management for the firms listed on the Tehran Stock Exchange during the period 2010-2014 and found a significant positive relationship between prebankruptcy financial distress and earnings management. M. Bisogno and R. De Luca (2015, 47) examined the relationship between financial distress and earnings management practices in the economic context of family-owned firms for Italian not publicly listed SMEs. They showed that firms manipulated their financial statement so as to portray the better financial performances that would enable them secure external funding. While examining the evidence of earnings management in distressed firms during the period prior to filing for bankruptcy, A. Dutzi and B. Rausch (2016, 15) showed that firms engaged in earnings management prior to the bankruptcy event. However, N. A. Shabani and S. Sofian (2018, 162) found a negatively significant relationship between earnings smoothing and bankruptcy risk. The study aligned with the statement that firms manipulated earnings when they were faced with the likelihood of bankruptcy and the hypothesis that:

H1: The probability of bankruptcies has a significant positive impact on earnings management.

Profit and earnings management

Profit is an important goal of financial management. It is a determinant of business, as well as management performance, in the short run and potentially in the long run (Cudia & Dela Cruz, 2018, 119). It is the bottom-line item of the income statement that presents value added, financial benefits and an economic situation of an entity, which is a yardstick for analyzing the expected future performance of the firm by market dealers (Anjum, Saif, Malik & Hassan, 2012, 14). Managers are tempted to manipulate profits through exercising an accounting choice and judgment when providing relevant information to stakeholders (Cudia & Dela Cruz, 2018, 119). For instance, management may manipulate earnings by declaring not too high (low) income trend or a flat income trend over years (Beaver, 2002, 466; Ghazali *et al*, 2015, 198). Downward earnings management

may imply avoiding paying a huge tax or government scrutiny (Lisboa, 2019, 72). Additionally, the weak performances of a firm provide an incentive to engage itself in upward earnings management intended to attract investors.

Some earlier study showed that profitability was negatively related to earnings management (Cudia & Dela Cruz, 2018, 127). H. Anjum *et al* (2012, 17) examined the impact of earnings management on the profitability of the nonfinancial firms listed on the Karachi Stock Exchange and found that earnings management had a negative impact on the profitability of firms. A. W. Ghazali *et al* (2015, 190) showed that the managers of a firm would engage themselves in earnings management when they are financially healthy and make a high profit, on the example of a sample of Malaysian publicly listed companies from the year 2010 to the year 2012. It probably suggests that a high profit should be manipulated downward in order to avoid paying high taxes. M. A. Abu-Jebbeh and A. Al-Thuneibat (2017, 259) shows that profitability exerts a significant impact on earnings management, which they prove in a study of the 40 industrial firms listed on the Amman Stock Exchange over the period 2009-2013. The study proxies profitability with return on assets, which shows how efficient an organization is with its assets, and hypothesizes that:

H2: Profitability (ROA) has a significant positive effect on earnings management.

The non-debt tax shield and earnings management

Non-debt tax shields arise from allowable deductions before taxes for items as as depreciation, amortization, provision for bad debts, investment tax credits and loss carryforwards (Clemente-Almendros & Sogorb-Mira, 2018, 165). Managers will prefer non-debt tax-shield instruments over debt tax shield instruments for earnings management because of incentives to permanently defer or avoid taxes and because there are no debt covenant restrictions (Clemente-Almendros & Sogorb-Mira, 2018, 165). It is less costly when compared to using the debt instruments that

require costly interest payments and reduces cash outlays. As an earnings management instrument, the non-debt tax-shield option takes the form of either charging a higher non-debt tax-shield transaction to report lower earnings or a lower non-debt tax-shield transaction to report higher earnings. S. O. Rego and R. Wilson (2012, 778), however, argued against the use of a non-debt tax shield as an earnings management instrument. They opined that aggressive tax strategies had significant uncertainties and a high-cost implication from the tax authority where its use violates the tax policy.

Furthermore, the International Financial Reporting Standards (IFRS) require foreign subsidiaries to consolidate under the parent company (IFRS 10, 2011) in certain circumstances, but the earnings coming from such subsidiaries are not recognized as taxable income until they are transferred to the parent company. Consequently, companies may permanently defer income taxes through reinvestment abroad, which is a non-debt tax-shield strategy (Clemente-Almendros & Sogorb-Mira, 2018, 165). Due to agency conflict between managers and owners, the opportunistic managers seeking to maximize their self-gain resort to tax-avoidance schemes to direct rent to themselves (Desai & Dharmaphala, 2009). However, managers will not engage themselves in tax avoidance if it is not gainful to them (Amidu & Yorke, 2017). This will force a negative relationship between a non-debt tax shield and earnings management.

M. Amidu, S. M. Yorke and S. Harvey (2016, 141) found a positive relationship between company tax avoidance and earnings management. S. D. Dyreng, M. Hanlon and E. L. Maydew (2010, 1185) show that management play a significant role in determining the level of the tax avoidances undertaken by a firm. The study assumes that a manager's personal interest is an incentive for them to manipulate the use of the non-debt tax-shield option, and the hypothesis that:

H3: A non-debt tax shield has a significant positive influence on earnings management.

Operating cashflows and earnings management

Operating cashflows are cashflows mainly from a firm's major producing activities, such as cash received from customers and cash paid to suppliers and employees. It is argued that the firms that experience low operating cashflows are more likely to initiate earnings management in order to increase the cashflow from operating activities, such as accelerating cash collection (Andreas, 2017; Jang & Kim, 2017, 330). On the other hand, the firms with high operating cashflows would not mind so much granting credit sales as much as it is profitable to do so (Cudia & Dela Cruz, 2018, 121-122). Also, firms may leverage on access to cheap sources of finance and delay the cash collection period. Managers can influence the realization of the timing of cashflows by accelerating or delaying sales receipts and cash payments to some extent (El-Diri, 2018, 8).

In an earlier study, C. S. F. Hastuti M. Arfan and Y. Diantimala (2018, 1141) tested the influence of cashflows from operation for the manufacturing firms listed on the Indonesian Stock Exchange and found that cashflows from operation have a negatively significant relationship with earnings management. On the other hand, C. P. Cudia and A. L. C. Dela Cruz (2018, 126-127) showed that cashflows from operation are positively and significantly related to earnings management. B. Banimahd and M. J. Aliabadi (2013, 1681) examined the impact of earnings management on the management of cashflows from operating activities over the period from 2004 to 2011 for the firms listed on the Tehran Stock Exchange and found a significant relationship between them.

Furthermore, free cash theory argued that managers would often use excess cash flows for the investments that would maximize their own wealth, rather than that of the owner of the firm (Harbula, 2001, 491). S. L. Chalak and S. Mohammadnezhad (2012, 435) supported free cash theory when he found that firms with a high level of cash flows and low growth are the typical firms that engaged themselves in earnings management. Given the fact that cash is the 'lifeflood' for the activities carried out by a firm, the study

opines that managers manipulate cash flows and hypothesizes that:

H4: Operating cashflows have a significant positive influence on earnings management.

Stock returns and earnings management

Stock returns is a powerful evaluator of the value of a firm. It takes into consideration capital gains and dividends, by which return on investors' stock ownership is measured. Stock value will always change as the fundamentals of a firm are revealed over time. A drop in the stock price is undesirable from the point of view of management since stock returns remain one of the primary objectives for evaluating management performance, and their compensation is particularly tied to it (Ali, Noor, Khurshid & Mahmood, 2015). Hence, managers undertake earnings management so as to influence the investor's positive reflection of the performance of a firm. Their job security and their value in the labor market increase with better stock returns (Chi & Gupta, 2009, 1656).

Although there are incentives for managers to manipulate the accounting numbers that will influence the stock price of a firm, the stock price is not determined by management, but in the stock market by market dealers instead. Therefore, through earnings management, managers make investors perceive a better situation of the firm that encourages them to pay a higher price for it. Thus, a dealer's perception of earnings as good (bad) news will reflect upward (downward) the stock price and, eventually, stock returns (Darmawan, Sutrisno & Mardiaty, 2019, 8). The higher the surprise of the unexpected news, the more significant the market reaction that alters the stock price equilibrium (Sayari, Mraihi, Finet & Omri, 2013, 52). Given the fact that managers are led to maximize their financial report policy in order to present it to the market, the most successful image exploiting the insufficiency of accounting standards, managers manipulate investors' thinking and expectations in order to exert an influence on the stock price and stock returns. It is in this light that the signaling theory based on earnings management is considered as a financial communication tool.

S. Sayari *et al* (2013, 51) showed that earnings management had positive bearings on stock returns in Tunisia. M. Bansal, A. Ali and B. Choudhary (2021) investigated the real bearing of earnings management on the cross-sectional stock return of the weekly and monthly data of 3,085 firms of the Bombay Stock Exchange from January 2000-December 2019 and showed that investors discounted the stock price when they perceived low-quality real earnings management.

J. D. Chi and M. Gupta (2009) posits that low-quality earnings management relates to lower future abnormal stock returns, finding that the firms with low-quality earnings management underperformed those with high-quality earnings management. Low-quality earnings management translates into lower future operating performances.

A. A. Al Saedi (2018, 9) found no significant relationship between earnings management and stock returns by examining the relationship between earnings management practice and stock returns on the shares of the Qatari industrial listed firms over the period 2009-2017. A. M. Al Omush, W. M. Masadeh and R. M. Zahran (2019, 20) examined the impact of earnings management on the stock returns of the firms listed on the Amman Stock Exchange on a sample of 18 firms over the period 2014-2018. The study found no relationship between the variables, suggesting that the stock exchange was not able to reflect earnings management practices. N. Nuryaman (2013, 73) reported that earnings management had a negative bearing on stock returns from the analysis of the effects of earnings management on the stock returns of firms, with the quality of audit as the moderating variable for the 149 manufacturing firms listed on the Indonesian Stock Exchange in 2010. The study hypothesizes that:

H5: Stock returns have a significant negative bearing on earnings management.

The firm size and earnings management

Two different points of view are presented of the relationship between the firm size and earnings

management. The one argument is that, as firms become larger and more successful, there is the tendency for them to expose themselves to the risk of the scrutiny of a Government agency and pressure from the capital market (Young, 1999; Dechow, Ge & Schrand, 2010, 380; Ali *et al*, 2015, 48). To avoid scrutiny implications, if any, management employs earnings management so as to cover up (Dechow *et al*, 2010, 380; Lusi & Swastika, 2013, 79). Larger firms are also likely to be engaged in earnings management when placing seasoned equity offerings in order to signal better information to prospective buyers. The above argument attracts a positive relationship between the firm size and earnings management.

Contrarily, large firms are assumed to engage themselves less on earnings management given the effectiveness of their employees' competences and their capacity to contract competent external audit and/or the audit committee that limits the activities of earnings management, which depicts a negative relationship. Furthermore, it is argued that smaller firms are more likely to have a weak internal control structure compared to larger firms with strong internal control and the highly qualified auditors who know how to avoid earnings management (Lusi & Swastika, 2013, 78-79). As a result, smaller firms are more likely to make up and correct misstatements in previously reported earnings.

I. Lisboa (2019, 80) found that the firm size was statistically significant to explain why firms engage themselves in earnings management. O. D. Moses (1987, 358) and S. Hefferman, M. F. Xiaoqing and F. Xiaolan (2008, 13) showed that the firm size was positively related to the quality of earnings. J. Gordanlidavaji and H. Vakilifard (2014, 519), U. Ali *et al* (2015) and U. Uwuigbe, U. O. Ranti and O. Bernard (2015, 224) showed that the firm size had a significant positive influence on earnings management. Contrarily, C. S. F. Hastuti *et al* (2018, 1141) examined the relationship between the firm size and earnings management for the manufacturing firms listed on the Indonesian Stock Exchange. They found a negative weak relationship between them. The study posits that as the firm size increases, the volume of the activities carried out by the firm opens

diverse opportunities to manipulate earnings, and hypothesizes that:

H6: The size of a firm has significant positive bearings on earnings management.

Growth and earnings management

Growth depicts many situations in a firm, such as increasing revenue and the volume of production, the emergence of new units, an increase in assets per worker, and so forth. Substantiable growth for firms is needed to maximize their shareholders' wealth, which does mean growth is a necessity for firms. It is posited that high-growth firms are more likely to engage themselves in earnings management so as to maintain the stream of earnings (Lee, Li & Yue, 2006, 330) and avoid unfavorable market reactions to reporting poor earnings. Negative growth is likely to attract market attention.

Additionally, managers are cautious while disclosing earnings, knowing that the earnings indicator will eventually signal the probable growth of the firm's earnings. They try to minimize growth signals by managing the earnings report in a way to portray the picture as per their incentives (Anjum *et al*, 2012, 14) in order to avoid scrutiny.

M. F. McNichols (2000, 315) showed that the firms expecting a greater growth of earnings were more likely to engage themselves in earnings management than the firms facing less expectant growth. B. Alareeni (2018) stated that the higher the growth rate, the lesser the need to manage earnings, and *vice versa*. In other words, a strong growth opportunity overshadows earnings management forcing a negative relationship (Al Saedi, 2018). J. D. Kwarbai, R. I. Akintoye, F. F. Adegbe and A. N. Nwaobia (2019, 1) showed that growth opportunities had a significant positive effect on earnings management. B. Alareeni (2018) showed that the higher the growth rate, the lesser the need to manage earnings, and vice versa. The study posits that a growth prospect will influence earnings management upward or downward, thus hypothesizing that:

H7: Growth is significantly positively related to earnings management.

MATERIAL AND METHODS

In the study, the secondary data retrieved from the annual financial report for the 77 sampled nonfinancial firms listed on the Nigerian Stock Exchange (NSE) from 2013-2019 (539 company-years) were used. As the dependent variable of the study, earning management is proxy with discretionary accruals separated from total accruals based on the modified Jones model (Dechow *et al*, 1995, 199). Table 1 presents the proxy and measurement of the variables.

Discretionary accruals estimation

The modified Jones model (Dechow *et al*, 1995, 199) was employed to separate the discretionary and non-discretionary accruals as follows.

Total accruals are:

$$TA_{i,t} = (\Delta CA_{i,t} - \Delta Cash_{i,t}) - (\Delta CL_{i,t} - \Delta CLSTD_{i,t}) - DEP_{i,t} \quad (1)$$

where for the firm i in the year t :

$TA_{i,t}$ is the total accruals, $\Delta CA_{i,t}$ is a change in the current assets, $\Delta Cash_{i,t}$ is a change in cash and the cash equivalent, $CL_{i,t}$ is a change in the current liabilities, $\Delta CLSTD_{i,t}$ is a change in the short-term debt included in the current liabilities, and $DEP_{i,t}$ is the expenses of depreciation and amortization.

The modified Jones model (Dechow *et al*, 1995, 199) reads as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_0 \left(\frac{1}{A_{i,t-1}} \right) + \alpha_1 \frac{(\Delta Rev_{i,t-1} - \Delta Rec_{i,t-1})}{A_{i,t-1}} + \alpha_2 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (2)$$

where for the firm i in the year t , $\Delta Rev_{i,t-1}$ is the revenue in the year t minus the revenue in the year $t-1$, $\Delta Rec_{i,t-1}$ is the receivable in the year t minus the receivable in the year $t-1$, $PPE_{i,t}$ is the gross property,

Table 1 The proxy, measurement and source of the variables for the analysis

Variables	Proxy	Measurement	Data Sources
Earnings management	Discretionary accruals	Modified Jones model (Dechow et al., 1995, 199): see equations (1) to (4)	Annual financial statement
Probability of bankruptcy	Measure of financial distress	Altman's z score (Altman, 2013, 431-432): see equation (5)	Annual financial statement
Profitability	Return on assets (ROA)	$\frac{\text{income before extraordinary items}}{\text{total assets}}$	Annual financial statement
The non-debt tax shield	Tax allowable deductions.	$\frac{\text{Depr} + \text{Amort.} + \text{R\&D}}{\text{total assets}}$	Annual financial statement
Operating cashflows (OCF)	OCF	OCF scaled down* by 1,000,000	Annual financial statement
Stock returns	Stock returns	$\frac{(\text{stock price}_t - \text{stock price}_{t-1}) + \text{dividend}}{\text{total assets}}$	https://afx.kwayisi.org/nseng/
The firm size	Total revenue	Log of total revenue	Annual financial statement
Growth	Annual change in total assets from year t-1 to year t	$\frac{\text{total assets}_t - \text{total assets}_{t-1}}{\text{total assets}}$	Annual financial statement

*Note: It is necessary to avoid a log of negative numbers

Source: Author

plant and equipment, is the total assets in the year t-1 (consistent with the previous studies, all the variables scaled down by the lagged total assets to minimize heteroskedasticity), and are the parameters to be estimated and is the residuals..

According to X. Li (2010, 8-9), the parameters of the ordinary least square regression of the equation (2) are used to estimate the non-discretionary accruals (NDA) in the model as follows:

$$NDA_{i,t} = \alpha_0 \left(\frac{1}{A_{i,t-1}} \right) + \alpha_1 \frac{(\Delta Rev_{i,t-1} - \Delta Rec_{i,t-1})}{A_{i,t-1}} + \alpha_2 \frac{PPE_{i,t}}{A_{i,t-1}} \tag{3}$$

Following the discretionary accruals:

$$DA = \frac{TA_{i,t}}{A_{i,t-1}} - NDA_{i,t} \tag{4}$$

DA (the discretionary accruals) is the earnings management proxy.

Altman's z-score

The study adopted the Z-score model for the emerging market (Altman, 2013, 432). It is estimated as follows:

$$Z = 0.012 (X_1) + 0.014 (X_2) + 0.033 (X_3) + 0.006 (X_4) + 0.998(X_5) \tag{5}$$

where:

$$X_1 = \frac{\text{current assets} - \text{current liabilities}}{\text{total assets}};$$

$$X_2 = \frac{\text{Retained earnings}}{\text{total assets}};$$

$$X_3 = \frac{\text{Earning before interest and tax}}{\text{total assets}};$$

$$X_4 = \frac{\text{Book value of equity}}{\text{book value of total debt}}; \text{ and}$$

$$X_5 = \frac{\text{Sales}}{\text{total assets}}.$$

Model specification

Following the previous studies, the specific model of the study reads:

$$EM_{c,t} = \beta_0 + \beta_1 PB_{c,t} + \beta_2 P_{c,t} + \beta_3 NDTS_{c,t} + \beta_4 OCF_{c,t} + \beta_5 SR_{c,t} + \beta_6 FS_{c,t} + \beta_7 G_{c,t} + \mu_{c,t} \quad (6)$$

where:

EM = earnings management, PB = a probability of bankruptcy; P = profitability; $NDTS$ = a non-debt tax shield; OCF = operating cash flows; SR = stock returns; FS = the size of the firm; G = growth; β_0 = the constant term; β_1 to β_7 = the coefficients of the explanatory variables, c,t = the firms and the time; and μ = the error term.

PRESENTATION OF THE RESULTS AND DISCUSSION

Descriptive statistics

Descriptive statistics are presented in Table 2. It shows a deviation from the observed 539 company

years because of the lagged years during some variable measurement. For instance, a year is lost from every company when computing growth and stock return (539-77 = 462). The Table 2 shows that minimum earnings management is -2.0658, maximum earnings management is 1.5953, while the mean is -0.0461. The mean statistics suggest that an earnings understatement is more prevalent. Earnings understatements are the strategy that retains maximum flexibility for future income-increasing attempts. It may help managers change the earnings expectations of financial analysts and investors. It is also a strategy for avoiding a huge tax payment or Government scrutiny (Lisboa, 2019, 72).

The mean score of the probability of bankruptcy is 0.8519, which suggests that firms might be heading for bankruptcy and need to take a precaution due to a probable insufficiency of capital (Altman, 2013, 426). The maximum value of the probability of bankruptcy is 14.4768, which is greater than the threshold 3 (Altman, 2013, 432). Stock return has a maximum of 16.67, a minimum of -0.7346, and the mean stock return is 0.0382. The mean operating cash flows are N4.096 billion, the maximum operating cash flows are N154 billion, and the least operating cash flows are minus N104 billion. The mean revenue is N379 billion, the least revenue is N5.407 million, and the maximum revenue is N489 billion.

Correlation

Table 3 presents Spearman's correlation matrix. Profitability ($r = 0.1383$, $p = 0.0034$) and growth

Table 2 The descriptive statistics

Variables	Obs.	Means	Std. Dev.	Min.	Max.
Earnings management	447	-0.0461	0.2432	-2.0658	1.5953
Probability of bankruptcy	539	0.8519	0.9481	-0.0123	14.4768
Profitability (ROA)	539	0.0186	0.1367	-1.2000	0.6858
The non-debt tax shield	453	0.0474	0.0917	0.0001	1.5103
Operating cashflows (N'000)	539	4,096,462	1.55e+07	-1.04e+08	1.54e+08
Stock returns	462	0.0382	0.9071	-0.7346	16.6667
The firm size [Revenue: (N'000)]	539	3.79e+07	7.45e+07	5407	4.89e+08
Growth	462	-0.0076	0.6501	-9.4166	0.9291

Source: Author

Table 3 Spearman's correlation matrix

	Earnings management	Probability of bankruptcy	Profitability (ROA)	The non-debt tax shield	Operating cashflows	Stock price	The firm size	Growth
Earnings management	1.0000							
Probability of bankruptcy	0.0564 (0.2341)	1.0000						
Profitability (ROA)	0.1383 (0.0034)	0.3126 (0.0000)	1.0000					
The non-debt tax shield	-0.2277 (0.000)	0.1263 (0.0075)	0.1313 (0.0054)	1.0000				
Operating cashflows	-0.2796 (0.0000)	0.2003 (0.0000)	0.3502 (0.0000)	0.1839 (0.0001)	1.0000			
Stock returns	-0.0286 (0.5467)	0.0219 (0.6435)	0.1529 (0.0012)	0.0408 (0.3899)	0.0771 (0.1037)	1.0000		
The firm size	0.0732 (0.1221)	0.5014 (0.0000)	0.2655 (0.0000)	0.0799 (0.0915)	0.5259 (0.0000)	-0.0403 (0.3953)	1.0000	
Growth	0.1391 (0.0032)	0.0142 (0.7653)	0.3370 (0.0000)	0.0826 (0.0809)	0.1129 (0.0169)	0.1130 (0.0168)	0.2220 (0.0000)	1.0000

Source: Author

($r = 0.1391$, $p = 0.0032$) are strongly positively correlated with earnings management. The non-debt tax shield ($r = -0.2277$, $p = 0.0000$) and the operating cashflows ($r = -0.2796$, $p = 0.0000$) are strongly negatively correlated with earnings management. The probability of bankruptcy ($r = 0.0564$, $p = 0.2341$) and the size of the firm ($r = 0.0732$, $p = 0.1221$) are weakly positively correlated with earnings management. Growth is weakly negatively correlated with earnings management.

Diagnosis and checks

In the study, Hausman's test was done to choose between the random effects (RE) model and the fixed effects (FE) model (Table 4). The null hypothesis reads as follows: the RE model is appropriate, whereas the alternative FE model is inappropriate. The test resulted in the p-value = 0.6734, suggesting that the RE model should be accepted and that the FE model should be rejected. The Breusch-Pagan LM test was also performed so as to choose between the pool

ordinary least square (OLS) model and the RE model (Table 4). The null hypothesis reads that the pool OLS is appropriate, whereas the alternative hypothesis reads that the RE model is inappropriate. It results in the p-value = 1.0000. Thus, the RE model is rejected, whereas the pool OLS model is accepted for the purpose of the analysis. A further diagnosis test was performed to check heteroskedasticity and serial correlation in the data.

The modified Wald test for groupwise heteroskedasticity in the fixed effects regression model was employed to test for heteroskedasticity in the data (Table 4). Ho is homoskedasticity, whereas HA is heteroskedasticity, which results in the p-value = 0.0000, suggesting heteroskedasticity. Additionally, the Wooldridge test for autocorrelation in panel data was employed to test for the presence of serial correlation in the data (Table 4). Ho is no serial correlation, whereas HA is serial correlation. The p-value is 0.1869, suggesting no serial correlation in the data. The variance inflation factor (VIF) test (Table 5) showed the highest VIF = 1.40, the lowest VIF = 1.00, and the

Table 4 The diagnostic statistics

The Hausman test: $\text{Chi}^2(7) = 4.89$; $\text{Prob} > \text{Chi}^2 = 0.6734$ suggests that the “Random Effect” is appropriate.

The Breusch-Pagan LM test: $\text{Chibar}^2(01) = 0.00$; $\text{Prob} > \text{Chibar}^2 = 1.0000$ suggests that the “Pool OLS” is appropriate.

The modified Wald test for groupwise heteroskedasticity in the Fixed Effect regression model 1.

$\text{Chi}^2(76) = 1.0e+06$; $\text{Prob} > \text{Chi}^2 = 0.0000$. The data are heteroskedastic.

The Wooldridge panel-data autocorrelation test. $F(1, 75) = 1.775$; $\text{Prob} > F = 0.1869$. No serial correlation is found.

Source: Author

mean VIF = 1.19, which depicts no multicollinearity challenges since the obtained VIF values are far below the rule of thumb 7. Heteroskedasticity challenges prompted employing the heteroskedasticity cross-panel Feasible Generalized Least Squares (FGLS) model [the Panels(heteroskedastic) option which specifies a heteroskedastic error structure with no cross-sectional correlation] rather than the pool OLS model. The FGLS allows estimation in the presence of heteroskedasticity across panels and is suggested by Stata (Stata, 2013).

Analysis of the results and discussion

The regression result (Table 5) is well-fitted, the p-value = 0.0000. The probability of bankruptcy was found to have an insignificant negative relationship with earnings management (-0.0056 , $p = 0.253$). The result did not support the hypothesis 1 of the study and failed to support the earlier findings that had found a significant positive relationship between the probability of bankruptcy and earnings management (Bisogno & De Luca, 2015, 47; Dutzi & Rausch, 2016, 15; Hassanpour & Ardakani, 2017, 217-218; Lisboa, 2019, 80). Nor did it support N. A. Shabani and S. Sofian (2018, 162), who had found a strong negative relationship between earnings smoothing and bankruptcy risk. Probably, the firms only face a temporary illiquidity position and/or that with low-quality earnings management they can decrease their probability of bankruptcy risk.

Profitability (ROA) has a significant positive relationship with earnings management (0.1890 , $p = 0.000$) and supports the hypothesis 2 of the study. It corroborated the studies by A. W. Ghazali *et al* (2015,

198) and M. A. Abu-Jebbeh and A. Al-Thuneibat (2017, 259), who found a strong positive relationship between profitability and earnings management, but did not support C. P. Cudia and A. L. C. Dela Cruz (2018, 127) and H. Anjum *et al* (2012, 17), who found a negative relationship between a profit and earnings management. The result suggests that management may indulge in earnings management by reporting a high profit (low profit) downward (upward) (Beaver, 2002, 466; Ghazali *et al*, 2015, 198). The reason for earnings management is probably to reflect huge capital employed in business, evade paying huge taxes and avoid Government scrutiny.

A non-debt tax shield has a significant negative influence on earnings management (-0.7007 , $p = 0.000$). The result fails to support the hypothesis 3 of the study, and does not support M. Amidu *et al* (2016, 141), who found a positive relationship between a non-debt tax shield and earnings management. It, however, corroborated the argument by M. Amidu and S. M. Yorke (2017), according to whom there is a negative relationship between a non-debt tax shield and earnings management when management do not engage a sufficient non-debt tax shield instrument for earnings management since it will only be gainful for shareholders, not for themselves (Amidu *et al*, 2016, 141).

The operating cash flows coefficient is significant and negatively related to earnings management (-0.0012 , $p = 0.000$). The result did not support the hypothesis 4 of the study, and the same contradicted C. P. Cudia and A. L. C. Dela Cruz (2018, 126-127), who found a positive relationship between operating cashflows and earnings management. It, however, corroborated the earlier studies that had shown operating

Table 5 The FGLS regressions

Earnings management	Coef.	Std. Err.	t	p	VIF	
Probability of bankruptcy	-0.0056	0.0049	-1.14	0.253	1.22	
Profitability (ROA)	0.1890	0.0357	5.29	0.000	1.09	
The non-debt tax shield	-0.7007	0.0871	-8.05	0.000	1.09	
Operating cashflows	-0.0012	0.0003	-4.51	0.000	1.00	
Stock return	-0.0098	0.0061	-1.61	0.107	1.37	
The firm size	0.0052	0.0021	2.53	0.011	1.40	
Growth	-0.0010	0.0064	-0.16	0.873	1.17	
cons	-0.0858	0.0308	-2.79	0.005		
Wald $\chi^2(7) = 149.43$; Prob > $\chi^2 = 0.0000$						
					Mean VIF	1.19

Source: Author

cashflows had strong negative bearings on earnings management (Andreas, 2017; Jang & Kim, 2017, 336; Hastuti *et al*, 2018, 1141). The result suggests that, when operating cashflows are low, managers are likely to initiate earnings management so as to increase their operating cash flow activities, such as accelerating cash collection and probably delaying cash outlays (Andreas, 2017; Jang & Kim, 2017, 330; El-Diri, 2018, 13). With high operating cashflows, managers may tend to employ the cash policy that delays cash collection or grant a higher credit level (Cudia & Dela Cruz, 2018, 126-127; El-Diri, 2018, 28).

The stock return coefficient is negatively and insignificantly related to earnings management (-0.0098, $p = 0.107$). The result fails to support S. Sayari *et al* (2013, 51), who found a significantly positive relationship between stock returns and earnings management. The results were all but supportive of the earlier studies that had shown stock returns were negatively significantly related to earnings management (Bansal *et al*, 2021; Chi & Gupta, 2009). The negative insignificant result is probably indicative of the fact that the stock exchange is unable to reflect earnings management practice (Al Omush *et al*, 2019, 20). Perhaps, the stock exchange is in its semi-strong form stage.

The proxy of the size of a firm with a revenue coefficient log (0.0052, $p = 0.011$) is positively and significantly related to earnings management. The result supports the hypothesis 6 of the study and

corroborates the earlier studies that showed that the firm size had a strong positive relationship with earnings management (Moses, 1987, 358; Hefferman *et al*, 2008, 13; Gordanlidavaji & Vakilifard, 2014, 519; Ali *et al*, 2015, 55; Uwuigbe *et al*, 2015, 224). The findings suggest that large firms tend to employ earnings management to a greater extent. The reason is probably to avoid being exposed to the risk of Government/regulatory scrutiny (Young, 1999; Dechow *et al*, 2010, 380; Ali *et al*, 2015, 48).

Growth has a weak negative influence on earnings management (-0.0010, $p = 0.873$). The result disagrees with the theoretical arguments implying that growing firms will engage themselves in earnings management so as to avoid an unfavorable market reaction, also failing to corroborate C. J. Lee *et al* (2006) and Kwarbai *et al* (2019), who found a strong positive relationship between growth and earnings management. Although the negative relationship is weak, it probably portrays the fact that strong growth opportunities overshadow earnings management (Al Saedi, 2018).

CONCLUSION

In the study, the data from the annual reports and accounts of the 77 nonfinancial firms listed on the NSE for the period from 2013 to 2019 were used in order to examine the determinants of earnings

management. The result obtained from the sampled firms shows that profitability, the size of a firm, a non-debt tax shield and operating cash flows are the most important determinants of earnings management. Profitability and the firm size have a strong positive impact on earnings management, whereas a non-debt tax shield and operating cash flows have a strong negative influence on earnings management. Managers manipulate earnings probably in order to permanently defer or even evade taxes and avoid Government scrutiny. A likely explanation for the strong negative impact of a non-debt tax shield on earnings management lies in the fact is that using a non-debt tax shield as an earnings management instrument will not benefit managers, but the firm's shareholders instead (Amidu *et al*, 2016, 141). Management manipulates operating cash flows depending on the level of their needs for cash. The result suggests that earnings management increases with the firm size. In other words, the quality of earnings management decreases as the firm size increases.

The study is only limited to the extent that a sample of only 77 nonfinancial firms listed on the NSE for the period from 2013 to 2019 were analyzed in it. The study, however, contributes to the literature on the determinants of earnings management, having established the strong determinants of earnings management for nonfinancial firms in Nigeria, upon which findings the researcher recommends earnings management related to assets (given the fact that ROA is a function of assets), a non-debt tax shield, and operating cash flows should be minimally employed as an instrument of earnings management since earnings management is likely to reverse or even account for negative consequences in the future and high earnings management portrays a low quality of financial reporting. This will improve the quality of financial reporting, which will attract prospective investors. Future research should enlarge the number of the firms included in the sample, financial firms being included as well. A further study on the determinants of earnings management should also reconsider the impact of the probability of bankruptcy, stock returns and the growth of a firm, which proved to have a weak influence on earnings management.

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ARE IFRS ACCEPTABLE FOR A DEVELOPING COUNTRY WITH SPECIFIC BUSINESS CULTURE? SUDANESE ACCOUNTANTS' ATTITUDES

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Developing countries are faced with a lot of challenges in providing high-quality financial reports based on modern accounting regulations and practices. With its specific colonial and postcolonial history of socioeconomic relations, Sudan is one of a few countries that has not adopted the International Financial Reporting Standards (IFRS) either as a mandatory or as a voluntary financial reporting framework. Focusing on a sample of 142 respondents, the attitudes towards the obstacles and possible benefits of introducing the IFRS in Sudan expressed by accountants working in the industry sector are examined in the paper. This research study has shown that Sudanese accountants are highly aware of the needs and benefits of the IFRS adoption. The respondents predominantly agree that the IFRS adoption would increase the FDI inflow, reduce frauds and other unlawful activities, and improve the comparability, reliability and transparency of financial information, which currently is not the case. However, the research shows that accountants in Sudan also express a high degree of skepticism, given the numerous restrictions that they believe would make the introduction of the IFRS more difficult.

Keywords: Sudan, IFRS, advantages and disadvantages, accountants' attitudes

JEL Classification: M41, M48, F63

INTRODUCTION

Like any other profession in its field of activity, accountants are the pillars of the quality improvement of financial reporting as their primary task. Depending on the legal system, business culture, tradition and

other factors, the role accountants play can be active, i.e. direct - in terms of creating accounting principles and standards, or passive, i.e. indirect - through an adequate application of imposed rules and a critical review of justification for them as well, which can ultimately result in exerting an influence on regulators. The quality of financial statements is assessed from the user perspective (Cohen, 2003), which is a special challenge in the conditions of dynamic changes in

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the business environment. This challenge arises equally in developed economies, where the capital market participants are under constant pressure to provide high-quality accounting information, and in developing countries. Although the largest number of organized capital markets are underdeveloped or nonexistent at all, information about the business done by an entity individually the business done by the economy as a whole in developing economies is important to all the potential investors who see their chance to make a profit by investing in the economies where resources (human and material) are usually cheap. On the other hand, in the absence of funding sources, know-how, new markets, both business owners and their state are interested in attracting new investors. Of course, financial statements are the basic "communication language".

Developing countries are being faced with a number of limitations on their way towards achieving high-quality financial reporting. Sudan is a typical example of it. Historical socioeconomic, political and other circumstances have hindered the achievement of this goal (Abouagla, 2017a). In the absence of modern national accounting regulations, it is possible to apply international generally accepted accounting principles embodied in the IFRS. This global harmonization would bring a broader economic effect - foreign direct investment and ultimately the growth of the national economy. Difficulties in the IFRS adoption and implementation would certainly be numerous, both objective and subjective. In addition to the other participants who can either directly or indirectly facilitate the IFRS adoption and implementation at the national level (the Government, the capital market, auditing firms, professional associations of accountants, the chamber of commerce, etc.), accountants' readiness in practice plays an important role in having the goal achieved. In this regard, the objective of this research study is to examine Sudanese accountants' propensity for the IFRS implementation in the financial reporting of large and the listed companies in the first implementation phase.

For this purpose, two basic hypotheses with appropriate claims were set:

H1: What do Sudanese accountants consider to be the main obstacles to the IFRS adoption?

H2: What would be the benefits of introducing IFRS in view of professional accountants in Sudan?

Following the „5-Point Likert Scale“ methodology, the attitudes of a total of 142 randomly selected Sudanese accountants working in the industrial sector are examined in the study via a questionnaire containing eight statements on the obstacles (H1) and four statements on the benefits (H2) of the IFRS adoption.

The case of Sudan is important for several reasons. First, Sudan is one of the 22 jurisdictions that have not adopted IFRS either as a mandatory or as a voluntary financial reporting framework, not even so for the listed companies (IFRS Foundation, 2018). The peculiarities of its corporate culture, as well as its historical socioeconomic and political heritage, account for the specificity that distinguishes Sudan from many other countries.

Furthermore, the contribution this paper makes to the literature stems from the fact that the possibilities of adopting the IFRS in Sudan are only dealt with in a few papers written in the English language (Abbas, 2012; Abouagla, 2017a; Elfaki & Al Hassan, 2018). In addition to the said, there are but few studies dedicated to the assumptions of improving the quality of financial reporting in this country (Abdalla & El-Basri, 2015; Abouagla & Sekerez, 2017 Abdalla, Gadour & Salih, 2019).

In our opinion, the findings pertaining to these issues demonstrated in this research study may increase the academic public's interest and may particularly alert Sudanese policymakers to the need to consider the IFRS adoption.

In order to achieve the research goal, to first emphasize the importance the IFRS introduction has for developing countries is considered as necessary. Through an analysis of the theoretical assumptions and empirical findings presented in the available literature, the arguments for and against changing the current practice of financial reporting in Sudan are presented in the second part of the paper. In the

third part of the paper, the fact that it is necessary to first point out the historical background of the achieved level of financial reporting in Sudan as the basis for the development of research questions of accountants' attitudes towards the need for the IFRS introduction is highlighted. The fourth part of the paper provides us with the research results and discussion, whereas the findings are summarized, and certain recommendations are identified in the Conclusion.

IMPORTANCE OF THE IFRS ADOPTION FOR DEVELOPING COUNTRIES - A LITERATURE REVIEW

The globalization of business and the obsolescence of closed national economies - the need for IFRS

The closure of national economies has long since been overcome. So, the globalization of social and economic flows and the general achievements of the 4.0 industrial revolution, as well as many other factors, has made inevitable the convergence of accounting practices at a global level. A lack of funding, modern technology, management systems and limited market access for developing countries and their companies are a challenge, the solution to which lies in attracting foreign investment. International mergers and acquisitions, joint ventures, and other forms of business combinations and investing capital rely on companies' high-quality financial statements, especially so on their comparability with investors' reports. Mutual comparability refers not only to the formal presentation of financial statements (the item structure and marking), but also to the way individual items of assets, liabilities, equity, revenues and expenses are measured. Certainly, in the conditions of different restrictions of a regulatory nature, comparability does not necessarily imply uniformity, but it is desirable that financial statement users should be clear enough about the nature and materiality of differences in reporting between investors and investees.

Information in financial statements „can be characterized as ‘a powerful and significant good’ because of its importance for the adequate functioning of the capital market, thus contributing to the achievement of social welfare as the ultimate goal of every society” (Obradović, 2016, 2). A company's publicity policy should be aimed at all stakeholders, especially the existing and potential investors and creditors as well (IASB, 2018). In recent decades, a set of the International Accounting Standards Board (IASB) standards - the International Financial Reporting Standards - have emerged as a global language (instrument) of business communication. Although primarily intended for public companies, their use by other unlisted companies significantly contributes to the attractiveness of investments for investors. R. Ball (2006) points out the fact that, from the investor's point of view, the most important advantage of adopting IFRS reflects in a lower investment risk, as a result of better information on the capital market value, the elimination of international differences in financial reporting, an expected increase in the market efficiency and the removal of barriers to international acquisitions. Moreover, diversity in financial reporting may negatively affect the level of international investment (Bradshaw, Bushee & Miller, 2004). In addition to said, although the IFRS are primarily intended for listed and large companies, even small companies feel their benefits (Lee, 2019).

Foreign Direct Investment (FDI) is one of the main measures of the attractiveness of investing in a national economy and its business entities. The general hypothesis in many studies on a sample of developing countries implies that the IFRS adoption encourages FDI, which results in the economic growth of a national economy and investees as well. A number of empirical studies have proven the positive impact of IFRS on FDI inflows (Okpala, 2012; Lungu, Caraiani & Dascălu, 2017; Akisik, Gal & Mangaliso, 2020; Nurunnabi, Jermakowicz & Donker, 2020). This impact is greater in developing countries than in developed economies (Gordon, Loeb & Zhu, 2012).

Analyzing the period from 2001 to 2016 in the context of the ASEAN countries, M. Yousefinejad, A. Ahmad, F. Md Salleh and R. Abdul Rahim (2018) find that

„IFRS adoption attracts more foreign investments into a country”, whereby “the causality test also confirms both short-run and long-run causality between IFRS and FDI inflows”. On a sample of the ASEAN countries in another study, the authors also point out the fact that “the positive relationship between the IFRS and FDI inflows provides evidence that the IFRS are an important determinant of FDI inflows and eventually economic growth” (Yousefinejad, Ahmad, Md Salleh, Abdul Rahim & Md Azam, 2018a, 641).

No less important is the IFRS application in reducing information asymmetry (Bushman, Piotroski & Smith, 2004; Gassen & Sellhorn, 2006; Horton, Derafeim & Serafeim, 2012; Turki, Wali & Boujelbene, 2017), which reduces aversion to investment risk both with the existing and with potential investors. A. Malo-Alain, M. Aldoseri and M. Melegy (2021) provide a piece of the evidence of the improved efficiency of investment decisions after the IFRS adoption compared to the period preceding it, which may be brought into connection with greater trust among investors in relation to the information used by them in business decision-making. A number of studies prove the expectations that the IFRS introduction will improve the quality of accounting information (Barth, Landsman & Lang, 2008; Horton *et al.*, 2012). Under the IFRS application conditions, analysts’ forecasts are becoming more accurate (Jiao, Koning, Mertens & Roosenboom, 2012), *inter alia* due to better disclosures, which may ultimately result in „less dispersion among individual analyst forecasts and less volatility in forecast revisions” (Lang & Lundholm, 1996). There are, however, the findings that the IFRS adoption cannot immediately result in better business decisions, fueled by financial analysts’ assessments even in developed markets. H. Turki *et al.* (2017) analyze a sample of French listed companies in the period before and after the IFRS adoption and find that financial analysts’ errors decrease from the third year after the date of the first adoption.

Although the stock exchange listing and the stock exchange itself are expected to improve the quality of financial reporting, there are the opinions that the nonexistence or underdevelopment of capital markets in developing countries cannot be viewed as

a factor of influence. The influence exerted by those stakeholders who, due to their „power, legitimacy or urgency” (Tawiah & Boolaky, 2019, 574) require the disclosure of better-quality financial statements is much bigger.

Developing countries rich in oil, with the growth potential of the national economies, are showing a greater interest in harmonizing their national financial reporting rules with the IFRS in general. In addition to the IFRS implementation, some countries are striving to proactively participate in the creation of these standards. For example, the representatives of the rich MENA countries are more represented in the IASB bodies, with the clear aim of „ensuring that future accounting standards (i.e. the IFRS) and amendments to the current ones are useful to the region” (Boolaky, Omoteso, Ibrahim & Adelopo, 2018, 331). Also, in addition to the high rate of economic growth, higher readiness to accept the IFRS in these countries is due to the high education level in general, professional accountants in particular, as well as the common law system (Zehri & Chouaibi, 2013), as a consequence of the colonial status of such a legal system.

The IFRS adoption and application possible shortcomings and difficulties

There are, however, the perceptions that the global accounting language plays only a partial role in improving the comparability of accounting information (Leuz, 2003; Burgstahler, Hail & Leuz, 2006). M. Nnadi and T. Soobaroyen (2015) analyze a sample of 34 African countries over a period of 20 years and find a hint of the negative impact of the IFRS full adoption on FDI. The authors believe that „in the case of Africa, foreign investors appear to be concerned with the costs of operating in an IFRS-regulated environment. Secondly, fundamental institutional structures such as the rule of law, the legal system and the level of corruption, rather than the IFRS adoption, appear more important in sustaining or enhancing the level of FDI in African countries”. S. Gu and G. J. Prah (2019) also deal with a sample of the 12 African developing countries that are

the largest FDI recipients in Africa and they find that “the non-fully-IFRS-adopted countries experience higher FDI inflows than the fully-IFRS-adopted countries”.

However, mixed findings may also be due to the fact that FDI inflows in African countries or in the other analyzed countries were low in many cases (Emeni, 2014), so no general conclusions can be drawn. Specifically, in some African countries, there is a positive, but insignificant correlation between FDI inflows and the IFRS adoption. Nevertheless, there is certainly an indirect connection. L. A. Gordon *et al* (2012) consider the effort to obtain financial assistance from the World Bank to be the primary motivation for the IFRS adoption in developing countries. Therefore, the influence of international financial institutions is no less important when speaking about the IFRS introduction in developing countries (Elad, 2015).

A lack of the institutional and professional capacities is considered to be the biggest obstacle to the IFRS implementation in Africa (Tawiah, 2019). Also, the complexity of the IFRS introduction process may be discouraging for underdeveloped countries (Guerreiro, Rodrigues & Craig, 2020). In addition, the costs of implementation in the conditions of scarce financial resources can be a significant factor. In this regard, there is a challenge of education both during formal education at a college level and at a university level, especially implying the continuous professional education of accountants. F. Zehri and J. Chouaibi (2013) find that „developing countries with a high economic growth rate, a high level of education and a common-law system are the most favorable to the adoption of the IFRSs“.

Even if IFRS were labeled as universal guidelines for the highest-quality financial reporting, „the unequal effectiveness of incentive mechanisms, together with the flexibility of IFRSs themselves and their modifications when incorporated into national regulatory frameworks, is a factor of inconsistent (uneven) application of the IFRS worldwide, which has imposed itself as a significant problem in recent years“ (Obradovic, 2014). Finally, there are the opinions that „the pros and cons of the IFRS are, therefore, somewhat conjectural, the unbridled enthusiasm of

allegedly altruistic proponents notwithstanding the notion that uniform standards alone will produce uniform financial reporting seems to be naïve“ (Ball, 2006, 5).

Despite the IFRS-related limitations, however, (the specifics of each country where they are applied: in terms of the legal system, business culture and tradition, etc. and their incompleteness and contradictions between the requirements of different standards (Todorović & Pantelić, 2014)), the application of these standards allows investors lower information costs, especially in the case of cross-border investments (Covrig, Defond & Hung, 2007).

RESEARCH FRAMEWORK

The Sudanese financial reporting environment

The American Accounting Association has identified the eight elements that determine a country's accounting practice: „the political system, the economic system, the degree of economic development, financial reporting goals, the authority that prescribes accounting standards, education, the training and licensing of accountants, the application of accounting and ethical standards and client requirements“ (Walton, Haller & Raffournier, 2003, 25). For countries like Sudan, each of these elements has a significant influence on the underdevelopment of financial reporting regulations and practices. M. A. Abouagla (2017), for example, lists the following key factors that have affected the historical development and the current state of low-quality financial reporting in Sudan:

- *the colonial status in the past* - As a former British colony, accounting in Sudan is still based on the UK Financial Reporting Standards (especially the SSAP), the regulations that are still in force (e.g. the Companies Act of 1925), the reporting format „without any concern as to whether they meet local users' needs or level of understanding“ (Abouagla, 2017, 38).

- *culture* - As a typical representative of a traditional collectivist society focused on the wellbeing of the extended family, the Sudanese culture emphasizes interdependence, the connection between the members of the immediate community, which affects the tendency towards lower transparency in financial reporting to external stakeholders.
- *the political circumstances* - In the period after gaining independence, namely in the period since 1956, the military regime rule has been predominant (for as many as 50 years) with the instability of the entire sociopolitical system due to the civil wars and other conflicts (including the secession of South Sudan). Such circumstances were characterized by insufficient will and institutional preconditions for making changes in the financial reporting area, equally so in relation to regulations and in practice as well.
- *the economic factors* - of course, the sociopolitical system instability has resulted in the underdevelopment of the economy itself. After the secession of South Sudan in 2011, Sudan was left without the three-fourths of its oil revenues, which further boosted inflation, worsened macroeconomic stability and the business environment in general. In addition to that, the narrow ownership structure of Sudanese companies (large state-owned companies, small family-type companies), together with the political circumstances, have further conditioned foreign investors' low interest, thus ranking Sudan 171st country (out of 190 countries) according to the World Bank Doing Business indicators for the year 2020 (World Bank, 2020).
- *the funding system and the capital market underdevelopment* - macroeconomic instability, inflation and an inadequate deposit structure favor supplying short-term loans to Sudanese commercial banks, the number of which is insufficient for the economy. In addition, the Khartoum Stock Exchange is underdeveloped, with a small number of listed companies. The listed companies' reporting non-transparency with irregular (usually made once a year) and

often unaudited basic financial statements (the income statement and the balance sheet, without any notes and any other reports) reflects the general state of the financial reporting practices in Sudan.

E. E. Motwali (2005) and T. Elhassan and B. Braima (2020) emphasize the need to attract foreign investors and encourage local investors on the Sudanese Khartoum Stock Exchange to ensure the economic growth of the national economy. However, the adequate application of the international GAAP is one of the conditions for attracting foreign investors.

The fact that, unlike the industrial sector, banks and other financial institutions in Sudan, as well as those in more than 45 Islamic countries, apply the standards of the supranational body established in 1991 - the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFOI) that issues the standards covering the areas of Shari'ah, accounting, auditing, ethics and governance for international Islamic finance should be emphasized. It is understandable that radical changes in the IFRS introduction cannot be expected in the financial sector, because these standards „cannot be used to account for the accounting requirements of Islamic banking operations arising from Shari'ah compliance contracts and products" (Ahmed, Tajul Ariffin, Karbhari & Shafii, 2019, 867).

Hypotheses, methods and sample

Hypotheses. The current state of financial reporting in Sudan described in the previous section, the need for the better and more transparent reporting of companies with the aim of attracting investors and economic growth, as well as some other shortcomings, impose the need to consider the possibility of introducing the internationally accepted accounting principles. Although, as a former British colony, Sudan has a certain legacy of the influence of the UK accounting standards, on the one hand, without their consistent application, on the other, the fact that, in the last three decades, the IFRS have increasingly been accepted either as a global trend or on a voluntary basis already in as many as 166

jurisdictions worldwide as the standards to be applied to individual entities (e.g. listed and large companies) should never be forgotten (IFRS Foundation, 2018). Given the fact that Sudan does not belong to this group of countries, there is the need to examine the readiness of the most important participants in the financial reporting process for the IFRS adoption and implementation. As one of the pillars of each country's financial reporting system, the accounting profession certainly "plays a fundamental role in national capital markets and in assisting countries in their economic growth and development" (IFAC, 2010, 11). At the same time, accountants' readiness for changes intended to raise the quality of financial reporting is one of the crucial expected features. This paper intends to examine Sudanese professional accountants' views of a possible IFRS application.

The method. A questionnaire was created for the purpose of doing research in accountants' attitudes towards the previously defined questions. Starting from the previously researched main influential factors representing the obstacles to and the benefits of the IFRS introduction, and taking into account the described characteristics of the financial reporting environment in Sudan, each questionnaire contains a number of items divided into two groups. With respect to H1, the first part of the questionnaire includes the eight items that can be considered as the most important for assessing the existence of the obstacles to the IFRS adoption in Sudan. The second part of the questionnaire (H2) contains the four items that reflect the potential benefits of the IFRS introduction in this country. An overview of the claims for both research questions is given in the tables 1 and 2, where the research results are described.

The respondents were offered an item in five ways, following the „5-Point Likert Scale“ methodology (Likert, 1932) that provides a reliable tool for understanding the nature of the obtained responses. The internal consistency of the responses in both tests was put to the test using Cronbach's alpha coefficient. For the first questionnaire (H1), the coefficient value was 0.83, whereas for the second questionnaire (H2), the coefficient value was 0.91, which indicated the satisfactory reliability of the selected instrument. The

results of the research were obtained by means of the SPSS v.23.0 software package and using descriptive statistics for their interpretation.

The sample. In addition to the Sudanese agricultural sector, the industrial sector of Sudan is the Sudanese sector with the largest number of the employed and the same also has the biggest share in the GDP of the country (Central Bank of Sudan, 2018). The agricultural sector was not taken into consideration because, apart from but a few large companies, the SMEs and entrepreneurs operating in rural areas have the biggest share in the total number of the entities doing business in that sector (World Bank, 2020a, 49). The case is similar to the other, less significant sectors of the Sudanese economy, which is the reason why the questionnaires were distributed to professional accountants from the industrial sector. Using the random sampling technique, a total of 86 companies from throughout Sudan were first selected and 172 questionnaires were sent to them (to be completed by two respondents in each). Responses to 150 questionnaires were received, of which eight questionnaires proved not to be valid (with the largest number of the answers missing). There were 142 questionnaires deemed as valid for the interpretation of the results of this research study. In terms of academic qualification, the biggest number of them were filled out by the accountants with a bachelor's degree - 91, only to be followed by those with a master's degree - 40, a vocational school degree - 10 and one accountant with a doctoral degree. According to their work experience, the structure of the respondents is as follows: 99 respondents had an experience of over 10 years; 21 respondents had an experience from five to ten years, whereas 22 respondents had an experience of less than five years. The authors of the paper opine that the sample is relevant, because the high level of education and the work experience of the largest number of the respondents should ensure the reliability and relevance of the collected data. The research study was conducted in the period from June to August 2017.

Results and Discussion

H1 - Although it is considered that „the harmonization of national accounting systems with the international ones is inevitable” (Randelović & Đukić, 2018), this process is slowed down by objective circumstances, i.e. a country’s specifics, such as those of Sudan, which is also possible to conclude based on the analysis of Sudanese professional accountants attitudes towards the obstacles to the IFRS introduction and implementation (Table 1).

The Sudanese accountants’ perceptions of the barriers to the IFRS application largely coincide with the experiences of even those developing countries that have already adopted the IFRS, such as Jordan. In that country, the barriers to the IFRS implementation originate from the weaknesses of the institutions and instability in the country itself (Al-Htaybat, 2018), on the one hand, with the „unavailability of relevant skilled individuals to carry out accounting

transactions as stated by the new standard (IFRS)” being particularly pronounced, on the other (Almubaydeen, 2020, 216; similar findings can also be found in Ballas, Skoutela, & Tzovas, 2010; Jones & Finley, 2011). Institutional barriers, as well as mistrust in the IFRS, have also been identified as the barriers to the IFRS implementation in Egypt (Elbannan, 2011) and in African countries generally (Lassou & Hopper, 2016; Tawiah, 2019; Agyei-Boapeah, Machokoto, Amankwah-Amoah, Tunyi & Fosu, 2020).

In the conditions of insufficient financial resources, the inevitability of organizing training courses for accountants for the purpose of applying the IFRS and the costs associated with such activities would be a significant factor which might slow down the application of these standards in Sudan. This is the problem being faced by almost all countries (Taylor, 2009; Ballas *et al*, 2010; Jones & Finley, 2011), especially by the countries whose concepts and general accounting philosophy differ from those of the IASB.

Table 1 The barriers to the IFRS application in Sudan

The barriers influencing the IFRS application	N	Mean	S.D.	Strongly agree (data in %)	Agree (data in %)	Neither agree nor disagree (data in %)	Dis-agree (data in %)	Strongly dis-agree (data in %)
				(5)	(4)	(3)	(2)	(1)
The disadvantages of the regulatory system	142	4.03	0.64	20.18	64.04	14.04	1.75	0.00
Weaknesses in accountants’ education	142	3.68	0.83	7.89	68.42	7.89	15.79	0.00
Professional accountants’ inadequate professional skills	142	3.05	1.10	12.28	26.32	15.79	45.61	0.00
The ownership type (predominantly family-owned companies)	142	3.75	1.21	28.07	45.61	8.77	8.77	8.77
IFRS are unsuitable due to different corporate cultures	142	3.96	1.10	36.84	38.60	12.28	7.89	4.39
Islamic banks and other financial institutions should follow the Islamic accounting standards (AAOIFOI)	142	3.89	0.82	22.81	49.12	23.68	3.51	0.88
Additional training for accountants to understand and apply the IFRS is inevitable	142	4.50	0.52	50.88	48.25	0.87	0.00	0.00
A high cost of the IFRS implementation	142	4.30	0.89	48.25	40.35	7.89	0.00	3.51

Source: Authors

In addition to the aforementioned factors, the most pronounced obstacle to the IFRS adoption and implementation in Sudan is conditioned by traditional business culture and social values, which is understandable because this factor generally exerts a big influence in all countries (Gray, 1988; Douppnik & Tsakumis, 2004), especially in the societies based on the closed-type family businesses, dominant cultural values in relation to the financial reporting purpose and the other characteristics that have already been described in the previous part of the paper. „Clearly, in the current interconnected and interdependent global, economic and political environment, the idea of an underlying, cultural accounting values orientation represents but one of a variety of competing factors influencing the adoption of IFRS” (Borker, 2013, 175).

H2 - Examining the attitudes of the accountants working in the industrial sector in Sudan towards the possible benefits of the IFRS adoption and application, the results presented in Table 2 were obtained.

Table 2 makes it possible to conclude that the results are encouraging, because the Sudanese professional accountants included in the survey proved to be highly aware of the usefulness of the IFRS adoption. Therefore, it is believed the decision to adopt the IFRS for certain Sudanese entities would be encouraged by

the activities carried out in said profession in terms of appropriate additional education and training on the application of these standards. Simultaneously, as the IFRS application is mainly limited to public companies and large companies, such a strategy could be defined for the convergence of the Sudanese financial reporting system with globally applied standards.

All the four claims defined as the benefits arising from the IFRS adoption are in line with the results of other research studies (Gordon *et al*, 2012; Yousefinejad *et al*, 2018a; Barth *et al*, 2008). Thus, raising the general level of financial reporting quality and opening companies and the country as a whole to investors and to other markets by applying IFRS have been recognized by accountants as an important goal in boosting Sudan's economy.

CONCLUSION

In the absence of their own funding sources, markets, technology and the other business success factors, developing countries strive for the convergence of their business models with developed economies and, in connection with that, the financial reporting

Table 2 The benefits of a potential IFRS implementation in Sudan

Benefits	N	Mean	S.D.	Strongly agree (data in %)	Agree (data in %)	Neither agree nor disagree (data in %)	Dis-agree (data in %)	Strongly dis-agree (data in %)
				(5)	(4)	(3)	(2)	(1)
A contribution to attracting FDI	142	4.44	0.85	57.75	35.21	2.82	1.41	2.82
The reduced possibility of illegal activities (frauds)	142	4.32	0.99	52.82	38.03	3.52	0.00	5.63
Improving the comparability of financial statements	142	4.46	0.78	54.93	41.55	0.70	0.00	2.82
The transparency and reliability of financial statements	142	4.49	0.78	57.75	38.73	0.70	0.00	2.82

manner. By doing so, this need is primarily economically based, although there are also political influences on the IFRS introduction (Hamidah, Triyuwono, Sukoharsono & Djamhuri, 2015; Boolaky & Hooi, 2016). The benefits of the IFRS introduction have been proven in a number of studies over the past two decades, and academic debate has intensified ever since. Certainly, there is the empirical evidence that the IFRS introduction has not led to the expected results. The convergence of national accounting practices at the global level, however, is inevitable because the closure of national economies is impossible in modern business conditions. The level of mutual convergence will depend on the willingness to renounce some of companies' traditional business postulates and publicity policies.

It is a special challenge for developing countries to face change in understanding the financial reporting goal, which is often conditioned by tradition, culture in general and the owner's business philosophy that financial information is not provided to a broader audience. Certainly, „the amount of variance of a country's accounting value profile with the IFRS-favorable profile is not a predictor of the speed or ultimate success of IFRS adoption or implementation" (Borker, 2013, 175). Therefore, the countries like Sudan should not be condemned in advance for not yet being able to adopt IFRS, at least not so for large and listed companies. In the postcolonial period in Sudan with all of its socioeconomic and political problems, no progress could have been made in the financial reporting field. A lack of institutional will and support and the underdevelopment of professional accounting associations account for the most important subjective factors of lagging behind in relation to the modern achievements of accounting regulations and practice.

This research study has shown that Sudanese industrial sector accountants are highly aware of the needs to adopt and the benefits of adopting the IFRS. The respondents dominantly agree that the IFRS adoption would generate a greater FDI inflow, reduce frauds and other unlawful activities, improve the comparability and reliability of financial information, and its transparency, which is currently not the case. However, the research study has revealed that Sudanese accountants also demonstrate a high

degree of skepticism, given the many constraints they consider will hamper the IFRS introduction (deficiencies in the regulatory system, the inadequacy of accountants' formal and nonformal education, the inadequacy of the IFRS for the Sudanese business culture and tradition, high costs of implementation, and so on).

Nevertheless, notwithstanding any objective limitations, that the Sudanese Government, the Khartoum Stock Exchange, the professional associations of accountants and the other influential factors in Sudan should be supportive of the efforts made towards the IFRS introduction for listed and large companies is considered to be necessary. Individual efforts cannot yield results without comprehensive institutional support. The cost-benefit analysis of the IFRS introduction should not be short-term in character. Although the first effects of investing in the IFRS adoption and implementation can be expected to appear relatively quickly, the full meaning of this activity would only be visible in a medium term.

The contribution of this research study is twofold. First, we believe that a study of this kind can be an additional incentive for policymakers in Sudan (the Government, the stock market and other influential bodies) to understand the benefits of the IFRS adoption and to accelerate this process. The results of this research study show that the IFRS adoption is possible in Sudan from the point of view of the accountants included in the research study sample. The obstacles identified in this study should help the stakeholders responsible for the adoption and implementation of the mentioned standards (most notably the Government and the professional associations of accountants) to create reasonable conditions for the success of this process (for example, trained educators, financial and organizational resources). Second, by contributing to the global research fund, it is expected that a further debate on whether the IFRS are universal or not, or whether the specificities of a country's corporate culture should be further taken into account in their local adoption or not, which is in particularly the case in Sudan, will be stimulated.

There are also several limitations to this study.

First, accountants from certain sectors are not included in the survey, which might lead to a selection bias, even if the sample represents one of Sudan's largest economic sectors.

Second, although less complex than full IFRS, the accountants' views of the possibilities of adopting and applying the IFRS for SMEs in Sudan are not considered. Namely, it is believed that the simultaneous introduction of the IFRS and the IFRS for SMEs would be challenging for several reasons. In our opinion, it may pose even greater challenges before the accounting profession and all the other participants in this process than the implementation of the full IFRS in the first place. As in the largest number of other countries, micro-, small and medium-sized enterprises dominantly operate in Sudan. Therefore, there is an extremely large number of the accountants who should be trained on how to apply the IFRS for SMEs. That would cause big organizational difficulties and extremely high costs for both the state and SMEs. In addition, according to the latest published Analysis of the IFRS Foundation (2018), only 86 of 166 jurisdictions require or permit the use of the IFRS for the SME Standard (IFRS Foundation, 2018). This fact confirms the position declared in this research study that the simultaneous introduction of IFRS and the IFRS for SMEs in a country without a well-established education and training infrastructure and other essential prerequisites, such as Sudan, would be risky and likely inadequate. Following the model of developed economies, the implementation of the IFRS for large and listed companies should be the first step. In the next phase, when certain experience has already been gained and when the awareness of the usefulness of the IFRS has already increased, the implementation of the IFRS for SMEs should be performed.

Bearing in mind all the foregoing limitations, future studies should examine Sudanese accountants' attitudes towards the IFRS adoption in other economic sectors as well. In addition to said, although it is believed that only the IFRS for large and listed companies should be adopted in the first phase, it

is necessary that attitudes towards the usefulness of adopting the IFRS for SMEs should be explored. Finally, it would be very useful to examine the views of the other participants in the process of adopting and implementing both the IFRS and the IFRS for SMEs (e.g. business owners, academics).

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Review paper

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THE INFLUENCE OF COMMUNICATION SATISFACTION ON JOB SATISFACTION - THE CASE OF EMPLOYEES IN THE REPUBLIC OF SERBIA

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Communication is one of the processes that take place within a company. However, employees may be more or less satisfied with the communication that takes place in their work environment. Thus, if employees are satisfied with communication inside their company, such communication satisfaction can be expected to have a positive impact on job satisfaction (JS). Employee JS can initiate many other positive consequences in terms of their attitudes and behaviors. One way to achieve this is to increase satisfaction with internal communication. Starting from the above-mentioned, the subject matter of this paper is to examine the relationship between communication satisfaction (CS) and JS on the example of employees in companies in the Republic of Serbia. This research study is aimed at determining whether there is a connection between these phenomena or not. The sample consists of 202 employees. The results of the study have shown that the bivariate correlation between CS and JS is positive. In addition, the results of the study have shown that several dimensions of CS have a statistically significant impact on employee JS.

Keywords: communication satisfaction, job satisfaction, employees, human resource management

JEL Classification: J28, J40, M54

INTRODUCTION

Organizations are coalitions of various external and internal stakeholders. The leadership team of an organization need to communicate with all stakeholders so that the organization could regularly operate. When communication within organizations

themselves, i.e. communication with internal stakeholders (employees), is concerned, the same might be realized in various ways. Information within organizations may be transmitted through either formal or informal channels, verbally, nonverbally, in writing or orally (Ali & Haide, 2012). Information may also be transmitted downwards, upwards and in other directions as well. Although internal communication can be initiated by any member of the organization, it is primarily the responsibility and obligation of the management who should ensure through it that the

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employee behaviour, attitudes and performances are in line with the achievement of organizational goals.

On the other hand, employees may be either satisfied or dissatisfied with internal communication. Given the fact that there are several aspects of that communication (such as communication with superiors, communication with colleagues, etc.), satisfaction with it is a composition of satisfaction with different facets and communication practices in the organization (Crino & White, 1981). When speaking about satisfaction with communication with superiors, which is very important to employees, it should be noted that the same is not only based on the amount of the information communicated to employees, but it also depends on the content and purpose of such information. There should be a „right measure“ in all this, because too much information may have an opposite effect: instead of employees being satisfied with a large amount of information provided to them, they may feel confused if they are unable to separate necessary and useful information from unnecessary and useless. Therefore, relevant information should be communicated to employees above all. Such communication should be realized in a continuous and timely manner. In addition to building trust in management, such communication could be a predictor of several other important phenomena in the organization, such as the level of employee engagement (Jaupi & Llaci, 2015), organizational commitment (Ammari, Kurdi, Alshurideh, Obeidat, Hussien & Alrowwad, 2017), manifestations of organizational civic behaviour, perceptions of a high level of organizational justice (Chan & Lai, 2017), and so on. It has also been shown that satisfaction with internal communication has a positive effect on the performance achieved by the organization as a whole (Robson & Tourish, 2005).

Many studies have confirmed the fact that communication satisfaction has a positive impact on yet another important attitude towards work - employee job satisfaction. It is safe to say that job satisfaction and organizational commitment as well as some of employees' attitudes towards work that research has been done in the most. The importance of job satisfaction stems from the fact that the human resources highly satisfied with their job are

more willing to contribute to the accomplishment of organizational goals by using their competencies (Kuzey, 2018). It has also been found that high employee satisfaction with the job may provoke additional positive forms of behavior, such as organizational citizenship behaviour (Hemakumara, Khatibi, Gapar & Md. Johar, 2018), organizational commitment (Djaelani, Sanusi & Trianmanto, 2020), low turnover intentions (Huang, Chen, Liu & Zhou, 2017), low burnout (Bauer & Silver, 2018) and so on. Therefore, it is of great importance to undertake all possible measures in order to increase the level of employee satisfaction. The field of internal communication in particular offers a possibility of improving communication satisfaction.

In the previous period, quite a body of the literature was dedicated to the investigation of the relationship between communication satisfaction and job satisfaction. This kind of research, empirical research in particular, has been quite rare in the Western Balkan countries such as the Republic of Serbia (RS). Therefore, this paper aims to find out the answer to the following two questions; first, the study is aimed at determining whether it is possible to establish a relationship between communication satisfaction and job satisfaction in this country, as suggested by the research studies conducted abroad, or not and second, whether employee satisfaction in this country has a positive effect on their job satisfaction or not, which again implies taking into account the results of the research conducted abroad. Starting from the foregoing, the subject matter of this paper is to examine the relationship between communication satisfaction and job satisfaction on the example of employees in Serbian companies, the purpose of which is to provide an insight into the impact that communication satisfaction has on job satisfaction in the context of employees working in Serbian companies. Therefore, a quantitative research study was conducted based on the data collected through a survey.

In addition to the Introduction and the Conclusion, the paper is organized into yet four other parts. In the first part, an overview of the existing literature on the communication satisfaction and job satisfaction

concepts is presented and the interdependence between these two phenomena are highlighted and the starting hypotheses of the research study are defined. In the second part of the paper, the methodology used in the conducted research study is described. In the third part, the obtained research results and discussion on them are presented. In the fourth, and simultaneously the last part an overview of the implications that the research results may have for human resource management is given.

LITERATURE REVIEW

Communication satisfaction

Communication is a process of meaningful and understandable transfer of ideas, thoughts and feelings among people (Goleman, 1998). For communication to be successful, it is necessary for the recipient to understand the meaning of the message and show it through expected reactions.

Employees may be more or less satisfied with communication in their organizations. Since there are many internal communication aspects are important to employees, such as communication with superiors (supervisors), communication with colleagues, the quality of the communication media used and so on, their satisfaction with internal communication is composed of several satisfaction segments.

Speaking about the fact that communication satisfaction is a composition of various types of satisfaction, C. W. Downs and M. D. Hazen (1977) used a multidimensional approach to analyze communication satisfaction. They examined it as an interpersonal, group and organizational communication context. D. J. Pincus (1986) further defined communication satisfaction as every employee satisfaction with the information, information flows, and relationships established in the organization (Pincus, 1986, 395). Communication satisfaction is also defined as an affective feeling which is the outcome of successful communication between stakeholders in an organization (Alam, 2017).

In recent years, research studies have mainly focused on the outcomes of the quality of internal communication. Some research studies have focused on the effects of internal communication on achieving organizational goals and values, whereas some research studies have focused on how the quality of internal communication affects employees' attitudes and their behavior. When the effects of internal communication on organizational goals are concerned, P. Robson and D. Tourish (2005) argue that the available literature implies that internal communication contributes to increasing organizational performance. A. A. S. Alam (2017) cites research studies showing that the improvement of communication leads to more organizational benefits, such as job satisfaction, motivation, job performance, productivity, work values, the organizational climate, leadership styles, organizational identification and organizational commitment. D. Quinn and O. Hargie (2004) acknowledge the value added of internal communication for organizational efficiency and effectiveness, which has broadly been recognized. Furthermore, according to A. Stein (2006), there is a strong correlation between the quality of internal communication and building a good organizational culture. J. Gray and H. Laidlaw (2002) also point out the fact that the level of employee education influences expectations and satisfaction with the quality of internal communication, as well as the need for information breadth and depth.

When the effects of internal communication on employees' attitudes and behaviour are concerned, there is also a significant body of research that has found, for example, that satisfaction with internal communication has a positive influence on employee engagement (Jaupi & Llaci, 2015), organizational commitment (Ammari *et al*, 2017), organisational citizenship behaviour and organizational justice (Chan & Lai, 2017). Informing employees has also been found to lead to increased confidence in management and communication satisfaction (Hargie, Tourish & Wilson, 2002, 414).

A significant body of research has also shown that communication satisfaction affects job satisfaction (Pincus, 1986; Downs & Adrian, 2004; Carrie're & Bourque, 2009).

Job satisfaction

Since work plays a significant role in the lives of the largest number of employees, it is only natural that they would like to be satisfied with the work they do. When speaking about defining this important phenomenon, numerous views are offered in the literature, historically dating back in the 1930s. Namely, in the mid-1930s, R. Hoppock (1935) expressed a view that job satisfaction was a set of the factors (physical and psychological) that caused a sense of satisfaction (in Rahmayanto, Hakim & Rommy, 2019). However, E. A. Locke (1976, 1304) is one of the most cited authors when the notion of job satisfaction is concerned. The aforementioned author considers job satisfaction to be „a pleasant or positive emotional state that results from the evaluation of work or the experience that results from it“.

In recent times, many other authors have offered their own views of job satisfaction, one of those authors being S. S. Baloyi-a, C. C. van Waveren-a and K. Y. Chan-a (2014). They define job satisfaction as a pool of employees' attitudes towards different characteristics and aspects of labor, suggesting that it is a multidimensional concept. On the other hand, O. Tutuncu and M. Kozak (2007) focus on employees' job expectations. In this regard, they claim that job satisfaction relates to the consensus among job aspects and employees' job expectations, implying that it is a completely subjective phenomenon.

Job satisfaction is important to both employees and organizations. Numerous studies have indicated that job satisfaction is associated with the employee initiative, their participation and organizational citizenship behavior, their satisfaction with their lives, their mental health and performance, whereas it is negatively correlated with work volatility, absenteeism and feelings of pressure (Judge & Hulin, 1993; in Milana, 2018). In short, job satisfaction is associated with almost all the important aspects of employees' attitudes and behaviors that they may demonstrate in the work environment.

In a similar fashion, the above implies that it is very important to know and understand the factors

that cause (or reduce) employee job satisfaction. Their knowledge makes them easier to manage, thus creating the preconditions for achieving high business results. When job satisfaction factors are in question, P. E. Spector (1997) is one of the founders of this subject matter in the literature. The mentioned author believes that the outcome of the rewards received by employees, their relationships with their colleagues and superiors, and the nature of the work they perform, too, will be depicted by their job satisfaction. Based on this point of view, this author created the most frequently used job satisfaction measurement questionnaire, which is used in many types of research. A. Armstrong and S. Taylor (2014) are of a similar opinion when job satisfaction factors are in question. According to them, job satisfaction factors can be observed at three levels (Armstrong & Taylor, 2014; in Alromaihi, Aslhomaly & George, 2017). The first level consists of the intrinsic factors related to job content. The second level is the quality of the supervision that affects employees' attitudes. The third level is an upgrade of the Sector understands, and the abovementioned authors believe that job satisfaction is influenced by success or failure in its performance. According to this perspective, the employees who are successful in performing their work tasks will be satisfied with the work they do, whereas those who are not will naturally not be satisfied with it, either.

Communication satisfaction is one of the factors with a big potential to influence job satisfaction and cause all the positive consequences that arise from that satisfaction. Therefore, this factor deserves to be paid special attention to, which is done and elaborated in this paper.

Hypotheses Development

The first study which connected the two variables - communication satisfaction and job satisfaction - was associated with Herzberg and the 1960s (Carriè're & Bourque, 2009). However, the authors of the late 1970s, who focused on exploring the relationship between communication with superiors and job satisfaction, were interested in this topic (Carriè're & Bourque, 2009).

After the late 1970s, the authors began to investigate the influence of communication satisfaction and other forms of communication on job satisfaction. Namely, C. W. Downs and M. D. Hazen (1977) identified as many as eight dimensions of communication satisfaction: organizational integration, personal feedback, corporate information, the communication climate, communication with supervisors, the quality of the media quality, co-worker communication and subordinate communication. Thus, for example, a study conducted by D. J. Pincus (1986) discovered that the high levels of communication satisfaction could be related to a high level of job satisfaction. More specifically, a study conducted by the aforementioned author found that communication with superiors, the work environment, and feedback contributed most to the strong link between communication satisfaction and job satisfaction (Pincus, 1986).

Various research studies have recently clarified the fact that positively perceived internal communication practices positively influence employee job satisfaction. Thus, feedback and the communication climate are an example of effective communication practices, having proven to be the factors closely related to job satisfaction (Downs & Adrian, 2004). Furthermore, a study conducted by H. Tseng (2006) identified positive coherence among several variables, such as communication satisfaction, on the one hand, and job satisfaction, earnings, promotion, and relationships with superiors, on the other. J. Carrière and Ch. Bourque (2009) explored the relationship between internal communication practices, communication satisfaction, job satisfaction, and organizational commitment. Their research study correspondingly confirmed that customs respected when on-job communicating determine both levels of job satisfaction and organizational commitment.

Although the aforementioned studies were conducted in developed countries, the relationship between communication satisfaction and job satisfaction established in those countries is believed to be also present when speaking about employees in companies in the Republic of Serbia. Therefore, the hypotheses to be tested in this paper are as follows:

- H1: There is a strong positive correlation between all the dimensions of communication satisfaction and job satisfaction of employees in companies in the Republic of Serbia.
- H2: The communication satisfaction dimensions influence the job satisfaction of the employees in enterprises in the Republic of Serbia.

RESEARCH METHODOLOGY

The sample and the procedure. For conducting this type of research, employees are the most applicable population. Therefore, during December 2019, a total of exactly 202 participants mostly from the southeast of Serbia were included in the research study. The respondents were employed persons from Southeastern Serbia. As the region of Southern and Eastern Serbia is Serbia's least developed region and as it is characterized by a high unemployment rate, the initial assumptions set by generalizing the conclusions of the previous research in the relationship between communication satisfaction and job satisfaction do not have to be confirmed. Thus, a stratified sample of employees from Southeastern Serbia was created. A paper version and an electronic version of the questionnaire in the form of the Google forms were used for data collection, which the respondents were asked to fill out based on the instructions provided at the beginning of the questionnaire. Thanks to the distribution of the questionnaires in companies in Southern Serbia, an 80.8% response rate was achieved in total. The mandatory questions and anonymity at completing the questionnaire were the significant factors of the participants' engagement.

The research variables and the instruments. The questionnaire used in the study consisted of the items relevant for employee communication satisfaction and job satisfaction measuring. It also included the questions intended to collect information on the respondents' demographic characteristics.

To measure employee communication satisfaction, the broadly accepted Communication Satisfaction Questionnaire (CSQ) taken from C. W. Downs and M. D. Hazen (1977) was used. This multidimensional

questionnaire is so designed as to generate employees' attitudes towards the eight dimensions of communication satisfaction, such as organizational integration, personal feedback, corporate information, the communication climate, communication with supervisors, the quality of the media, co-worker communication and subordinate communication. The questionnaire consists of 40 items. The response options are measured on a seven-point Likert scale, anchored by very dissatisfied (1) to very satisfied (7). On the Likert scale, the value 4 means a neutral attitude towards communication, whereas the values lower than 4 mean either total or partial dissatisfaction and those higher than 4 account for partial or total satisfaction with communication. A total of five items were developed for managers to measure subordinate communication. In this research study, there were no respondents in a managerial position, so all the respondents answered 35 questions. The reliability test with the cut-off point for Cronbach's alpha greater than 0.6 (Griethuijsen, Eijck, Haste, Brok, Skinner, Mansour *et al*, 2014) showed that the reliability of all the dimensions of communication satisfaction was above the threshold (Table 1). The reliability of the communication with supervisors measuring scale expressed by Cronbach's alpha value 0.849 was achieved by excluding one item from the analysis, namely „The extent to which grapevine is active in our organization“. The overall reliability of the CSQ was 0.958, thus indicating a very high reliability of the scale.

To measure employee job satisfaction, a twenty-item scale of the short form of the Minnesota Satisfaction Questionnaire (MSQ) was adopted (Weiss, Dawis, England & Lofquist, 1967). In this part of the research, a five-point Likert scale was applied (1 - very dissatisfied to 5 - very satisfied). One example of the response option was „The chance to do things for other people.“ On the Likert scale, the value 3 indicates a neutral attitude towards job satisfaction, whereas the values greater than 3 indicate job satisfaction and those lower than 3 indicate job dissatisfaction. The reliability analysis presented a high value of Cronbach's alpha for overall job satisfaction (Table 1).

The analyses and the procedures. A descriptive analysis was first carried out using the IBM program SPSS

Version 26. The analysis was conducted by calculating the minimum, maximum, mean and standard deviation values for the communication satisfaction dimensions and job satisfaction. The reliability of the instruments was then assessed by calculating Cronbach's Alpha values, where the alpha values greater than 0.6 meet the acceptance condition (Hair, Black, Babin & Anderson, 2019). The strength of the relationships between the communication satisfaction dimensions and job satisfaction was then examined in a correlation analysis as a precondition for employing regression analysis. Finally, multiple linear regression analysis was used to predict the impact of the independent variables on the dependent variable. $P < .05$ was applied as the cut-off point for significance.

THE FINDINGS OF THE STUDY AND DISCUSSION

The sample characteristics. To review the structure of the sample obtained in this study, its demographic characteristics need to be analyzed. The sample dominantly included women (63.4%), whereas men accounted for 36.6%. In terms of age, work experience and education, the sample of the respondents is of a heterogeneous composition. Almost one-half of the participants (44.6%) were between 30 and 39 years of age. In a similar fashion, 40.6% were from 20 to 29 years of age, whereas only 8.9% were in the group of those from 40 to 49 years of age, and 5.9% were in the group of those older than 50 years of age. Presumably connected with the sample age distribution, the respondents were generally with a work experience of less than ten years (83.2%). Additionally, 9.9% of the respondents had 11 to 20 years of work experience, 5.9% had a work experience between 21 and 30 years and 1% of the respondents had a work experience between 31 and 40 years. The level of the respondents' education is diverse, specifically 12.9% had a high-school diploma, 38.6% had a bachelor's degree, 41.6% had a master's degree, and 6.9% had a doctoral degree.

The descriptive analysis presented in Table 1 accounts for the results of how participants scored their statements on communication satisfaction and

Table 1 The minimum, the maximum, the mean, the standard deviation and the reliability of the researched variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation	Cronbach's Alpha
Organizational integration	202	1.00	7.00	4.8020	1.26349	0.891
Personal feedback	202	1.00	7.00	4.6198	1.13576	0.854
Corporate information	202	1.00	7.00	4.5941	1.21039	0.830
Communication climate	202	1.00	7.00	4.6871	1.42205	0.931
Communication with supervisors	202	1.00	7.00	4.9282	1.26439	0.849
Quality of the media	202	1.00	7.00	4.9208	1.21092	0.886
Co-worker communication	202	1.00	7.00	4.7822	1.26840	0.892
Communication satisfaction	202	1.00	7.00	4.7620	1.12241	0.958
Job satisfaction	202	1.00	5.00	3.7079	.71580	0.949

Source: Authors

job satisfaction. The presented data were also tested on whether they met the conditions for normally distributed data before conducting the correlation and regression analyses and the assumption of normality was met.

Table 1 illustrates the communication satisfaction dimension values ranging from 1 (minimum) to 7 (maximum). All the mean communication satisfaction dimension values are higher than 4, which is indicative of the fact that employees are most satisfied with all the seven communication dimensions in their organizations. The participants are on average especially most satisfied with communication with supervisors ($M = 4.9282$, $SD = 1.2643$). Therefore, superiors are marked as the people who pay attention to what employees say and as problem-solving action guides. Furthermore, the overall communication satisfaction of 4.7620 ($SD = 1.1224$) demonstrates employees communication satisfaction.

The mean value of job satisfaction of the sample used in this study is 3.7079 ($SD=0.7158$), which is viewed as partial employee satisfaction with job-related characteristics.

To test the first hypothesis (H1), intercorrelations were used so as to investigate the relationship between the communication satisfaction dimensions and the employee job satisfaction. Noteworthy is the fact that the correlation between overall communication

satisfaction and job satisfaction is positive and strong ($r = 0.791$, $p < 0.01$). The results supportive of the first hypothesis are highlighted in Table 2.

The correlation analysis revealed that there was a significant positive and strong relationship between all the communication satisfaction dimensions and job satisfaction, thus having confirmed the first hypothesis. In other words, the results indicate the fact that, if the level of every dimension of communication satisfaction increases, the level of job satisfaction will increase accordingly, and *vice versa*. Table 2 also indicates the fact that the highest value of the correlation coefficient is recorded between communication with supervisors and participant job satisfaction, which is both positive and statistically significant ($r = 0.766$, $p < 0.01$).

Proposing that the high correlation coefficients point out a greater predictive accuracy of the independent variables, the second hypothesis (H2) was tested by conducting a multiple linear regression analysis, where the communication satisfaction dimensions were the independent variables and job satisfaction was the dependent variable.

Table 3 shows that the R value 0.832 and its R square 0.678 indicate that the communication satisfaction components explain 67.8% of the variability in respondent job satisfaction. The model fit between the communication satisfaction dimensions as the

Table 2 The correlations between the communication satisfaction dimensions and the employee job satisfaction

Variable	1	2	3	4	5	6	7	8
1. Organizational integration	1							
2. Personal feedback	.822**	1						
3. Corporate information	.720**	.773**	1					
4. Communication climate	.697**	.699**	.817**	1				
5. Communication with supervisors	.688**	.668**	.702**	.867**	1			
6. Quality of the media	.728**	.652**	.707**	.866**	.876**	1		
7. Co-worker communication	.779**	.745**	.754**	.829**	.834**	.864**	1	
8. Job satisfaction	.709**	.716**	.647**	.718**	.766**	.712**	.687**	1

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

Source: Authors

Table 3 The results of the multiple regression analysis

Explanatory Variables	Dependent variable - Job satisfaction			
	β	Sig.	Tolerance	VIF
(Constant)	1.167	.000		
Organizational integration	.115	.000	.247	4.041
Personal feedback	.187	.014	.243	4.107
Corporate information	-.020	.000	.244	4.106
Communication climate	.037	.683	.139	7.191
Communication with supervisors	.278	.501	.175	5.712
Quality of the media	.043	.000	.146	6.830
Co-worker communication	-.112	.493	.175	5.708
R	.832			
R ²	.678			
Adjusted R ²	.666			
ΔR^2	.678***			
F	58.322***			
Number of observations	202			

Note: *** p < 0,001

Source: Authors

independent variables and job satisfaction as the dependent variable was met ($F = 58.322, p < 0.05$). According to the third part of Table 3, the regression coefficients for the communication satisfaction dimensions that are statistically significant are as follows: organizational integration ($\beta = .115, p < 0.05$), personal feedback ($\beta = .187, p < 0.05$), communication with supervisors ($\beta = .278, p < 0.05$) and co-worker communication ($\beta = -.112, p < 0.05$). The highest beta coefficient amongst all the four significant coefficients

is that for communication with supervisors. Regarding the degree of supervisors' success in understanding employees' opinions and their problems in the workplace, employees will be more satisfied with their job if that degree is high. Also, if employees are satisfied with the information about the work environment and about how their performances are evaluated, job satisfaction will increase. Despite the positive influence of the three communication satisfaction dimensions, co-worker communication

has a negative impact on job satisfaction. This finding could be contemplated as a positive, meaning that if there is no informal communication between co-workers, there will be no misleading information that might lead to employee job dissatisfaction.

Finally, the regression equation for the predicted value is expressed as follows:

$$\text{Job satisfaction} = 1.167 + 0.115 (\text{organizational integration}) + 0.187 (\text{personal feedback}) - 0.020 (\text{corporate information}) + 0.037 (\text{the communication climate}) + 0.278 (\text{communication with supervisors}) + 0.043 (\text{the quality of the media}) - 0.112 (\text{co-worker communication}) \quad (1)$$

As was previously stated, only four regression coefficients are statistically significant, while three (corporate information, communication climate and media quality) are not. Based on the previously presented results, the second hypothesis (H2) is but partially confirmed.

To address the multicollinearity issue, it is important to look into the columns of Table 3 showing the VIF and tolerance values. Even though there are high correlation coefficients between the independent variables, the values of the tolerance and VIF tests are within acceptable limits - VIF < 10 and Tolerance > 0.1 (Field, 2018).

The obtained research results reveal comparable findings as the other studies in which communication satisfaction and job satisfaction were researched in general and the relationship between the communication satisfaction and job satisfaction forms. Taking into consideration those studies, the results of the P. Vermeir, C. Downs, S. Degroote, D. Vandijck, E. Tobback, L. Delesie, A. Mariman, M. Deveugele, R. Verhaeghe, B. Cambré and D. Vogelaers (2018) study are similar to the results obtained in this study. At the $p < 0.01$ level, they found that all the dimensions of communication satisfaction in hospital nurses significantly correlated to their job satisfaction. Opposite to the results obtained in this study, showing a strong correlation between the variables, the correlation coefficients in their research had a medium effect, which was indicative

of a moderately strong relationship between those variables. Additionally, a research study by G. Doleman (2017) detected a strong positive relationship in the six communication satisfaction dimensions (organizational integration, corporate perspective, a relationship with supervisors, the communication climate, horizontal communication, and the quality of the media) and job satisfaction ($p < 0.01$) in pediatric nurses. The findings of this research study provide a specific view of the positive relationship between all the independent and dependent variables, as well as a research by L. D. Ramirez (2012), done in university foodservice student employees.

The importance of doing research in the impact of the communication satisfaction dimensions on employee job satisfaction is observed through the fact that not many such surveys have been conducted. In one of them, job satisfaction is observed as a mediating variable between communication satisfaction and the organizational commitment of researchers in agriculture (Oso, Adebayo & George, 2017). The results have shown that only top management communication influences job satisfaction, which implies that the top management interacting with employees and valuing their attitudes towards the company's vision, mission and goals exerts a positive influence on job satisfaction. G. Doleman (2017) further found that job satisfaction expressed by the nurses was significantly influenced by the quality of the media and the communication climate, which is only followed by the relationship with supervisors. In both research types, i.e. both in the study we conducted and in the research study by G. Doleman (2017), communication with supervisors was found to be a significant variable influencing job satisfaction. This further means that, when employees are satisfied with supervisor's shared information and when the upward and downward aspects of communication are in place, they will be more satisfied with their jobs.

Rare studies conducted in Serbia dedicated to the issue in question show that employees are satisfied with some aspects of communication in organizations. For example, some studies found that communication with supervisors moderated the relationship between employees' personality traits and the dimensions

of employee job satisfaction (Hadžić, Majstorović and Nedeljković, 2009). Furthermore, in their broad research based on the data obtained from 256 middle managers working in 131 companies in Serbia, M. Nikolić, J. Vukonjanski, M. Nedeljković, O. Hadžić and E. Terek (2013) found that the internal communication satisfaction dimensions were positively correlated with the job satisfaction dimensions. In the research study conducted by M. Nedeljkovic Knezevic, M. Mijatov and S. Nedeljkovic (2019), the personality dimensions significantly related to the dimensions of the communication satisfaction in 119 employees in Serbia.

IMPLICATIONS FOR HUMAN RESOURCE MANAGEMENT

Based on the previously shown results and in order to contribute to an increase in employee communication satisfaction and employee job satisfaction levels, it is possible to make recommendations for human resource management, at least for the human resource managers working in the organizations included in the research study. Some of the recommendations are as follows:

Maintaining a communication link with employees. In order for employees to be satisfied with the work they perform, communication with superiors must be open and honest. The first step in achieving suchlike communication is to establish and later maintain adequate employee-superior communication channels (Doleman, 2017). All official information and instructions should be conveyed through formal communication channels, whereas informal communication is only reserved for meeting employees' relational needs (such as understanding, support, advice, etc.). Informal communication, however, can also be used to transmit official information if, for any reason, formal channels have not been sufficient to provide an appropriate response from employees or if there has been some interruption in information transmission (Kandlousi, Ali & Abdollahi, 2010). All channels, no matter whether they are formal or informal, should enable

the two-directional information transmission: from management to employees and *vice versa* (Zangaro, 2001). Except for traditional communication methods (such as conversation or e-mail), communication may considerably be enriched using other options, such as „the open door“, „the open book“, „e-books“, and so on.

Providing feedback on the work done by employees. The results of the research study show that providing feedback on employee performance is a very important factor in employee job satisfaction in Serbia. For this reason, employees should promptly be informed about the aspects of their work that will be the subject matter of evaluation and the evaluation methods that will be used for that purpose, the dynamics of such evaluation, and so on.

Providing information on the company's business and operation. This information group aims to increase employee organizational integration, which has also been shown as a significant predictor of employee job satisfaction. Therefore, in order to increase employee job satisfaction, they should be provided with all the relevant information about their immediate work environment, what business plans are to be implemented, what results they are expected to achieve, even the news about their colleagues and other employees (Doleman, 2017).

Improving communication with colleagues. The research study has proven that communication with colleagues is the factor which may predict employee job satisfaction, but the same has a negative sign. Such a situation can be characterized as problematic from the aspect of a team spirit development and cooperation inside the work environment. Given such a situation, G. Doleman (2017) suggests that lateral communication can be enhanced by various team-building practices (such as workshops, common excursions, etc.). Also, designing the work tasks that involve collaboration between the employees of different departments may contribute to an increase in understanding, collaboration and tolerance among employees (Awad & Alhashemi, 2012).

CONCLUSION

The subject matter of this paper implies a study of the two important issues related to the workplace, namely communication satisfaction and job satisfaction. Both issues, each on its own part, exert an influence on the work-related outcomes. However, they can be interrelated in such a way that the one influences the other, which indirectly affects many other important work-related outcomes. For both reasons, it was important to conduct a deeper research study of their nature and the relationship between them as well. Therefore, an empirical research was done on a sample of employees working in enterprises in Serbia.

The conducted research study has primarily shown that employees in Serbia are generally satisfied with both communication within the company and the work they perform, bearing in mind the fact that the average communication satisfaction and work satisfaction scores range between 4.7 and 3.7, respectively, on a scale from 1 to 5.

Secondly, the results of the study verify the fact that there is a positive relationship between these two variables. Furthermore, the results indicate that the issue of the relationship between communication satisfaction and job satisfaction can also be addressed through regression analysis.

Thirdly, the results of the study have revealed that the largest number of communication satisfaction facets have a statistically significant influence on job satisfaction (the regression analysis has shown that the communication satisfaction dimensions greatly influence employee job satisfaction, accounting for 67.8% of variability in job satisfaction). The significant influential communication satisfaction dimensions that have arisen from the research study by the magnitude of the effect are as follows: communication with supervisors, personal feedback, organizational integration and co-worker communication. Additionally, the study has also shown that co-worker communication has a negative effect on job satisfaction, apart from the other three factors that have a positive effect. Consequently, there is a need for the improvement of communication in this area.

Therefore, practices for human resource management are proposed both for enhancing the influence of the communication satisfaction dimensions that already have a positive influence on job satisfaction and for strengthening lateral communication among employees.

This research study, however, has its limitations. They primarily relate to the sample size and the fact that the sample sociodemographic structure is rather diverse, too. Therefore, in order to generalize the research results, future research in this topic should be aimed at including a larger number of the respondents who will have similar frequencies between groups. A suggestion is also made in this paper that it may be useful to explore the relationship between communication satisfaction and job satisfaction with the other attitudes towards work, such as organizational commitment. Despite the paper's obvious limitations, this paper is believed to be contributing to the domestic literature in this field, since this topic has not been paid sufficient attention to so far. The contribution of the paper also reflects in the proposed recommendations set intended to help human resource management enhance employee communication satisfaction and consequently employee job satisfaction at least in the enterprises that were included in the sample.

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Review paper

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OIL PRICE ASYMMETRY, ENERGY USE AND ECONOMIC GROWTH TRANSITION IN NIGERIA

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The study accounts for the structural break effect in the context of Nigeria. According to the findings obtained, the linear Autoregressive Distributed Lag (ARDL) bounds test reveals that the possibility of a long-term co-integrating relationship is inconclusive. When the study further accounts for asymmetry and the structural break period, however, the Nonlinear Autoregressive Distributed Lag (NARDL) bounds test reveals that there is no long-term co-integrating relationship among the variables in Nigeria within the specified period. According to the results of the NARDL test, both the positive and the negative changes in the oil price and energy use have a negative significant impact on economic growth in Nigeria in the short run, whereas the Consumer Price Index (CPI) exerts a positive and significant impact on economic growth in the short run. The Error Correction Model (ECM) result shows that the independent variables can correct about 94% of the short-run deviation of economic growth from equilibrium in the long run. The study concludes that, irrespective of the changes in the Bonny Light crude oil price, its impact remains the same on the Nigerian economic growth.

Keywords: oil price, consumer price index, energy use, economic growth

JEL Classification: C32, O13, O47

INTRODUCTION

Oil price asymmetry is a lack of the oil price equality or equivalence. It may also be referred to as the oil price fluctuation. Discussion on the impact of the oil price fluctuations on economic growth remains an

interesting and attractive topic among researchers in the economies of oil producing countries. It has been argued though that the growth trend of an economy is more influenced by macroeconomic variables, such as inflation, unemployment, trade, the interest rate, savings, and investment, among other variables (Omitogun & Longe, 2017; Longe, Adelokun & Omitogun, 2018; Ahmed, Bhutto & Kalhor, 2018). There is a strong correlation between the oil price and

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Nigeria's economic growth, given its dependency on oil as its mainstay (Omitogun, Longe & Muhammad, 2018).

Bonny light oil was discovered for commercial purpose in Nigeria in 1956. It is graded as sweet oil with a low-sulphur environmental impact.

The Nigerian economy has been recording slow growth since the oil price shock experienced in 2014 that led the economy into a recession in 2016, the growth rate being recorded at a range below its Economic Recovery Growth Plan (ERGP) target of 7% by the year 2020.

The recent oil war between Saudi Arabia and Russia (the two giant oil producers) and the outbreak of COVID-19, however, have prompted a revision of its expected growth. Initially in January 2020, the International Monetary Fund (IMF) forecast Nigeria's economic growth for 2020 at 2.5%, assuming that the oil sector would continue to recover and the agriculture sector would regain the momentum after a worthy harvest. Due to the continuous decline in the international oil price recently experienced in 2020 and the COVID-19 pandemic, however, the growth rate was revised downwards at 4.3% for the year 2020 given Nigeria's vulnerability to twin shocks. This exposure is no doubt traced to its large dependency on crude oil revenue and on having a larger amount of imported goods in use for its domestic activities. The Nigerian Bureau of Statistics (NBS), however, reported a 1.92% contraction in the Nigerian economy for the year 2020 due to the impact of the oil price turbulence and the covid-19 pandemic disruption on economic activities.

Theoretically, changes in the oil price have two effects: first, the demand side effect and second, the supply side effect. When the demand side is concerned, a positive change in the oil price positively adjusts the price of the fossil fuel energy use, which results in an increase in the cost of the transportation of goods and services, which adds to the production cost and increases the final price of goods and services to the end user. Following the demand law, this effect therefore reduces consumer consumption power which is in contraction with an economy's expected

growth. From the supply side, an increase in the oil price causes the production cost to increase via the energy consumed in the production process. For example, given the fact that Nigeria is an oil product importing country, positive oil price changes increase the monetary value or the cost of oil products (such as premium motor spirit, dual purpose kerosene, and AGO) as the crude oil importing country would want to cover the cost of buying at a higher price through the sale of refined products. As a result of this, as the price of the oil product used in the production process increases, producers' production capacity is negatively affected given the fact that the monetary value of their current capacity drops via the exchange rate, thus leaving the country's growth transition unfavored. This implies that there is a connection between the oil price fluctuations and the energy consumed and the consumer price index of the Nigerian economy. Negative oil price changes turn around the effect on both the demand side and the supply side.

On the methodological front, different studies have applied different, various methods, such as the Online Linguistic Support (OLS), the ARDL model, the Vector Autoregression (VAR) model, the Vector Error Correction (VECM) method, and the Granger Causality Test, to analyze the impact of the oil price changes on economic growth in Nigeria. Albeit, they all came up with different findings, since some argued the impact was significant (Akinleye & Ekpo, 2012; Idrisov, Kazakova & Polbin, 2015; Ebele & Iorember, 2015; Gummi, Buhari & Muhammad, 2016; Ogboru, Rivi & Idisi, 2017) and some argued that the impact was insignificant (Ayadi, 2005; Odularu, 2007; Omitogun *et al*, 2018), but the findings are based on the differences in the scope, the method and interpretation.

There is no doubt that the Nigerian economy is exposed to both external demand and supply shocks. The question, however, that has remained unanswered is first, how the oil price regimes and some other key variables, such as the consumer price index and the energy use, affect Nigeria's growth transition. Among the studies reviewed to the best of our knowledge, no study has actually captured

the effect of structural breaks in the Nigerian model specified with the energy use and the consumer price index, either, which may have influenced the outcome of the study and the results. The second question that is to be answered is that to what extent the structural breaks identified through the oil price regimes affect Nigeria's economic growth? These questions are considered as important, and they need to be answered given the fact that they capture both consumer and investor decision-making in the economy towards their respective engagement in the activities that may contribute to the country's economic growth. Accordingly, the research goals of this paper are to investigate whether:

- the oil price regimes, the consumer price index and the energy use affect Nigeria's growth transition or not, and
- the effect of the structural breaks identified through the oil price regimes affect Nigeria's economic growth or not.

Based upon the foregoing, the hypotheses of the study are as follows:

- The oil price regimes, the consumer price index and the energy use have no effect on Nigeria's economic growth.
- The structural breaks identified through the oil price regimes have no effect on Nigeria's economic growth.

These hypothetical propositions are tested using the ARDL model on the time-series data of the variables.

The rest of the study is organized into four sections. Section Two deals with a literature review. Section Three demonstrates the methodology and the data. In Section Four, the results obtained in the study and discussion are given. Section Five contains the summary and the conclusion.

LITERATURE REVIEW

Theoretically, according to G. Idrisov *et al* (2015), the impact the oil price exerts in the context of the

Solow growth model can be traced through capital accumulation for a largely oil-dependent nation. This approach was considered by M. Kazakova, S. Sinelnikov-Murylev and P. Kadochnikov (2009); M. Kazakova and S. Sinelnikov-Murylev (2008) and M. Kazakova (2009). Hypothetically expanding the Solow growth model, G. Idrisov *et al* (2015) assume that an economy consists of the two sectors: the oil sector and the non-oil sector. They premised their argument on the assumption that the economy is in steady-state economic growth at a rate equal to the addition of the population and productivity growth rates. They further assume an increase in the oil price, which is the income from abroad that can either be consumed or invested. Therefore, an increase in the oil price increases investment funding sources, which positively adds to accumulated capital within the domestic economy and increases physical outputs. This discussion, however, suffers from the impact negative changes in the oil price would have on economic growth through the other macro-economic variables, such as the consumer price index and the energy use in the form of technological development.

Empirically, D. Ven and R. Fouquet (2017) used the structural oil market VAR model to identify supply, aggregate demand and residual shocks to energy prices and estimated their changing influence on the energy prices and the Gross Domestic Product (GDP). Their study identified that supply shock impacts became greater with an increase in coal dependency and declined with partial transition to oil. Transition from exporting coal to importing oil, however, increased the negative impacts of the demand shocks.

In the OECD countries, R. Eyden, M. Difeto, R. Gupta and M. Wohar (2018) used different panel data techniques, such as the Generalised Method of Moment (GMM), the Feasible Generalised Least Squares (FGLS) Random Coefficients (RC), among other methods, to analyze the economic growth reaction to the oil price volatility. The study took a sample of the 17 OECD member countries, and the data sampling was performed for the period between 1870 and 2013. The study findings noted that the oil price volatility had a negative statistically significant impact on the sampled members' economic growth.

The study further analyzed the heterogeneity effect amongst the countries, and it was noted that the economic growth of the oil producing countries was for the most part affected by the uncertainty of the oil price, especially so Norway and Canada. F. Jawadi and Z. Ftiti (2018) used on/off threshold regression to analyze the asymmetric, nonlinear and time varying oil/GDP relationship with regards to the business cycle phases in Saudi Arabia. In their study, they also tested the diversification policy implemented through the National Transformation Program (Saudi Vision 2030) so as to verify the equity-energy investment possibility of improving the growth status of Saudi Arabia. Their result confirms that the relationship between oil and the Saudi Arabian economy exhibits nonlinearity and the threshold (there is a certain level of volatility in the oil market that will have an impact on the economy) effect as the impact varies per regime, depending on the market status. It was also verified that the diversification route would stimulate the oil benefit effect on the Saudi Arabian economy. P. Wesseh and B. Lin (2018) used the unrestricted Vector Autoregressive (VAR) model to model the upward and downward movements of the oil price and the exchange rate effect on Liberia's economic growth using the data over a span from 1980 to 2015. The findings obtained in the study show that positive changes in the oil price stimulate Liberia's economic growth. The exchange rate depreciation in Liberia causes economic growth to fall, whereas appreciation tends to have no significant impact on the economic growth of the Liberian economy. Lastly, the study noted that a trade balance and consumer prices were positively correlated with economic growth in the economy. The study, however, differentiates itself by concluding that positive changes (increases) in the oil price have a positive impact on the economy of net-oil importers. A. Evgenidis (2018) investigated the impact of the oil price shocks in the Euro Area using the threshold VAR model. The findings obtained in the study show that a higher uncertainty of the oil price impedes a greater effect on the output than it is the case when such uncertainty is lower. However, besides the output effect, the study also notes that stock markets respond more negatively to an increase in oil price shocks, whereas, irrespective of the oil

price changes, the consumer price is largely affected.

J. Cunado, S. Jo and F. de Gracia (2015) considered the impact of structural oil shocks for the top four oil-importing Asian countries using the Vector Autoregressive (VAR) model. The study identified the three different structural oil shocks depending on sign restrictions: oil supply shocks, oil demand shocks as a result of increased economic activities, and oil-specific demand shocks. The result shows that, depending on their nature, the economic activity and prices purely differently respond to the oil price shocks. Particularly so, the impact of the oil supply shock is limited, while the demand shock driven by the global economic activity has a significant positive effect in all the four Asian countries. The study further submitted that the policy tools such as interest rates and exchange rates help mitigate the effects of supply shocks in Japan and Korea, but they can be more actively used in curbing demand shocks. With a special focus on the post-2009 Euro Areas effect of the oil price shocks on macroeconomic and financial markets, C. Morana (2017) used the semiparametric dynamic conditional correlation model. The study confirmed that recessionary periods were triggered off by the seasons of the oil price hikes and, in some cases, by the oil price slumps. The post-2009 nature of the oil price significantly contributed to the sluggish growth of the considered areas. Ahmed *et al* (2018) examined the impact of the oil price shocks in India, Pakistan, Bangladesh, Sri Lanka and Bhutan using the Impulse Response Factor (IRF) and the Forecast Error Variance Decomposition Method (FEVDM). The IRF result shows significant variations among all the macroeconomic variables in response to the exogenous oil price shocks at different time horizons. According to the study, the implication of this reflects in the fact that macroeconomic variables are sensitive to even small oil price shocks and that they have various socioeconomic implications. The FEVDM confirms the fact that there are variations in how economies react to oil price shocks. J. Kouton (2019) examined the asymmetric heterogeneous relationship between the energy use and economic growth in the 19 selected African countries in a span from 1971 to 2014. In the study, the NPARDL model was used, and the asymmetric panel causality test was done for the

estimates. The empirical results suggested that the relationship between the energy use and economic growth was asymmetric and depended on the phases of the economic cycle.

S. Ghosh and K. Kanjila (2020) investigated the potential impact of promoting non-fossil fuel energy on India's economic growth using a regime based the nonlinear asymmetric framework. The empirical outcomes affirmed the regime-shift and asymmetric co-integrating links of the non-fossil fuel energy use represented by combustible renewables and waste (CREW) and alternative and nuclear energy with the GDP. The study confirmed the fact that the causal links between combustible renewables and waste and the GDP were regime-variant and asymmetric, on the one hand, whereas the dynamism between alternative and nuclear energy and the GDP was proven to be both asymmetric and regime-invariant, on the other.

L. Kilian and R. Vigfusson (2011) tested the estimations made in the existing studies of the impact of the oil price shocks using the VAR model, analyzing the symmetric and asymmetric links between the energy prices and the U.S. economy. Their findings reveal an inaccurate magnitude in either direction. The study noted that the M. Karaki (2017) re-examined real GDP asymmetric response to the oil price declined. The study also tested the symmetry effect following L. Kilian and R. Vigfusson (2011). The findings do not go against L. Kilian and R. Vigfusson (2011). The asymmetric result, however, shows the unstable feedback of the real oil price. The effect, however, vanishes after a robustness check.

A. P. Gbatu, Z. Wang, P. K. Wesseh and I. Y. Tutdel (2017) applied both the asymptotic and bootstrap distribution techniques so as to model the impact that various oil price shocks exert on macroeconomic variables in Liberia. The study noted that the different oil price shocks with different effects and the existence of asymmetries in the oil price could be explained by Liberia's lack of structured financial markets and its tight monetary policy controls and that a rise in the oil price shocks favored Liberia's economic growth. In Malaysia, H. Ahmed and M Wadud (2011) used the structural VAR model to analyze the data over a span

from 1986 to 2009. The study found the existence of the dampening effect of the oil price shocks on the macroeconomic variables in Malaysia's economy. In reaction to such oil price uncertainties, however, the study also noted that the Malaysian economy adopted expansionary monetary policies to curb the said effect.

I. Raheem (2017) tested the asymmetric response of the trade channels of different countries to oil price shocks using the Nonlinear Auto-Regressive Distributed Lag (NARDL) technique and monthly datasets for the period from 01/1992 to 06/2016. The selected countries are China and Germany (high-trading countries), U.S. and India (oil-importing countries) and Russia and Canada (oil-exporting countries). The findings obtained in the study show that there is a long-term asymmetric effect of oil price shocks on the export component of the high-trading economies (namely China and Germany), a short-term impact on the imports of the oil-importing countries (namely the U.S. and India), and a long-term impact on the import of the oil-exporting countries (namely Russia and Canada). It was, however, concluded that the result might change in relation to changes in the data frequency. U. Bala and L. Chin (2018) verified the asymmetric link between the oil price and inflation in the African OPEC member countries (namely Algeria, Angola, Libya and Nigeria) using ARDL dynamic panels to estimate the short- and long-term links. It was observed that both the positive changes and the negative changes in the oil price had a positive impact on inflation in those economies, which were more significant whenever there was a negative change in the oil price.

In Nigeria, O. Ayadi (2005) examined the development of the Nigerian economy via industrial production as it was affected by the oil price fluctuations using the VAR model for the data spanning from 1980 through to 2004. The analysis revealed that the oil price had exerted an impact on the country's industrial production through the exchange rate volatility, but the same was not statistically significant. According to the findings of the study, a conclusion was made that the increase in the oil price in Nigeria did not translate to an increase in industrial production.

Omitogun *et al* (2018) used the data over a span from 1981 to 2016, adopting the ARDL model to investigate the impact of the oil price and revenue variations on economic growth. The study noted that, the oil price, the consumer price index, and the exchange rate positively related with economic growth in the long run, whereas oil revenue simultaneously negatively influenced Nigeria's economic growth. In the short run, the oil price and revenue exert a positive impact on economic growth, whereas the consumer price index and the exchange rate have a negative impact on Nigeria's economic growth. Longe *et al* (2018) checked the long- and short-term link between the oil price fluctuations and the Nigerian current-account balances using the ARDL model with the data spanning from 1977 to 2015. In the short run, the study reveals that the oil price has an impact on the current account balances, and that the impact is positive and insignificant, whereas in the long run, the same is negative and significant. I. Ogboru *et al* (2017) adopted the Vector Error Correction Model (VECM) to analyze the impact of changes in crude oil prices on Nigeria's economic growth. The study findings reveal that all the variables contributed to the convergence of economic growth to a long-term equilibrium and that there is a positive unidirectional relationship between changes in crude oil prices and economic growth. U. Gummi *et al* (2016) examine the causal link between the oil price and economic growth in Nigeria. The result reveals that there is a unidirectional causal link between the oil price and economic growth. Based on the OLS results, G. Odularu (2007) argued that crude oil consumption in the Nigerian economy was insignificant to its growth, but the export services were found to be significant and to exert a positive impact on its economic growth. S. Akinleye and S. Ekpo (2012) tested the truism of the existence of the Dutch disease syndrome in the short run and in the long run in the context of Nigeria. Their findings show that shocks in oil revenue disrupt growth and hamper the price level in the short run.

According to the empirical studies presented in this literature review, discussion on the impact of the oil price on economic growth remains inconclusive given its volatility nature. The dynamic findings and the conclusions emanated from the different approaches

applied and the different goals set in the foregoing studies. However, following the argument made by O. Ayadi (2005) that the oil price has an impact on economic growth, but that impact is not direct, this study focusses on extending this argument by considering the various means through which growth transition in Nigeria is affected through the oil price volatility, the average price of goods and services, and the energy use.

METHODOLOGY AND DATA

To expand the G. Idrisov *et al* (2015) theoretical discussion, the study follows the O. Ayadi (2005) and D. Ven and R. Fouquet (2017) models.

First, the model is specified in its linear-linear form as:

$$Y = f(BL, CPI, E) \quad (1)$$

where:

Y is the GDP, the economic growth proxy, BL is the Bonny Light crude oil price, CPI is the consumer price index, and E is energy consumption.

The model is respecified in an econometric log-log form as:

$$\ln Y = \alpha_0 + \beta_1 \ln BL_t + \beta_2 \ln CPI_t + \beta_3 \ln E_t + \mu_t \quad (2)$$

where:

$\ln Y$, $\ln BL$, $\ln CPI$ and $\ln E$ imply the log form of the GDP, the log form of the Bonny Light crude oil price, the log form of the Consumer Price Index and the log form of energy consumption, respectively, α_0 is the intercept of the model, β_1 - β_3 are the coefficients of the estimated parameters, t is the time and μ is the error term.

According to Equation 2, the short- and long-term oil price NARDL model, the CPI, the energy use and economic growth are stated as follows:

$$\begin{aligned} \Delta \ln Y_t = & \mathcal{G}_0 + \sum_{q=1}^n \rho_1 \Delta \ln Y_{t-k} + \sum_{q=1}^n \rho_2 \Delta \ln BL_t^+ \\ & + \sum_{q=1}^n \rho_3 \Delta \ln BL_t^- + \sum_{q=1}^n \rho_4 \Delta \ln CPI_{t-k} \\ & + \sum_{q=1}^n \rho_5 \Delta \ln E_{t-k} + \beta_1 \ln Y_{t-1} + \beta_2 \ln BL_t^+ \\ & + \beta_3 \ln BL_t^- + \beta_4 \ln CPI_t + \beta_5 \ln E_t \\ & + \delta ec m_{t-1} + \mu_t \end{aligned} \tag{3}$$

In order to consider the structural break effect, the NARDL model in Equation 3 is respecified as follows:

$$\begin{aligned} \Delta \ln Y_t = & \mathcal{G}_0 + \sum_{q=1}^n \rho_1 \Delta \ln Y_{t-k} + \sum_{q=1}^n \rho_2 \Delta \ln BL_t^+ \\ & + \sum_{q=1}^n \rho_3 \Delta \ln BL_t^- + \sum_{q=1}^n \rho_4 \Delta \ln CPI_{t-k} \\ & + \sum_{q=1}^n \rho_5 \Delta \ln E_{t-k} + \beta_1 \ln Y_{t-1} + \beta_2 \ln BL_t^+ \\ & + \beta_3 \ln BL_t^- + \beta_4 \ln CPI_t + \beta_5 \ln E_t \\ & + \delta ec m_{t-1} + \sum_{r=1}^s B_r Dummy_{rt} + \mu_t \end{aligned} \tag{4}$$

According to Equations 3 and 4, Δ denotes the changes in the variables in the short run, n is the optimal lag length, μ_t is the error term at a time. The parameters ρ ($i = 1, 2, 3, 4, 5$) are the corresponding long-term multiplier, and the parameters $\beta = (1, 2, 3, 4, 5)$ are the short-turn dynamism of the NARDL model. $\delta ec m$ is the parameter estimate of the error correction model. $Dummy_{rt}$ is the dummy variable for the break defined as $Dummy_{rt} = 1$ for $t > T_B$, otherwise $Dummy_{rt} = 0$. t represents the time; T_B is the structural break date, where $r = 1, 2, 3, \dots, k$ and B_r is the coefficient of the break dummy.

In the study, the annual time series data on the Gross Domestic Product (*per capita* at the current LCU), the Consumer Price Index (CPI) and Energy Consumption *Per capita* (oil equivalent *per capita*) from the World Development Indicators (WDI) (2019) and the Oil Prices (WTI and Brent) from the BP Statistics

(2019) and the Bonny Light (BL) crude oil price from the Energy Information Administration - EIA (2019) were used. The data span from 1978 to 2016. The study limits its scope due to the availability of the data on some variables, such as energy consumption *per capita*.

RESULTS AND DISCUSSION

Descriptive statistics

In the study, a behavioral analysis of the variables used in the study was carried out using the descriptive statistics technique. The results presented in Table 1 show that the variables (the GDP, the BL, the CPI and E) change within the studied period by 4.23%, 1.54%, 1.037%, and 2.85% on average, respectively. The variables are well-behaved as their mean values fall within the maximum and the minimum values. The resulting standard deviation shows that the GDP (with the value 1.05%) is the variable that is the most volatile to shocks amongst the variables.

Table 1 The results of the descriptive statistics

Variables	Obs.	Mean	Maximum	Minimum	Std. Dev.
$\ln GDP$	39	4.226	5.742	2.716	1.048
$\ln BL$	39	1.536	2.071	1.134	0.288
$\ln CPI$	39	1.037	2.265	-0.478	0.926
$\ln E$	39	2.852	2.902	2.810	0.023

Source: Authors

Correlation

According to the obtained result accounted for in Table 2, it is possible to notice that there is a strong positive significant linear correlation between the independent variables and the GDP, which on its part implies that changes in these variables are more likely to have a significant impact on the dependent variable (GDP).

Table 2 The correlation results

Variables	lnGDP	lnBL	lnCPI	lnE
lnGDP	1 -----			
lnBL	0.680 0.000*	1 -----		
lnCPI	0.990 0.000*	0.594 0.000*	1 -----	
lnE	0.872 0.000*	0.804 0.000*	0.837 0.000*	1 -----

*, **, *** implies a significance level at 1%, 5% and 10%, respectively.

Source: Authors

The unit root test

The unit root test verifies the long-term mean reverting the possibility of the variable and showing whether there is (or there is not) a stationarity problem amongst the variables. This study adopts the Augmented Dickey Fuller (ADF) test (1979) and the Phillip-Perron (PP) test in order to perform a robust stationarity check amongst the variables. Although the two tests assume that no structural breaks are found in the data used over the studied period, they otherwise report the non-stationarity of the variables in the case of such a structural break. According to P. C. B. Phillip and P. Perron (1988), however, the PP unit root test differs from the ADF test mainly in how the errors of serial correlation and heteroskedasticity among the variables are dealt with. P. C. B. Phillip and P. Perron (1988) noted that the ADF tests used parametric autoregression to approximate the ARMA structure of the errors in the test regression, but the PP tests ignored any serial correlation in the test regression. Therefore, considering a high volatility in the crude oil price and its dynamic impact on growth in Nigeria, it is important to affirm the existence of structural breaks and the need for testing them in the study. According to the results presented in Table 3, it was observed that all the variables were stationary after the first difference for both the ADF and the PP tests, only for the CPI that proved to be non-stationary at the level and the first difference considering the PP.

Table 3 The unit root test results

Variables	ADF		PP		
	Level	First Difference	Level	First Difference	Order of Integration
lnGDP	-1.928	-5.360*	-2.105	-5.360*	I(1)
lnE	-3.137	-4.962*	-2.564	-4.853*	I(1)
lnBL	-1.609	-5.427*	-1.790	-5.427*	I(1)
lnCPI	-0.862	-3.756**	-0.804	-2.878	I(1)
CV 1%	-4.219	-4.227			
5%	-3.533	-3.537			
10%	-3.198	-3.200			

*, **, *** implies a significance level at 1%, 5% and 10%, respectively.

Source: Authors

The ARDL bounds test

The ARDL bounds test results confirm (Table 4) the fact that the existence of a long-term co-integrating relationship amongst the variables is inconclusive as the F-statistics value falls in between the lower and the upper bounds values, which, therefore, implies that reporting the long-term result for this model is inconclusive (i.e. the same may or may not be reported).

Table 4 The ARDL bounds test results

Test Statistic	Value	k
F-statistic	4.274042	3
Critical Value Bounds		
Significance	lo Bound	li Bound
10%	3.47	4.45
5%	4.01	5.07
1%	5.17	6.36

*, **, *** implies a significance level at 1%, 5% and 10%, respectively.

Source: Authors

The structural break test

The Bai-Perron test is used to verify the significant break period which may have affected economic growth the most within the studied period. The structural break analysis of the result shows a break period of 2010 (Table 5), which marks the period in which the oil price was just recovering from the shocks experienced in the year 2008.

Table 5 The structural break test result

Country	Break Period	Break Range
Nigeria	2010	2010- 2016

Source: Authors

The NARDL estimates with breaks

The NARDL results show that the identified break has a significant impact in the model and that the

same is positive in explaining the phenomenon (Table 6). The positive and negative changes in the oil price in the short run negatively and significantly influence the growth of the Nigerian economy. As the Bonny Light oil price changes both positively and negatively, the growth possibilities are reduced by approximately 33% and 30%, respectively, in the short run, which is implicative of the fact that Nigeria's economic growth has negatively been exposed to the shocks in the oil price since the discovery of the oil that has diverted the Nigerian economic system from an agriculture-based system to an oil-based economy with no hope of enjoying the benefits of the income from oil in the long run, given the fact that no long-term impact can be reported. The consumer price index has a positive significant impact on growth in Nigeria, which implies the fact that a 75% increase in Nigerian economic growth is recorded as the average price of all goods and services in Nigeria changes. The result also validates the general supply law, which states that producers are willing to sell more at higher prices because of the profit involved in the scenario.

Table 6 The NARDL estimation results

	Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIC Selected Model: ARDL(2, 3, 0, 4)	ΔBL_{t-1}^+	0.303	0.119	2.558	0.020**
	ΔBL_{t-2}^+	-0.325	0.098	-3.322	0.004*
	ΔBL_{t-1}^-	0.123	0.125	0.982	0.339
	ΔBL_{t-2}^-	-0.087	0.155	-0.563	0.580
	ΔBL_{t-3}^-	-0.297	0.130	-2.283	0.035**
	$\Delta \ln CPI_{t-1}$	0.753	0.077	9.740	0.000*
	$\Delta \ln E_{t-1}$	3.176	1.033	3.073	0.007*
	$\Delta \ln E_{t-2}$	-0.417	1.203	-0.347	0.733
	$\Delta \ln E_{t-3}$	-0.478	1.214	-0.394	0.698
	$\Delta \ln E_{t-4}$	-2.223	0.905	-2.456	0.025**
	ΔBI_{t-1}	0.196	0.038	5.155	0.000*
	ECM_{t-1}	-0.944	0.109	-8.624	0.000*
NARDL with breaks Bounds Test		2.874			
Breusch-Godfrey Serial Correlation LM Test:		1.802	Prob. F(2,16)		0.197
Heteroskedasticity Test: ARCH		0.379	Prob. F(2,30)		0.688
Ramsey RESET Test		1.180	(1, 17)		0.293

*, **, *** implies a significance level at 1%, 5% and 10%, respectively.

Source: Authors

As there is willingness to sell more, the output of the economy spikes, which therefore contributes to the general economic growth of the economy as a whole. Energy consumption has a negative significant impact on economic growth in the Nigerian economy, which implies that percentage change in energy consumption brings about 2.22% declines in Nigerian economic growth. Looking at the nature of the Nigerian power sector, the oil-related energy sources such as fossil fuel products are the common alternative energy consumed by both households and investors. Given the cost attached to this source, economic growth is affected as it withdraws a part of the profit or income of those involved in said consumption.

The error correction model results are correct with a negative sign and significant, and they show a very strong capability of the independent variables correcting about 94% of the deviation of Nigerian economic growth from equilibrium in the short run back to equilibrium in the long run. Therefore, if the variables are trended in the right direction, there is a high possibility that the growth plan in Nigeria will positively benefit from the independent variables.

The VAR model

The stationarity status of the variables qualified the study to adopt the VAR model in order to analyze the growth response to the changes in the independent variables (both positive and negative changes in the Bonny Light crude oil price, the consumer price index and energy consumption). The study adopted the Generalized Impulse Response Function (GIRF) in order to analyze the phenomenon. The VAR model is specified in the following manner:

$$Y_t = A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + \mu_t \quad t=1, 2, \dots, T$$

where:

A_1, A_2, A_p and $y_{t-1}, y_{t-2}, y_{t-3}$ are the parameter matrices, p is the optimal lag length determined by SIC, μ_t is the common vector errors and t is the time range.

According to the results, the impulse response function lies within the lines (i.e. at a 95% confidence

interval). The growth response to the positive changes in the oil price was positive in the early period, but the same declined to a steady state point in the 2nd period, and negatively responded to the changes throughout the periods. It was also noticed that growth had the same response to the negative changes in the Bonny Light crude oil price and energy consumption throughout the periods. Growth was positively influenced by the shocks in the average price of all goods and services in the economy throughout the periods. Those results confirmed the ARDL estimate findings as the positive and negative changes in the Bonny Light crude oil price and energy consumption had a negative impact on growth in the economy and positively responded to the consumer price index (Figure 1).

From the results, it can be deduced that Nigerian economic growth remains below the expected growth despite the different crude oil price regimes (neither positive nor negative), which is so because of Nigeria's large dependency on crude oil as a source of funding the country's development in the other economic sectors. Much of surplus generated when the crude oil price positively changes is used to finance subsidy and insurgencies, and sometimes is mismanaged. Therefore, following the economic development level and the power supply condition, oil-related energy consumption is the best option considered by many investors, which as a result negatively contributes to the economic growth of the economy through their emissions conflicting with the sustainable economic growth plan. The findings also reveal negative changes in the crude oil price have not reached level at which a subsidy can be absolutely eliminated as the oil-related-energy cost of landing (e.g. PMS) is greater than its ceiled price. Given the recent oil price war between Saudi Arabia and Russia (the two giant oil producers) and the COVID-19 pandemic (causing both a demand shock and a supply shock), the oil price crash caused the complete removal of a subsidy as petrol was sold within the range N123.5-N125.00 per liter against its landing cost of N121.54 as at 6th of March 2020. Therefore, Nigeria should save more if it did not largely depend on crude oil and if it diverted the subsidy funds towards the other strategic sectors of the economy. The CPI positive significant impact

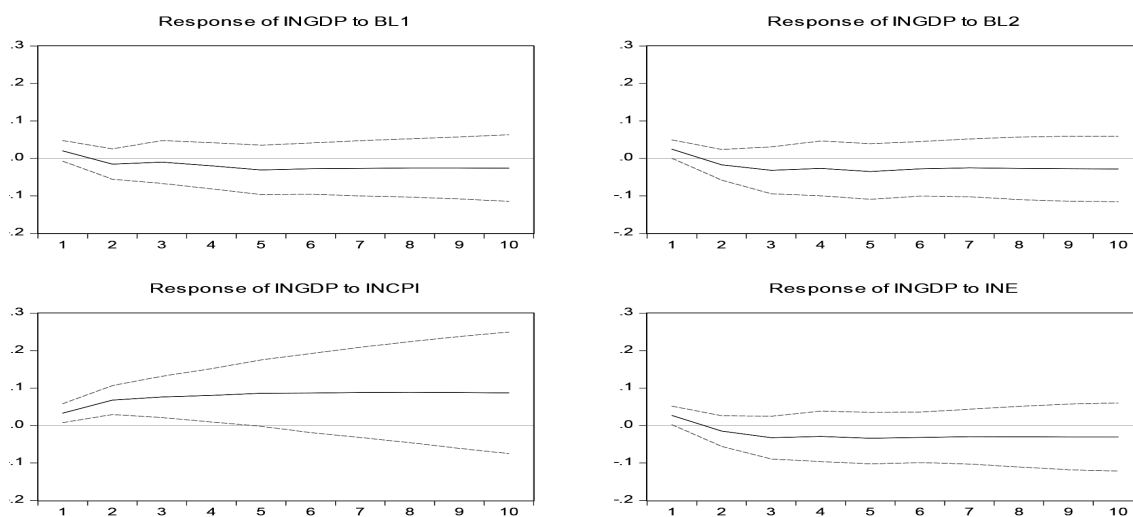


Figure 1 Response generalized 1 S.D. inovations +/- 2 S.E.

Source: Authors

on economic growth transition evidenced that the activities were propelled at high prices in the economy. The study findings also negated G. Idrisov *et al* (2015) that positive changes in the oil price exert a negative impact on economic growth in the context of Nigeria, which on its part accounts for the fact that the assumption by G. Idrisov *et al* (2015) is country-specific and does not represent a holistic view of the expected impact of positive changes in the crude oil price.

CONCLUSION

The studies extant in the literature have verified the connection between the oil price and economic growth, inflation and economic growth, and energy consumption and economic growth. This study deviates from the existing studies in that it considers the consumer price index, energy consumption and negative and positive changes in the Bonny Light crude oil price using the indigenous price since it is at this price that Nigeria generates crude oil revenue. The study adopts the NARDL and the VAR models in order to analyze the used time series data.

According to the findings, there is no long-term co-integrating relationship amongst the variables that leads us to conclude that there is no reporting of the long-term results. The NARDL estimates show that, in the short run, both positive and negative changes in the Bonny Light crude oil price have a negative significant impact on economic growth in Nigeria, the consumer price index has a positive significant impact on economic growth, whereas energy consumption has a negative significant impact on economic growth. In the long run, these variables correct about 95% of economic growth deviations from equilibrium in the short run, which has been verified herein. The GIRF confirms that the economic growth response to energy consumption and to negative and positive changes in the Bonny Light crude oil price are the same throughout the periods, whereas its response is positive to the consumer price index throughout the periods specified in the study.

According to the findings of study, neither positive nor negative changes in the Bonny Light crude oil price obviously favor Nigeria's economic growth, the consumption of oil-related energy likewise. Therefore, this confirms the fact that the economy needs to look beyond the oil sector in sustaining

its economic growth. There is the need to adopt a strategic investment policy towards diverting the little that can be saved from the oil sector to the other sectors. The adoption of this strategy will gradually make it possible for the economy to stop making negative responses to the oil price shocks.

This study is limited in terms of the scope and the data used in it. It can be extended to oil-dependent developing countries in order to robustly check if the facts presented herein also hold for the other related countries.

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