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# The Value of Employee Health Benefits During the Coronavirus Pandemic in Hungary

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*Abstract: The coronavirus pandemic has affected the lives of employers and employees worldwide. This is why it is important for HRM to look at employee health from a new perspective. In our research, we investigated whether health has been valorised in employees' minds as a result of the coronavirus pandemic and, if they could choose health benefits as fringe benefits, to what extent they would prefer health-related benefits. Our primary questionnaire survey used a non-representative sample (N=250). The main objective of our research was to understand the importance of health and the opinions of individuals aged 18 and over with an active working life in Hungary on health-related fringe benefits during the pandemic. The data was collected through an online, anonymous questionnaire. Their health status at the time of completing the questionnaire was more important than before the COVID-19. 85.6% of respondents have not introduced any new health-related benefits at work in 2020 and 41.2% do not have any, even though 81.2% of respondents would like to have some kind of health-related benefits that they consider useful and important. 70.4% of respondents would opt for dental check-ups and treatment. More than 50% would also use some kind of general or complex managerial screenings.*

*Keywords: employee; health; benefits; Hungary; coronavirus; pandemic*

## 1 Introduction

The importance of health and its appreciation has changed in recent months. Individuals, organizations, and institutions have been affected by the coronavirus pandemic, the health situation surrounding it, and the health status of individuals. All organizations, businesses, and institutions are made up of many individuals who contribute to their functioning through their activities. Perhaps this is why the critical question is whether employees' health has become more valuable. What are the views of employees and employers in support of this situation? In the present research, we were interested in finding out how the COVID-19 pandemic has



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affected the survey respondents who are active workers in Hungary, whether and to what extent health and health maintenance benefits are essential to them.

## 2 Literature Review

### 2.1 The health sector and COVID-19

In the autumn of 2020, the pace of the pandemic's spread accelerated (Bolcsó, 2020), not only in Hungary but also worldwide. The COVID-19 outbreak has reached populations worldwide in high numbers, as it has done across Europe. The infection and its serious consequences have been published, highlighting the rapidly increasing mortality figures. In addition to health-related indicators, the impact of the pandemic was also felt in economic indicators - most notably the negative trend in unemployment rates and GDP growth rates (OECD/European Union, 2020).

Our research took place when the V4 countries (Poland, Czech Republic, Slovakia, and Hungary) had high daily positive COVID-19 test rates among the population. Both the prevalence and mortality were high. The governments of the countries have taken several different restrictions. In Hungary, restrictions and closures were imposed (koronavirus.gov.hu, 2021a). The pandemic has put a strain on the health system, resulting in the postponement of planned surgical procedures, a drop in emergency center attendance, and a reduction in the volume of outpatient specialist care for both acute and chronic patients (OECD/European Union, 2020). Once the pandemic has subsided, patients will be overwhelming the health system, as they will not have consulted a specialist for their problems and illnesses, and this will have a financial impact on the care provider side and the financing side (Csiki, 2021a). As for private health care providers, after a slight temporary downturn, an increase in demand emerged in the second half of 2020 and is still present in 2021. The financing difficulties of the Hungarian healthcare system (lack of resources) and the phasing out of the gratuity scheme will lead to an increasing number of patients with ailments being forced out of the public care system. The pandemic has also pushed patients in a new direction, as telemedicine systems have allowed private providers to continue to provide specialist care despite epidemiological restrictions (e.g., curfew restrictions) (Csiki, 2021b).

The daily positive COVID-19 test rate has been increasing since September 2020 (Our World in Data, 2021a), and this has marked the second wave of the pandemic in Hungary (Bolcsó, 2020) (koronavirus.gov.hu, 2021b). In addition, the number of deaths has also shown a rapid increase from September 2020 in Hungary and beyond (Our World in Data, 2021b) (OECD/European Union, 2020).



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## 2.2 Remuneration and incentives

Incentives, and the various benefits, are influenced by many environmental factors that directly and indirectly impact. External factors: economic situation; demographic situation; employment situation and labor market; legal regulation (Poór et al., 2020). Hungary's economic situation was favorable before the coronavirus pandemic, i.e., in 2020 and before - the unemployment rate was at its lowest in 2019 at 3.42%, rising to 4.35% in 2020 (statista.com, 2021a). The GDP growth rate in 2020 fell by -4.96% due to the pandemic (statista.com, 2021b). In contrast, the Government of Hungary has designed the legal framework to allow employers to offer favorable benefits to employees, taking into account tax considerations (Government Decree 140/2020 (IV. 21.), 2020). Employers can offer benefits in (1) fixed or (2) flexible forms (fixed: the same benefit is offered to all employees) (flexible: the employee can choose between the benefits and the proportions of the amount that can be used) (Poór et al., 2020). Flexible benefits are preferable from the employee's point of view, as they can be tailored to the employee's preferences and thus contribute to meeting different needs. It can also increase employee loyalty and motivation towards the organization (Poór et al., 2018). The coronavirus pandemic has reduced the mobility of the population in Hungary (and the rest of the EU) (OECD/European Union, 2020), which has sometimes encouraged employers to offer home-office working to employees who can perform their tasks in this way, thus protecting their health (Pénzcentrum, 2020).

Analysis of labor market and employee data shows that the COVID-19 impacted the whole labor market. New technologies can improve the safety of working environments and help protect the employees from infection from any disease (Caselli et al., 2021). Remote work can be one of the benefits for the employee. The pandemic caused changes in work organization - working from home, virtual teamwork is routine. Furthermore, there is an impact on workers – such as social distancing, stress, and unemployment (Juchnowicz – Kinowska, 2021).

## 3 Material and methodology

### 3.1 Research

In our research, we formulated assumptions and examined respondents' feedback:

Q1: Do more than 75% of respondents consider some form of health-related benefits their employer offers important?

Q2: Is their health more important to respondents when completing the questionnaire compared to the pre-COVID-19 pandemic (pre-2020)?



Q3: If the employer offered a package of health services available at a private health facility, which health services would be most likely used?

Our survey was conducted online between October 2020 and February 2021. The data collection was not based on a probability sample. Specifically, a snowball sample and the data collected cannot be considered representative but may provide a good indication of specific trends. The primary research used a 22 question online anonymous questionnaire with Likert scale, closed, and semi-closed questions.

Statistical methodology:

Digital data were processed, organized, and cleaned using Microsoft Excel software, and the organized data were analyzed using IBM SPSS Statistics 24 software. Descriptive statistical analysis was used to examine the general characteristics of the respondents who completed the questionnaire.

Sample characteristics:

An anonymous questionnaire was used to collect responses from 250 people. Responses from individuals actively employed in Hungary when completing the questionnaire were analyzed. In a sample of N=250, 62% had been employed for more than 48 months in their current job, 12-12% had been employed for 12-24 months and 25-48 months, while 14% had been employed for less than 12 months at the time of completion. The gender distribution was 71.2% female and 28.8%, male. The distribution by age group was as follows: 18-23 years (4.8%), 24-29 years (22.4%), 30-35 years (12.4%), 36-41 years (10.4%), 42-47 years (21.2%), 48-53 years (17.6%) and 54 years and over (11.2%). Respondents worked in the following sectors at the time of completing the questionnaire: health (32%), social sector (22%), public sector (16%), industry (15%), services (7%), economy (6%), education (2%).

### 3.2 Results

In the questionnaire, we asked respondents how important their health was to them, which was reflected in two different questions, and they were asked to rate their answers on a 1-5 Likert scale (1=Not at all important; 5=Very important). The first question was "How important was your health before the COVID-19 pandemic (before 2020)?" with a mean of 4.436 (standard deviation 0.7538). The second question is "How important is your health and its protection to you now?" with a mean score of 4.704 (standard deviation 0.5455). The results presented in Table 1 show that in the sample of 250 items, the mean value increased for the question on the period COVID-19. Therefore, it can be said that the pandemic has led to a reassessment of the importance of health and its protection. These questions reflect the attitude of individuals, which should be contrasted with the opportunities offered by the employer.





Table 1 Importance of health status according to respondents' views (N=250)

	How important was your health before the COVID-19 pandemic (before 2020)? (1-5 Likert scale)	How important is your health and its protection to you now? (1-5 Likert scale)
<i>Mean</i>	<b>4,436</b>	<b>4,704</b>
<i>Median</i>	5	5
<i>Std. Deviation</i>	0,7538	0,5455
<i>Variance</i>	0,568	0,298
<i>Skewness</i>	-1,028	-1,689
<i>Skewness Std. error</i>	0,154	0,154
<i>Kurtosis</i>	-0,076	1,932
<i>Kurtosis Std. error</i>	0,307	0,307

Source: own research, 2021

In the questionnaire, we asked the following closed question, to which respondents could select more than one of the 15 possible answers: 'Which of the following opportunities and benefits offered by your employer would be important to you?'. A very high proportion of respondents (76.8%) would consider benefits in the form of salary supplements (bonuses) to be the most important, followed by health insurance contributions (48.4%) so that health-related benefits are the second most important benefit for respondents. The other health-related benefits that are worth mentioning based on the results obtained are dental care subsidy (38.0%), complex screening (37.6%), and general screening (28.4%).

More than 80% of respondents think that some form of health-related benefits offered by their employer is significant (81.2% chose some form of health-related benefit, 18.8% did not select this option). The types of health benefits listed under the question "Which of the following options and benefits offered by your employer would be important to you?" are, in alphabetical order: general check-up, health promotion programs, health insurance contribution, dental care subsidy, medication subsidy, complex check-up (managerial screening), health screening days at the workplace, company health insurance, vaccination funding. The highest proportion of respondents in the sample (20.0%) indicated at least two different health-related benefits, followed by 18.4% who would choose at least one and 16.4% who would choose at least three different health benefits if offered by their employer in a private health care institution.

If we look deeper into what specific health service respondents would choose to receive in a private health facility is provided as a benefit by their employer, we get the following results. First, 70.4% of the respondents would choose dental examination and treatment, which is not surprising, as the Szinapszis Market Research and Consulting Institute research on health care has shown similar results (Szinapszis, 2017). The annual household expenditure on health care in 2020 for dental care is 29,926 HUF, representing 11% of their health care expenditure (Synapse, 2021). The second most common choice was a medical massage (59.2%),





followed by an eye examination (54.8%), a general screening (54.8%), and a complex managerial screening (49.6%).

### **Conclusions**

Q1: Do more than 75% of respondents consider some form of health-related benefits their employer offers important? Our research suggests that for most respondents, some form of fringe benefits is essential. They would prefer a pay rise, but 81.2% of respondents would prefer some form of employer-provided health benefits.

Q2: Is their health more important to respondents when completing the questionnaire compared to the pre-COVID-19 pandemic (pre-2020)? The COVID-19 pandemic has led to a reassessment of the importance and protection of health - it was less important before the pandemic.

Q3: If the employer offered a package of health services available at a private health facility, which health services would be most likely used? Health benefits are valuable and essential to respondents, with more than 50% of them also taking advantage of some form of general or complex managerial screening as a preventive measure. This is important for both the health system and the individual (patient), as timely diagnosis or treatment initiated can help to curb or reverse the deterioration in health. The impact of COVID-19 has already led to an increase in the importance of laboratory tests (38.4%) among respondents. Behind this, laboratory testing due to compulsory epidemiological measures may be a factor, but prevention is supported. 70.4% of respondents will opt for dental examinations and treatment if they are employer-financed in a private health establishment. This is not a surprising result, as Szinapszis Market Research and Consulting found similar results in its research in 2017 and 2021. The second most common choice was a medical massage (59.2%), followed by an eye examination (54.8%), a general screening (54.8%), and a complex manager screening (49.6%).

In summary - the coronavirus outbreak has had an impact on the importance of health for workers in Hungary. This points to the fact that employers may be encouraged to offer health-related fringe benefits. This could take various forms, and it may be appropriate to allow employees to choose the type of benefit they wish to receive. Research shows that dental, eye examinations and screenings are attractive, as are medical massages. These health benefits can contribute to prevention and to maintaining the health of workers.



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# The Influence of Exports and Imports on Economic Growth in Palestine

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*Abstract: Economic, commerce, and job opportunities have been severely disrupted in the Palestinian territories (PTs) for the previous several decades. Palestinian external trade was plagued by several challenges, including Israeli restrictions on trade with neighboring nations and the rest of the globe. A country's trade balance is heavily influenced by its exports and imports. Exports are often regarded as a catalyst for economic growth and social progress because of their ability to reduce poverty. This paper aims to check whether the GDP (dependent variable) has a relationship with exports of goods and services and imports of goods and services (independent variables) in Palestine. An econometric model is built to examine the direct relations between the three variables: exports, imports, and economic growth in Palestine. An econometric model is constructed to explore the direct relations between the three variables: exports, imports, and the economic growth of Palestine. To accomplish this goal, yearly data (2007–2020) was tested using the OLS (Ordinary Least Squares), Engle-Granger Cointegration, and Gretl Causality tests, and the data was obtained from the Palestinian Central Bureau of Statistics (PCBS). The results show no relationship between the three variables in Palestine. However, we can observe strong evidence of the relationship between exports and economic growth.*

*Keywords: economic growth; Palestine; export; import; Gretl; econometric; model.*

## 1 Introduction

The existence of economics gave the world a new way to view the globe. It has assisted people over the past decades in understanding the environment we live in. A large part of what economics has discovered has been helping countries and individuals to attain economic success (Mankiw, 2016). One of the main factors in assessing an economy's health is gross domestic product (GDP). It remains by far the best single sign to lead government policies, and disregarding it in favor of other indicators is likely to reduce people's overall quality of life. The results of a new study on 120 countries revealed that the average income of the bottom 40% of the community has grown at the same rate as GDP growth during the last 40 years. Thus, boosting GDP helps the poorest people worldwide (Romero, 2015). GDP is



crucial due to economic growth, saving more than 1 billion humans from severe poverty. However, the significance of GDP extends far beyond income. When countries become more affluent, people will live there longer and have a lower child mortality rate (Bista and Tomasik, 2018). As a result, the government can invest more in health care. Likewise, high personal income allows people to purchase healthy food and other products for their families and make overall health decisions (Romero, 2015). Moreover, a high GDP helps nations and families have the funds for competent teachers, additional educational means, and children can spend more time in schools. Therefore, providing a better overall education is required. As a result, states with high GDP per capita tend to perform better in the United Nations Human Development Index (HDI), which tracks life expectancy, living standards, and educational attainment (Bista and Tomasik, 2018).

On the other hand, imports and exports play an essential part in defining a country's trade balance. It is recognized that exports are perceived as the central core of economic and social improvement due to their potential to stimulate economic growth and shrink destitution. They are the topics of growth strategies implemented by emerging countries, encouraged by the achievements of those in Latin and Southeast Asian countries. Latest domestic growth models underline the significance of imports as a vital port for external technology and information to stream into the national economy. The latest technologies could be incorporated into imports of producer goods like machinery and equipment, and work efficiency could increase when employees know about the new technology (Mehrrara et al., 2013; Bista and Tomasik, 2018). Mainly, Palestine is considered one of the emerging countries still facing the influence of occupation for several decades. The predominant constraints to economic growth in Palestine are the limitations on trade, labor movement, and complete constraints on economic activities by the Israeli occupation. These circumstances impacted the progress of commerce, employment rates, and economic growth undesirably. Moreover, the Palestinian lands in the West Bank and the Gaza Strip have been described as having a constant shortage for more than 50 years. Furthermore, Palestine observed one of the highest levels of unemployment in the world and had fragile rates of economic progress, a position that obstructed growth (Abugamea, 2019). The purpose of this study is to determine if the GDP of Palestine is associated to goods exports and imports. Do these variables contribute to our understanding of how GDP and a country achieves economic success and stability? The following objectives guide this paper:

1. To build an econometric model that will be applied to the public to use GDP by the Palestinians and examine regression results.
2. To determine whether exports of goods and services and imports of goods and services are significant indicators of Gross Domestic Product in Palestine using econometric theories.



## 2 Literature Review

### 2.1 Model specification

Scholars and legislators conducted a wide range of research and studies on imports, exports, and economic growth. Their investigation uncovered a range of results about the link between the aforementioned factors. Lately, most research has focused on cointegration tests, OLS, and VAR (Vector Auto Regression) models (Dickey and Fuller, 1979; Abugamea, 2015; Taghavi et al., 2012; Bakari, 2018;). Additionally, the earliest empirical models sought to reflect the basic relationship between imports, exports, and GDP growth by including imports and exports into the total output function.“(Balassa, 1978; Hussain, 2015a; Hussain, 2015b).

The enhanced output function, which includes exports and imports, is as follows:

$$GDPT = (\text{exports}, \text{imports}) \quad (1)$$

The output function can be expressed in a log-linear econometric format as well, accordingly:

$$\log(GDP) = \beta_0 + \beta_1 \log(\text{exports}) + \beta_2 \log(\text{imports}) + \varepsilon t \quad (2)$$

Where:

- $\beta_0$ : The constant term.
- $\beta_1$ : coefficient of variable (exports)
- $\beta_2$ : coefficient of variables (imports)
- $t$ : The time trend.
- $\varepsilon$ : The random error term assumed to be normal, identically and independently distributed.

## 3 Methods Methodology

### 3.1 Dataset

The research examines the annual time series in Palestine from 2007 through 2020. The dataset contains an analysis of GDP, goods and service imports (in US dollars), and goods and service exports (in US dollars) (US dollars). The information was compiled using data from the Palestinian Central Bureau of Statistics (PCBS, 2020),



the World Bank's national accounts (Worldbank, 2019), and the Organization for Economic Cooperation and Development's (OECD, 2019).

### 3.2 Methodology

The authors create an econometric model to examine the direct correlations between Palestine's exports, imports, and economic development. Annual data from 2007 to 2020 are used to evaluate the model using the most applicable technique. Thus, for the dependent variable Gretl, OLS regression and Engle-Granger cointegration and causality analyses were conducted. Then, we determined whether the variables included a unit root using the ADF unit root test. As a consequence, all variables were verified to be stationary at their initial differences. Also, Engle Granger Cointegration test is used to assess the long-term link between the variables. Granger Causality Test is employed to ascertain the relationship's direction among the variables. Additionally, data were treated/transformed and several models were tested. For instance, logs were transformed. This, however, had no effect on the quality of the regression models.

## 4 Results and Discussion

The researcher conducts several tests to validate the model; in the empirical investigation, OLS, Engle-Granger Cointegration Analysis, and Granger Causality Tests were used. The output of OLS on model 1 is shown in Table 1.

Table 1: OLS, using observations 2007-2020 (T = 14)

	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-ratio</b>	<b>p-value</b>
<b>Const</b>	4.45056	1.27326	3.495	0.0050 ***
<b>Imports</b>	0.177744	0.318565	0.5580	0.5881
<b>Exports</b>	0.503401	0.216195	2.328	0.0400 **
<b>Mean dependent var</b>	9.107998	<b>SD dependent var</b>	0.230220	
<b>Sum squared resid</b>	0.069385	<b>SE of regression</b>	0.079421	
<b>R-squared</b>	0.899298	<b>Adjusted R-squared</b>	0.880989	
<b>F (2, 11)</b>	179.7582	<b>P-value(F)</b>	3.97e-09	
<b>Log-likelihood</b>	17.28487	<b>Akaike criterion</b>	-28.56974	
<b>Schwarz criterion</b>	-26.65257	<b>Hannan-Quinn</b>	-28.74721	
<b>rho</b>	0.547210	<b>Durbin-Watson</b>	0.897456	

Source: Author's Creation based on the dataset (2007-2020).





Exports are a significant explanatory variable in the regression model output above, with a 0.04 level of significance. This suggests that at the 5% level, exports have a P-value that is considerably different from zero. The OLS test findings also provide estimations of the coefficients, which imply that a \$1 million increase in exports translates in a \$0.50 million rise in GDP. The import p-value, on the other hand, is 0.177.  $R^2 = 0.90$  denotes a solid model that accounts for 90% of the variation in the dependent variable; in other words, changes in imports and exports can explain 90% of the variation in GDP. This result could be explained as the underlying restraint on economic growth in Palestine due to the Israeli occupation's restrictions on commerce, labor mobility, and economic activity in general. This circumstance had a detrimental effect on commerce, employment, and economic growth. Since 1967, the Palestinian territories in the West Bank and Gaza Strip have been characterized by a persistent deficit. Additionally, Palestine has a high percentage of unemployment and slow economic growth, which impedes economic progress (Abugamea, 2019).

### Engle-Granger Cointegration analysis

#### Tests for unit roots: ADF

Granger causality and cointegration tests are used to determine the stationarity and order of integration of the specified variables. We used the Augmented Dickey-Fuller (ADF) test to determine the variables' stationarity. The ADF test for the existence of a unit root is based on the regression model described below.

$$\Delta Y_t = \beta_0 + \alpha + \delta Y_{t-1} + \gamma_1 \Delta Y_{t-1} + \gamma_2 \Delta Y_{t-2} + \dots + \gamma_p \Delta Y_{t-p} + v_t \quad t = 1, \dots, T$$

Where Y is the dependent variable, " $\Delta$ " is the first difference operator,  $\alpha$ ,  $\beta_0$ ,  $\gamma_1$ , ...,  $\gamma_p$  are estimated parameters, t denotes a deterministic trend,  $v_t$  is white noise, and T is the number of observations. Therefore, a stationary test like the ADF test will be used to do this task.

Table 2: ADF test

Variable	ADF		Order of Integration
	Test Statistic	Probability	
<b>Log (GDP)</b>	-2.09513	0.0394	I (1)
<b>Log (Exports)</b>	-3.73664	0.0511	I (1)
<b>Log (Imports)</b>	-4.31107	0.0004	I (1)

Source: Author's Creation based on the dataset (2007-2020).

The stationary test ADF findings in Table 2 indicate that all variables are included in order (1), more precisely in the first difference. We can reject the null stationarity hypothesis at 0.05 based on the ADF results, as the P-value is significant at that



level; hence, the residuals are stationary. This indicates that at least one cointegration connection exists between these variables.

Table 3: Engle-Granger Cointegration test (T = 14).

	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-ratio</b>	<b>p-value</b>
<b>Const</b>	4.45056	1.18869	3.744	0.0032 ***
<b>Imports</b>	0.177744	0.272826	0.6515	0.5281
<b>Exports</b>	0.503401	0.184699	2.726	0.0197 **
<b>Mean dependent var</b>	9.107998	<b>SD dependent var</b>	0.230220	
<b>Sum squared resid</b>	0.069385	<b>SE of regression</b>	0.079421	
<b>R-squared</b>	0.899298	<b>Adjusted R-squared</b>	0.880989	
<b>Log-likelihood</b>	17.28487	<b>Akaike criterion</b>	-28.56974	
<b>Schwarz criterion</b>	-26.65257	<b>Hannan-Quinn</b>	-28.74721	
<b>rho</b>	0.547210	<b>Durbin-Watson</b>	0.897456	

Source: Author’s Creation based on the dataset (2007-2020).

Table 3 shows the outcomes of a cointegration regression with a high R2 of 0.90. As a result, the model accounts for 90% of the variation in the GDPReal. However, since the P-value is bigger than the 0.05 level of significance, the null hypothesis is not rejected. As a result of the series having a unit root, GDPReal, Imports, and Exports are not cointegrated. This suggests that the model can account for a large number of variances within the data, but it is not significant. However, export’s influence on economic growth in Palestine is disproportionately large due to export’s reliance on Israeli restrictions in various aspects and sectors . Palestine’s economic reliance on Israeli control should be reduced, and significant structural adjustments are required to do this (Abugamea, 2019) .

Table 4: Granger Causality Tests.”

<b>Null Hypothesis:</b>	<b>F-Statistic</b>	<b>Prob.</b>
<b>LOG(EXPORTS) does not Granger Cause LOG(GDP)</b>	6.6544	0.0297
<b>LOG(IMPORTS) does not Granger Cause LOG(GDP)</b>	0.29410	0.6008
<b>LOG(EXPORTS) does not Granger Cause LOG(IMPORTS)</b>	3.8478	0.0814

Source: Author’s Creation based on the dataset (2007-2020).

The results from the Granger causality test in Table 4 show that exports are directed toward economic progress in Palestine, and imports do not lead to economic growth. Furthermore, the results show a poor causality between exports and imports at the



0.10 level. The findings are supported by Abugamea (2015), who examined the link between imports, exports, and economic development in Palestine from 1968 through 2012, using yearly time series data. The findings, based on the Granger Causality test, indicate that there is no causal relationship between the three variables of exports, imports, and economic growth, with the exception of exports toward economic growth. Krugman (1986) demonstrated empirically that the flexibility of labor demand increases with increased trade openness in the presence of imperfect competition. Additionally, Tsegaye (2015) used a vector error correction model and the granger causality test to evaluate the relationship between economic growth in South Korea. This study found that exports and economic growth in Korea were unidirectional in the long term, but imports were bidirectional. Additionally, it discovered unidirectional short term causality between exports and imports and economic development. Anderson and Babula (2008) mention that a developing country's capacity implies to increase productivity through trade is contingent on a number of things, including education facilities that protect property rights and help establish institutions (Anderson and Babula, 2008). As well, several studies examine or study the relationship between trade and economic growth, or between trade, labor, and economic growth. According to Abugamea (2008), his study concluded that the Palestinian demand (economic activity) had a considerable positive effect on imports from and exports to Israel, both global and Israeli demand growth (GDPs) had a negligible effect on Palestinian exports. The result above could be explained by the fact that the Palestinian economy has faced numerous obstacles, primarily due to the Israeli occupation, which restricts access to resources (telecommunications, water, electricity, knowledge, cultural heritage, and land, among others) and opportunities of investment. These include industrialization and the dominance of the service sector. In addition to controlling border crossings, customs revenues, and trade flows (MNE, 2020).

### **Conclusion**

Globalization has brought countries into close contact through trade in products and services, as well as in the financial services industry. Those countries classified as emerging economies, in particular, participate more extensively in this trade network. A country's efficiency rises as a result of the growth of this trade network, its technology advances, and its economy may flourish. This paper examines the relationship among the variables (exports, imports, and economic growth) in Palestine. To accomplish this purpose, the annual dataset from 2007 to 2020 was analyzed using the OLS, Engle-Granger Cointegration, and Causality tests. The tests are used to determine the correlation between these three variables. The findings indicate that there is no correlation between the three factors in Palestine. There is, nevertheless, compelling evidence of a link between exports and economic development. Additionally, the cointegration regression models and causality results reveal that exports are a strong predictor of the dependent variable (GDP).



However, one of the primary reasons for these outcomes is that the economies, commerce, and employment rate in the Palestinian territories in the West Bank and Gaza Strip have experienced various strikes and insecurities over the last fifty years. Palestinian foreign trade witnessed many troubles, specifically Israel's command of constraint on Palestinian commerce with the bordering countries and the remaining states of the world. For the time being, unemployment rates in Palestine have declined severely due to Israeli restraints, which have forced the Palestinian work movement into Israel since 1994. Regardless of the mentioned challenges, the outcomes prove that exports are perceived as one of the sources of economic growth in Palestine. Lastly, various policy implications can be drawn from the study results. Government and private sector participation in economic policies is required, and the policies that impact trade, import, and export aspects make trade more active, therefore affecting both employment and economic activity. Also, removing any constraints on Palestinian commerce is vital in any form. Consequently, trade, jobs, and growth in the economy will be more closely connected.

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## Factors Affecting the Banks Profitability in Jordan between 2015 and 2020

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*Abstract: This study aimed to examine the internal and external factors affecting commercial banks' profitability. The internal factors comprised in the independent variables are: asset quality, capital adequacy, management quality, liquidity, bank age, and bank size. On the other hand, the external factors include GDP growth, inflation, and interest rate. The dependent variable is the commercial banks' profitability measured by Return on Assets (ROA). The researcher used the descriptive-analytical approach. The study population consisted of all the commercial banks listed on the Amman Stock Exchange (ASE) which amount to (13) banks, and the sample included all the population's elements. Financial data were collected from the financial statements of commercial banks listed on the ASE (2015-2020) to measure several internal and external factors affecting profitability. The data were processed using the Statistical Package for Social Sciences (SPSS) version 22. This study concluded that the internal factors have a clear impact on the profitability of commercial banks and that GDP growth is one of the external factors that affect profitability. The remaining variables that have been studied (i.e., the bank age, liquidity, bank size, inflation, and the interest rate) do not affect the profitability of commercial banks.*

*Keywords: profitability, ROA, asset quality, GDP, inflation, interest rate, Jordan, commercial banks.*

### 1 Introduction

The banking sector throughout the world has witnessed some profound changes due to innovations in technology and globalization that have created a robust competitive environment. Therefore, this sector has to deal with the challenges and the increase in the growth opportunities in order to increase its profitability. Thus, the performance of banks is deemed to have an impact on investment and corporate growth, industrial expansion, and economic development. Moreover, profitability is necessary to maintain economic activity and achieve returns for shareholders; therefore, factors affecting profitability and performance in the banking sector have attracted the interest of academic researchers as well as the management of banks and financial markets (Sheefeni, Peyavali, 2015).



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Profits maximization is one of the main goals that commercial organizations, including commercial banks, seek to achieve. This is because realizing these profits enables banks to maintain their continuity, support their financial position, and increase their ownership rights and solvency. Commercial banks play a crucial role in allocating economic resources in countries, and their primary contribution to the country's economic growth is through the provision of funds to investors. For that, profitability is a key element as it increases the depositors' confidence in banks and prospective investors and encourages venture capitalists to subscribe to the bank.

Profitability is usually used to measure the bank's management performance, and it gives vital signs to regulators that the bank is operating accurately. It provides an overview of the adequacy of this bank in managing its projects, besides that it constitutes a measure of the investment effectiveness, operational performance, and financing policies followed by the bank management to ensure the existence of a sector (Nuriyeva, 2014). Healthy, reliable, and stable bankers, assessing and analyzing the banking sector profitability listed on the ASC are paramount to identify weaknesses and address them. Especially in light of the significant structural, legislative, and institutional changes after the financial crisis, profitability in the global and international banking sector was positively impacted by a grouping of the internal and external elements (Dahiyat, 2018).

This research consists of several sections starting with the introduction, followed by the literature review related to the topic of the research. The third section presents the methodology used in the research, including the study model, procedural definitions, and the study hypothesis. In the next section, the data is analyzed and the results are presented according to the study's objectives, which is the study of factors affecting the profitability of commercial banks. Finally, the last section presents the conclusions of the study

## 2 Literature review

Profitability is the company's ability to generate profits; these profits are essential from the creditors' standpoint because they are the only source of funds to cover the debt. Management uses the profit to measure profitability analysis (Gibson, 2010). The primary objective of commercial banks is to achieve higher returns and provide services to customers; therefore, commercial banks must play this role and take care of this responsibility with all their financial strength. In addition, liquidity must be provided to meet any contingency, maintain continuity, economic growth, banking progress, and achieve shareholders' interests (Michael and Osamwonyi, 2014).

Commercial banks enjoy several functions different from other financial institutions (Gibson, 2010). The banking sector in Jordan has made moral development in a short period compared to other developing countries, especially thanks to the





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attention which has been given to this sector by the authorities in Jordan. Despite the financial crisis in Jordan and the unstable global conditions, this sector has been largely managed to sustain its stability. The policies adopted by the Central Bank of Jordan have enabled maintaining reliable and robust finance sectors and provide a stable investment atmosphere (Dahiyat, 2018).

The annual report for the year 2020 issued by the Central Bank of Jordan stated that the Jordanian economy has a high capacity to adapt to the surrounding developments and continue its positive performance during the year (2020). Despite all challenges faced, including the region's surrounding political and economic conditions, the real GDP growth reached 2.0% inflation 3.3%, and the general budget deficit reached 2.6% of output. Regarding the activity of licensed banks during 2020, the leading indicators witnessed a performance improvement, as evidence that the total assets/liabilities of banks witnessed a growth of 1.5% to reach 49.1 billion Jordanian dinar, credit facilities balance increased by 8.0% to reach 24.7 billion Jordanian dinar. Credit to the private sector increased by 9.3% to reach 21.7 billion Jordanian dinar. The total balance of deposits in licensed banks increased by nearly 33.9 billion Jordanian dinar compared with the end of 2019, while interest rates on credit facilities witnessed a similar increase on the level of the interest rates on deposits, followed by the rising interest rate margin (Jordan, 2020).

### **3 Problem statement**

Banks play an essential role in facilitating financial transactions through converting deposits into investments and achieving monetary balance by implementing the Central Bank's policies. Profitability is an important performance indicator, and it is the main objective that banks seek to achieve and enhance. Based on this significance of the profitability, it was necessary to study the main internal and external factors affecting the banks' profitability and give ground to help decision-makers. Therefore, the study seeks to identify the most critical factors that affect the profitability of banks through answering the following question: what is the impact of the internal factors (asset quality, capital adequacy, management quality, bank size, liquidity) and the external factors (GDP growth, inflation, and interest rate) on banks profitability?

### **4 Research objective**

The main objective of this study is to know and analyze the internal and external factors (asset quality, capital adequacy, management quality, bank size, liquidity,



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bank age, GDP growth, inflation, and interest rate) affecting the profitability of commercial banks listed on the Amman Stock Exchange, for the period (2015-2020). And based on the findings, conclusions will be summed to reach a set of results and recommendations that can help maintain and increase profits, as a source of reassurance for investors and stakeholders, and knowledge of strengths and correction of weaknesses.

## 5 Research Method

The researcher relied on the descriptive-analytical method in conducting this study to identify the factors affecting profitability in commercial banks listed on the Amman Stock Exchange. The descriptive-analytical approach is not limited to the process of describing the problem only. Rather, it works on analyzing, measuring, and interpreting the data, arriving at an accurate description of the problem and its results, and providing solutions and suggestions to correct its weaknesses.

The Statistical Package for Social Sciences (SPSS) software V22 was used to conduct the descriptive analysis and test hypotheses.

### 5.1 Data collection and sample

To achieve the study objectives, the data has been collected through the following methods:

1. *Primary data*: It is represented by the financial statements of commercial banks listed on the Amman Stock Exchange from 2015 to 2020.
2. *Secondary Data*: The previous studies, including journals and articles, and websites relevant to this study subject.

The study sample was identified based on its conformity with the study criteria and the period covered by the research. The study sample included (13 banks) (Exchange, 2020). The study stipulated that the bank must be listed on the Amman Stock Exchange, and that it has the necessary data to measure the variables of the study. In addition, the bank must be operating and continuing to practice the activity from 2015 to 2020, which is the period covered by the study. After reviewing the criteria mentioned above, it was found that all banks meet the study criteria.

### 5.2 The study variables Definitions

- **Asset quality**: Credit facilities are the most critical part of a bank's assets and a source of income, and they are expected to affect profitability. This ratio is measured by non-performing loans (Olweny, Tobias, 2011).



- **Capital Adequacy:** The bank's ability to absorb any losses arising from risk or some significant macroeconomic differences (Olweny, Tobias, 2011).
- **Management quality:** The efficiency of management is of great importance to the profitability of a bank as it is aware of the bank's ability to cover its operating expenses from the realized income and is calculated as an operating cost on total revenue (Brahmaiah and Ranajee, 2018).
- **Bank size:** The total assets of a bank are measured by the natural logarithm of the asset (Brahmaiah and Ranajee, 2018).
- **GDP Growth:** The group of finishing goods and services of any kind produced in a given country locally over one year (Brahmaiah and Ranajee, 2018).
- **Liquidity:** It is the bank's ability to meet its obligations to creditors, and it occupies particular importance in assessing the bank's solvency.
- **Inflation:** It is an economic phenomenon and it means a rise in the general level of prices, because of the increase in the amount of money (Brahmaiah and Ranajee, 2018).
- **Interest rate:** It denotes the cost of capital or credit during the year debt, and it is calculated as a percentage. (Tariq, 2014).

The financial statements listed on the ASE have been relied upon through the annual financial disclosure reports (2015- 2020) as the primary data collection tool. Table (1) shows the calculations to obtain data for each dependent and independent variable.

Table (1): Research variables measurement

Dimension	Type	Measuring
Assets Quality	Indep.	= Low provision for credit facilities / Net interest income
Capital Adequacy	Indep.	= Total equity / Total assets
Management quality	Indep.	Profit margin = Net income after tax / Total revenue
Bank's Size	Indep.	= Logarithm of assets
GDP Growth	Indep.	The rate of GDP growth found in the Central Bank's annual report
Inflation	Indep.	Percentage calculated in the Central Bank report
Profitability	Dep.	Rate of return on assets = net income after tax / total assets



### 5.3 Research Model

To achieve the desired objectives of this study and to know if there is a statistically significant impact, the following model (Fig. 1) is designed and represents the relationship between the main variables in the study:

*Independent variables:* Internal factors: asset quality, capital adequacy, management quality, bank size, liquidity, and bank age; External factors: GDP growth, inflation, and interest rate.

*Dependent variable:* commercial banks profitability measured by Return on Assets (ROA).

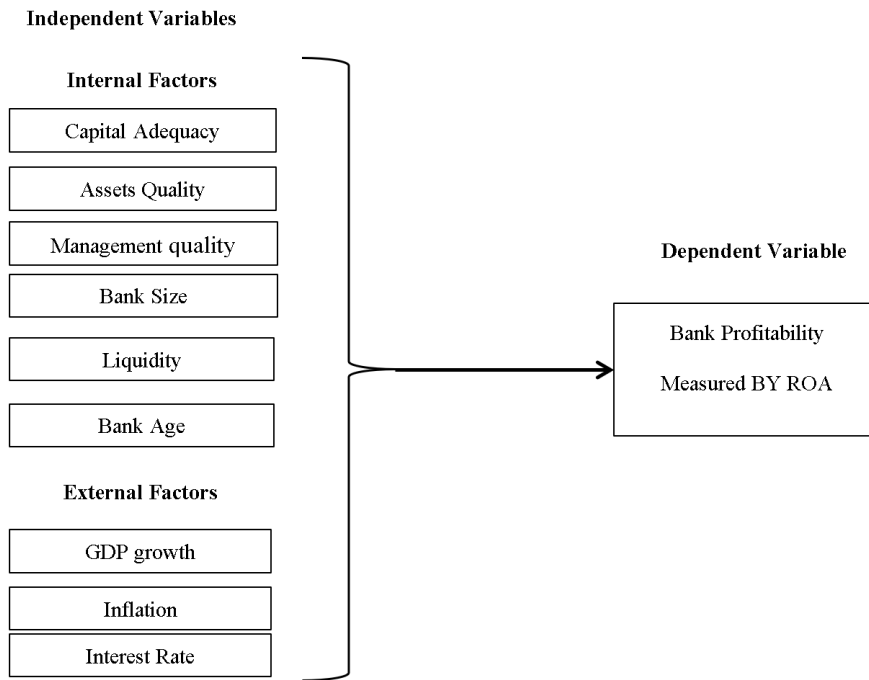


Figure 1: Research model

The following hypothesis was formulated in line with the objectives of the study.

*H0: There is no statistically significant effect of the internal and external factors at the significance level ( $\alpha \leq 0.05$ ) on the profitability of Jordanian commercial banks.*



## 6 Results:

The mean and standard deviation were extracted to describe the study results for both independent and dependent variables during the period 2015-2020, as shown in Table (2).

Table (2): Descriptive Statistics

Variable	Mean	S.D.	Min	Max
Asset Quality	0.7761	0.32142	0.00	1.74
Capital Adequacy	0.1407	0.02804	0.04	0.22
Management quality	0.3051	0.10606	0.01	0.58
Bank Age	43.88	16.643	17	88
Liquidity	0.6120	0.12639	0.45	1.21
Bank size	9.3590	0.39530	8.68	10.41
GDP growth	0.0250	0.00411	0.02	0.03
Inflation	0.0245	0.01809	0.009-	0.056
Interest Rate	0.0275	0.00519	0.015	0.04
ROA	0.0127	0.00479	0.00	0.02

Table (2) indicates that the arithmetic mean for asset quality is (0.7761) with a standard deviation of (0.32142), while the arithmetic mean for the capital adequacy is (0.1407) with a standard deviation (0.02804). The arithmetic mean for management quality is (0.3051) with a standard deviation of (0.10606), while the arithmetic mean of the bank age is (43.88) with a standard deviation of (16.643). The arithmetic mean of liquidity is (0.6120), with a standard deviation of (0.12639). For the bank size, its arithmetic mean is (9,359, with a standard deviation of (0.3953). In contrast, the arithmetic mean of GDP growth amounts to (0.0250) with a standard deviation of (0.00411), while the arithmetic mean of inflation is (0.0303) with a standard deviation of (0.01809). The arithmetic mean of the interest rate is (0.0438) with a standard deviation of (0.00519). For the dependent variable, the profitability of Jordanian commercial banks achieved an arithmetic mean at (0.0127) and a standard deviation of (0.0047).

To ensure that this condition is met, the variance inflation factor (VIF) and the permissible variance (Tolerance) were extracted as shown in Table (3). The allowable tolerance of variance for the independent variables was less than (1) and greater than (0.01), and the values of the VIF were less than (5); and this denotes that there is no high correlation between the independent variables. Therefore, this



indicates the acceptance of the values and is suitable for conducting linear regression analysis (Hair *et al.*, 2018).

Table (3) VIF and Allowable Variance (Tolerance) for the independent variables

Variable	Asset Quality	Capital Adequacy	Management quality	Bank age	Liquidity	Bank size	GDP growth	Inflation	Interest rate
<b>VIF</b>	1.623	1.233	1.339	2.066	1.388	2.081	1.536	1.555	1.105
<b>Tolerance</b>	0.616	0.811	0.747	0.484	0.721	0.481	0.651	0.643	0.905

To confirm the previous results, Pearson's correlation coefficients between the independent variables were used to ensure that there are no high multiple linear correlations between the independent variables and the results shown in Table (4).

Table (4): Independent variables Correlation coefficients (Pearson) Matrix

	Asset Quality	Capital Adequacy	Management quality	Bank age	Liquidity	Bank size	GDP growth	Inflation	Interest rate
Asset Quality	1								
Capital Adequacy	0.109	1							
Management quality	*0.303	0.153	1						
Bank age	*0.227	-0.147	-0.147	1					
Liquidity	-0.159	*0.288	0.087	0.072	1				
Bank size	*0.229	-0.050	0.017	<b>**0.687</b>	0.053	1			
GDP growth	0.134	0.125	0.158	-0.081	**0.295	-0.088	1		
Inflation	*0.269	0.113	0.179	-0.067	0.192	-0.091	**0.495	1	
Interest rate	0.096	0.114	-0.055	-0.042	0.079	-0.065	-0.158	0.049	1
*Significant at the level of significance 0.05									
** Significance at the level of significance 0.01									

As shown in Table (4), the highest correlation among the independent variables is (0.687) between the bank size and the bank age. In contrast, the correlation coefficient values between the other independent variables were less than that, indicating the absence of the correlation of high multiple linearities among the independent variables, as their values were less than (80%). Therefore, the sample is free from the problem of high multiple linearities (Dodge, 2008).



### Hypothesis testing

The results as show in Table (5) below indicate that the predictor variables of ROA are significant because the p-value is less than 0.05. The value of R-squared in the model is 41.4%, which endorses that the explanatory variables explain 41.4% of the factors affecting the dependent variable (bank profitability), measured by ROA, where 58.6% of the explanations come from variables not included in this research.

Table (5): the multiple linear regression and model summary

Model Summary					
R			R <sup>2</sup>		
0.797			0635		
ANOVA					
Model		DF		F	Sig F
Regression	0.001	9	0.00	13.167	0.00*
Residual	0.001	68	0.00		
Total	0.002	77			
Coefficient					
Model	B Slope	SD	Beta	T	T Sig
Constant	-0.009	0.012		-0.733	0.466
Asset Quality	-0.005	0.001	-0.313	-3.351	*0.001
Capital Adequacy	0.076	0.014	0.447	5.493	*0.00
Management quality	0.019	0.004	0.430	5.076	*0.00
Bank Age	4.777	0.00	0.017	0.158	0.875
Liquidity	-0.012	0.003	-0.307	-3.554	*0.001
Bank size	0.00	0.001	0.028	0.262	0.794
GDP growth	0.392	0.106	0.336	3.705	*0.00
Inflation	-0.005	0.024	-0.019	-0.206	0.838
Interest Rate	0.058	0.071	0.063	0.812	0.419
F tabulated = (K-1) – (n-1) = 2.04					
T tabulated (at DF=1) = +/-1.991					
*Significant at the level of Significance $\alpha \leq 0.05$					





The results in Table (5) indicate that there is a statistically significant effect at ( $\alpha \leq 0.05$ ) level of internal and external factors on the profitability of Jordanian commercial banks listed on the ASE. The F-value of 13.167, which is greater than its tabular value (2.04), represents the significance of this model at a degree of freedom (68/9). The value of  $R^2$  of (0.635) indicates that internal and external factors have explained (63.5%) of the changes in the profitability of Jordanian commercial banks among (36.5%) of other factors that were not included in the study model.

The correlation coefficient  $R = 0.797$  indicates a strong relationship between the (internal/external) factors and the profitability of the Jordanian commercial banks listed on the ASE. It is evident from the results of the partial analysis of this hypothesis that (capital adequacy) had the greatest impact among the internal factors in the dependent variable (bank profitability), as shown by the value of its beta coefficient ( $\beta = 0.447$ ). This effect reinforces the (T) (5.493) calculated value, more remarkable than its tabular and significant level.

Management quality came in the second place in terms of its effect on the profitability of the Jordanian commercial banks listed on the ASE, as the value of its beta coefficient reached ( $\beta = 0.430$ ), and this effect is reinforced by the value of T calculated (5.076), which is greater than its tabular value, at a significant level (Sig = 0.00). GDP growth, which is one of the external factors, is ranked third in terms of its effect, as the value of its beta coefficient reached ( $\beta = 0.336$ ), and this effect is reinforced by the calculated value of (T) (3.705), which is greater than its tabular value, with a significant level of (Sig = 0.00). The asset quality, which is one of the internal factors, is ranked fourth in terms of its effect, as the value of its beta coefficient amounted to (- ( $\beta = 0.313$ ), and this effect is reinforced by the calculated value of (T) -3.351, which is higher than its tabular value, with a significant level of (Sig = 0.001).

Liquidity, which is an internal factor, is ranked fifth in terms of its effect, as its beta coefficient reached ( $\beta = 0.307$ ); and this effect is reinforced by the value of T calculated (-3.554, which is greater than its tabular value, at a significant level of (Sig = 0.001). On the other hand, the rest of the variables covered in this study did not indicate any contribution to the effect on the profitability of banks, where the significance level values were greater than (0.05); and the calculated T value for is less than its tabular value as shown in Table (5).

Based on the foregoing, we reject the null hypothesis (H<sub>0</sub>) and accept the alternative hypothesis (H<sub>a</sub>), as it has been proven that there is a statistically significant effect at the significance level of ( $\alpha \leq 0.05$ ) of internal and external factors on the profitability of Jordanian commercial banks listed on the Amman Stock Exchange.



## 7 Discussion

The study (Nuhiu, Hoti and Bektashi, 2017) proved that there is an impact of asset quality on profitability measured by the rate of ROA, the rate of ROE, and the interest margin. This is consistent with the findings of this current study. Capital adequacy measures the ability of the banking sector to absorb any losses arising from a risk or some major imbalances in the overall economy. Most studies use an alternative to the capital adequacy ratio, the ratio of total equity to total assets, which indicates that the bank's total assets are financed by its shareholders (Petria, Capraru and Ihnatov, 2015). The capital adequacy also shows the bank's financial strength and financial position in line with the ratios of equity and debts. It was calculated in a study (Myktybekovich, 2013) by dividing the equity by the total assets. A bank's capital acts as a safety net during adverse conditions, and capital ratios correlate directly with profitability. If the banks aim to improve profitability, they must maintain an appropriately high capital because the high capital ratio enables them to avoid unexpected losses. If this ratio is high, it indicates that banks are working conservatively and providing some potential investment opportunities (Mbekomize and Mapharing, 2017).

The GDP rate is one of the best variables to determine the economic performance. It was chosen as an external variable or the so-called macroeconomic variable to show its relationship with the profitability index (Myktybekovich, 2013) (ROA). A study (Petria, Capraru and Ihnatov, 2015) also showed that this variable is used as a proxy for measuring economic activity. That is, when the total is high, the loan demand increases, and greater profits can be achieved. Conversely, if the GDP growth slows down, banks face increased credit risks and increased provisions, and thus profitability decreases. In addition to the GDP rate, inflation also is an important factor for the profitability of commercial banks, and its impact depends on the bank's income or profits in the event that the bank's operating costs are higher than the inflation rate. This is why the effect of inflation depends on the macroeconomic rigidity that allows accurate prediction of inflation (Tariq *et al.*, 2014).

This study showed a statistically significant effect of the management quality on the profitability of commercial banks listed on the ASE, as measured by the profit margin, equal to the total property rights divided by the total revenues. The results of the study (Nuhiu, Hoti and Bektashi, 2017) were in agreement with the results of this current study, as the profitability of commercial banks depends mainly on the efficiency of management. Also, in the same regard, the study of (Ramadan, Kilani and Kaddumi, 2011; Myktybekovich, 2013; Petria, Capraru and Ihnatov, 2015) was similar to this study's results as it was proven that there is a clear and tangible effect of management efficiency on the profitability of commercial banks. However, the results of this study showed that there is no effect of the bank age on the profitability of Jordanian commercial banks listed on the ASE and that the experience of these



banks over these years has no relationship with profitability. This result differed from the result of the study (Muda, Shaharuddin and Embaya, 2013), which concluded that there is an impact of the bank age on local and foreign Islamic banks. Still, the study (Samad, 2015) agreed that macroeconomic variables do not affect profitability. In contrast, the study (Sheefeni, 2015) disagrees with the result of this current study as found that there is an effect of inflation on the profitability of commercial banks.

### **Conclusion**

This study extends previous studies which have addressed the impact of some internal and external factors on the profitability of Jordanian commercial banks. Still, this study was distinguished from most of the previous literature in terms the number of factors it covers, as it included six internal factors, namely, asset quality, capital adequacy, management quality, age of the bank, liquidity, size of the bank, and three external factors consisting, namely, GDP growth, inflation rate, interest rate during the relatively recent period (2015-2020). This research relied on the descriptive-analytical method. The study population consisted of all commercial banks listed on the Amman Stock Exchange, to examine the factors affecting their profitability.

In light of the research's results, a set of recommendations can be made. The most important is the need to pay attention to the variables affecting the profitability and improve them. Moreover, the study recommends paying attention to management quality because of its effect on enhancing the profitability of commercial banks. Furthermore, the researcher recommends conducting more studies, especially on factors not addressed in this study, such as deposits and credit risk, to see their impact on the profitability of commercial banks; additionally, this study recommends measuring the effect of the study variables on the profitability of commercial banks through using different dependent variables on the rate of ROA.

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# What is HR professionals' quest for change management? A bird's eye view in the UAE's post-pandemic strategies

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*Abstract: Changing economic fundamentals, such as Covid-19, have been catalysts for organizational change that is unprecedented, and is expected to continue in the future as well. The role of human resource professionals within businesses has changed dramatically. Rather than being involved in decision-making, human resource strategists HR professionals perform a massive role in organizational success and competitiveness. To be viable, firms employ only individuals who can add value to their workplace with a changing and learning mindset. In today's world, job security and fringe benefits are a thing of the past, and a fluid, flexible, and ever-changing environment is the norm. Organizations and people management professionals have responded with innovative ideas and practices such as change management, leadership, talent management, and E-HR, globally. This study discusses the contribution of HR professionals towards company performance. Thus, it selects some UAE firms randomly and provides a snapshot of strategies in the post-pandemic era to have a competitive edge. Further, the study penetrates the importance of having different mindsets in gaining and maintaining a stable work environment.*

*Keywords: change management, leadership, talent management, E-HR practices.*

## 1 Introduction

Government policies are not for generating profits, but for creating an environment in which organizations and employees can cooperate mutually for their endurance, also, for a better quality of life. At the same time, firms must take constant measures to achieve their goals in an organized way (Lei & Slocum, 2005; Lewis, 2020) [1-2]. The global pandemic of COVID-19 and subsequent economic downturn have caused the change in the way individuals live and work, but it will open new business models. Managing change and prioritizing business agility are the top



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agenda in this twenty-first century. Due to current recessionary pressures and job insecurity, there is a pressing need for a strategic move in firms by employee branding and benchmarking (Parameswaran, 2020) [3].

While reflecting the demographics of the UAE population, the nationals make up a mere 11 percent, while expatriates are 89 percent. It is noteworthy that the current net migration rate is 1.93 per 1000 population [4]. A particular emphasis is placed on Dubai in the present study because it is the second-largest emirate in the country with an area of 4,114 square kilometers. It is in the southwest corner of the Arabian Gulf and is recognized as a global business hub and the commercial capital of the UAE. Moreover, this cosmopolitan metropolis has more expatriates than Emiratis (GMI, 2021) [5]. In terms of employment in the UAE in 2018, there were 7.384 million people, and the unemployment rate decreased from 2.5 percent in 2017 to 2.2 percent in 2018 (Annual Economic Report, 2019) [6]. The entry of the women's workforce also impacted the workforce distribution in the UAE. The table below depicts the percentage of male, female employees in public, private, and other sectors in the UAE in 2019. Moreover, employment in the UAE has increased by 2 percent continuously in the first quarter of 2020. For these reasons, there are a lot of opportunities for employment in the UAE. Hence, firms should take appropriate measures to tap the skills of all talents to utilize them to their maximum.

Table 1 Statistics on the distribution of labor force in the UAE

Sector	Emiratis			Non-Emiratis			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Federal Government	44.7%	31.0%	40.5%	2.0%	1.6%	1.9%	3.9%	3.4%	3.8%
Local government	36.7%	40.0%	37.7%	5.2%	3.7%	4.9%	6.6%	6.0%	6.5%
Private Sector	6.5%	11.4%	8.0%	82.4%	46.4%	73.9%	79.1%	44.3%	70.7%
Shared	10.0%	16.0%	11.9%	4.4%	3.7%	4.2%	4.6%	4.5%	4.6%
Foreign	0.2%	0.6%	0.3%	1.1%	1.4%	1.1%	1.0%	1.3%	1.1%
Diplomatic Authority	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%	0.1%
Non-profit Organisations	0.9%	0.5%	0.8%	0.2%	0.1%	0.2%	0.2%	0.1%	0.2%
Without Establishment	0.3%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%
Private Household	0.0%	0.1%	0.0%	4.3%	42.8%	13.4%	4.1%	40.1%	12.7%
Other	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Not Stated	0.5%	0.3%	0.4%	0.0%	0.1%	0.0%	0.1%	0.1%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Labor Force Survey 2019- Federal Competitiveness and Statistical Centre

In these backgrounds, it is quintessential to delve into sources of competitive advantage in firms. Hence, it is decided to conduct the study based on the following factors:

- Determine the factors that enhance the change management process at businesses.
- Examine the role of people managers as leaders.



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- Consider strategies to address the 'war of talent'.
- Develop an understanding of how technology can support effective talent management
- management strategy.

## 2 Background to the study

### 2.1 Change management as a tool for agile businesses

Change is inevitable to any organization for its vitality, survival, and growth; therefore, HR professionals' engagement and quality are paramount in the coming decades. Unfortunately, the success rate for change management processes in the firms seems to be very less. Approximately five percent of companies undergoing significant organizational changes avoided significant disruptions and completed on schedule. (Gilley & Gilley, 2007) [7]. According to Dawson (2004), various triggers to organizational changes are technology, customer demand, skill updation, administrative structures, along with political, social, economic, and technological aspects [8]. These aspects create virtual teams, self-managed work teams, High-Performance Work Systems (HPWS), alternative workplace programs, and talent management. Additionally, employee knowledge and skills can enhance by the following concepts:

- implement and track new technology programs
- enable online learning
- maintain work-life balance and keep responsibilities while homeworking
- perform tasks for psychological wellbeing and productivity
- socialization and networking.

The fact that half or more of employers say at least fifty percent of their workforce has been home-working continuously throughout the crisis indicates that expectations about homeworking and work flexibility have changed dramatically (CIPD, 2020) [9]. Further, 'evidence-based decision-making' by behavioral science and research, people analytics, stakeholder concerns, practitioner expertise are the foundations of skills required to draw useful conclusions from diverse insights. A survey by People Profession (2020) found that nine out of ten organizations plan to use people data and analytics in the future [10]. As far as paradigms go, the resource-oriented, best practices, and process-oriented paradigms can help enterprises to develop competencies that are tailored to the specific requirements of their businesses. Performance implication and employee motivation assist in





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achieving the 'level of interest alignment.' This level of alignment leads to achieving both organizational and personal goals. During each of the three levels of motivational alignment outlined by Gottschalg and Zollo (2007), a high level of interest alignment can be achieved. A person's intrinsic motivation level dictates what rewards he or she receives for a particular action. Secondly, the hedonic intrinsic motivation level refers to the degree of pleasure individuals receive while completing their task tasks at work. Therefore, organizations can alter task and task contents in the changing economic conditions. Lastly, the normative intrinsic motivation level creates a socialization process, through which companies can clarify their values and norms and help employees to develop behaviors that are consistent with them [11].

## 2.2 Leadership as a change agent

Today's flexible, inventive, and vibrant business environment calls for more than just being a good manager (Nathanson, 1993) [12]. As the landscape changes, leaders need to reconfigure their approaches to their organizations' portfolios. Additionally, it recommended that they develop practical knowledge of a company's structure and internal dynamics (Parameswaran, 2021) [13]. Leaders in the post-pandemic period inspire a shared vision and ensure its implementation, articulating, maintaining it, and involving followers to further its implementation. Even though Mintzberg's ten managerial roles of leaders were published decades ago they are still relevant in this unprecedented economic downturn (Lussier & Achua, 2004) [14]. Additionally, Figure 1 depicts the view of institutionalized leadership can create a strategic move in organizations and equip them to have a competitive edge (Nadler et al 1995).

	Incremental	Discontinuous
Anticipatory	<b>Tuning</b> Adjustment Improvement Internal alignment Components or sub-systems	<b>Reorientation</b> Major change Positioning entire organization Frame bending
Reactive	<b>Adaptation</b> Internal alignment External event	<b>Recreation</b> Reevaluate whole organization Rapid system-wide change Frame breaking

Fig 1: Institutional Leadership

Source: Nadler, D.A., Shaw, R.B. & Walton, A.S. (1995). Discontinuous change: Leading organizational transformation. San Francisco, Jossey Bass:225.





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On an organizational level, flexibility involves the use of employment practices and organizational structures in a coordinated way to create a capacity for change and innovation. Numerous forms of overlapping flexibility such as functional (Kossek et al., 1999), numerical (Rimmer & Zappala, 1988), financial (Atkinson, 1984), procedural (Bamber, 1990), regulatory (Bamber, 1990), mobility (Bamber, 1990), cognitive (Morrison, 1994), and organizational (Hassard & Parker, 1993), flexibility exists, and people management professionals need to distinguish between these forms of flexibility to grab opportunities for system flexibility [15-20]. Related to this, the big concern in this post-pandemic period is to consider whether the firms are ready to implement any of these techniques. Hence, the factors that assist in this scenario are policy, employee commitment, management commitment, training and orientation, technology, teamwork, performance management, teamwork, decision making, communication, and information dissemination.

### **2.3 Talent management as an administrative facet**

The impact of pandemic indicates that there is a great influence on employment relations that leads to restoration of policies and procedures as the 'war of talent' becomes intense. Further, the procedures of managing talents need to be more diversified, strategic, varied, and well-rounded than earlier. Various activities can be included such as HR forecasting, gap analysis, staffing methods, retention management, learning, and development, assessments, and so on. According to Michaels et al (2001), organizations can consider the following aspects to have a competitive edge; talent approach to be developed, employee value proposition to be generated, recruiting plans to be reconstructed, integrate growth into the business culture, and segregate and validate individuals. [21].

Additionally, moral standards are considered in business ethics as they are interpreted by organizations and the behavior of their members. HR professionals must follow an ethical approach to decision-making, take a moral standpoint, make financially sound decisions, and adhere to all relevant laws and regulations. Ethical decision-making requires three qualities and needs three dimensions, the capacity to analyze moral issues in a context; the capability to utilize issues utilizing lock-in principled based thinking; obligation to perform morally. The IBE surveys for 1998, 2001, and 2004 found that in 44-46% of the UK companies the Company Secretary or legal department was responsible for administering a company's code of ethics. This contrasts with the reported 16 percent in 2004, 20 percent in 2001, and 12 percent in 1998 for responsibility resting with the HR department (Vickers, 2005) [22].



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## 2.4 Human resource professionals in the electronic era

The organizations that understand the implications of the internet economy will be the most successful in their e-transformation project. Electronic business (e-business) in the HR area is when an organization operates in a web-based environment that provides users, managers, and employees with direct access to relevant HR data to help them achieve their objectives within the organization. Therefore, people management professionals must upgrade their skills when they approach their customers, and how they market, order, track, and deliver their products or services.

### HR matrices

For HR to contribute, how HR systems enable it to contribute, and how people management professionals ultimately deliver, an understanding of the rules of the game and a new perspective is necessary. Due to various economic changes, several measures are available in organizations to explore: the workforce, HR function, and leadership to have a strategic success. The three popular measures: are the Balanced Scorecard, the HR Scorecard, and the Workforce Scorecard. For example, the balanced scorecard approach was used by companies like Sears and American Express in the 1990s was developed by Robert S. Kaplan and David P. Norton. In this approach, they emphasized the need for four important perspectives in the businesses namely, customer, internal, innovation and learning, and financial perspective (Kaplan & Norton, 2005) [23].

## 3 Methodology

In this study, which is pure or basic, or fundamental research, the goal is to advance knowledge or to improve understanding of a natural phenomenon. It facilitates the development of new ideas, principles, and theories. In the late 19th and early 20th centuries, basic research developed to strive to address the gaps in the utility of science to society. This study emphasizes theoretical aspects and allows psychologists, educationalists, academicians, to comprehend certain variables for this cutthroat knowledgeable economy rather than finding solutions [24]. Hence, this research collected literature from various sources and prepared recommendations based on the same.



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## 4 Recommendations

From the above-mentioned strategic move firms in the post-pandemic should ensure the following factors. A strategic change management process can include three important factors:

The assessment of the current position of the company through external environmental scanning and identifying what is working well and what is not. Secondly, the changes needed to solve the existing problems, thirdly, steps to how to implement the changes and build dynamism. The factors to be considered in these aspects are encouraging commitment and utilizing the resources, working with politics of change, supporting emotional transitioning, planning the implementation details, fostering creativity and spontaneity, and inspiring continuous learning and evolution.

The development of a flexible-firm model or core-periphery model in firms can create a competitive edge by the restructuring of the employment relationship. The core is made up of a permanent highly skilled group of employees with internal career paths. Hence, they can enjoy job security to a great extent, also updating the skills and competencies by training and development. On the other hand, the peripheral workers represent a qualitative or numerical flexible workforce, and they are engaged in important day-to-day activities but are not vital to organizations.

Firms in the post-pandemic era can rebuild recruitment strategies to understand the workforce, retrain them and retain them. Moreover, it is evident from the literature that employees are looking for exciting work, personnel and professional development, the culture of the company, wealth, and rewards (Michaels et al., 2001). When it comes to ethical approaches, HR practitioners who are well versed in ethical theory are more likely to be able to respond appropriately to ethical challenges. They may also make a meaningful contribution to an enterprise's ethical infrastructure, thus reducing the probability of costly ethical breaches and strengthening its relationships with employees and external stakeholders.

Some of the concerns while implementing the workforce scorecard are; the ability of the managers to distribute skills to drive strategy, to find out the right measures of workforce success and mindset, and accessibility of using the data to give feedback and evaluate the developments. While implementing and maintaining an e-business strategy, the firms can consider the following factors: gain ongoing support from the top management in decision-making, establish job rotation in a self-managed team, launch change management and communication plans, acquire their own budget, and assess the progression.



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## 5 Future Scope of the study

As this, further study can be extended into applied research. This can develop corporate policies for a competitive advantage in firms. Each variable can be analyzed through sub-variables and conduct Confirmatory factor analysis and Structural Equation Model. This can be achieved by preparing a primary data collection (questionnaire/survey and interview). Finally, an outcome can be created based on theories.

### Conclusion

The pandemic has truly shaken the complete world. To strengthen the financial status and economic conditions, the UAE government has introduced numerous financial approaches, plans, and strategies. The initiatives are mainly concentrated on the reinforcement of business growth by various approaches. A few are; a holistic economic support plan from the Central Bank, assisting the federal government to lessen the burden in the existing situation, and supporting local government package to ensure the solidity of the national economy; incomparable creativities to build a unified civic in times of catastrophe; the nationwide fumigation program and safe distancing rules; excellent rules and regulations for suppleness in auxiliary specific sectors; reinforcement of food security strategy, and the UAE's philanthropical initiatives. Indeed, these new initiatives and decisions created a sense of reassurance, safety, and comfort for the locals, expatriates, and tourists. Hence, by safeguarding wellbeing and security, these programs guarantee the government functions in all sectors. [25]. Certainly, the parameters for the study shed light on the UAE's initiatives and strategies for the future.

Nowadays, strategic planning and action plans play a significant role in people management professionals' responsibilities. It is clear from the mentioned aspects that to understand the learning needs and to underpin the delivery of learning, organizations need evidence-based decision-making. In this post-pandemic period, finding the future skills is a high priority for organizations, and deploying those selected skills in a strategic manner is very challenging. Therefore, firms can sustain themselves if HR professionals restructure the traditional HRM function into tactical, operating, and rational levels. In a nutshell, HR professionals must ensure that they have attributes in global, innovative, virtual, and collaborative aspects.



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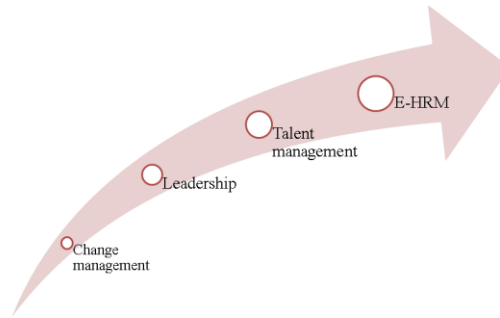


Fig 2: HR professionals' quest for change management: core strategies in the post pandemic era

Source: Present Study

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## Employee - Supervisor Conflict Management in Organization

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*Abstract: Globalisation has caused more diversity in the workplace and in addition to the benefits it has led to increased conflicts. The perception of conflict is not the same between individuals because they bring different cultures and mentalities. As a result, its management is demanding and requires a detailed analysis of the situation to determine the most effective method to use. The study aims to analyse the styles employees use in handling conflicts with their supervisor. The study uses as research instrument a questionnaire created relating on other studies to collect the data needed for the research analysis. As all the sample of respondents is composed by Albanian citizens the language of the questionnaire is Albanian language. The study found out that Albanian employees use the collaborating style in handling conflict, and also compromising style which favours both parties and finding a common solution.*

*Keywords: conflict management styles, handling conflict, collaborating style, compromising style*



## 1 Introduction

Globalization, demographic change, emigration, low fertility rate, few opportunities for skilled work, high level of women participation at labor force, are factors that have impacted the increase of the heterogeneity in the workforce in recent years. Diversity has influenced organizations to implement rules and policies in order to effectively manage problems or conflicts that may arise as a result of cultural changes that affect each individual.

The organizations stimulates conflict, competition and comparison between departments and individuals. Conflict is a reality in the social context founded at personal, group and organizational level. Since the consequences of the conflict are categorized as functional and dysfunctional, exists a necessity to investigate several particular and different techniques and tools to handle the conflict. Managing the conflict effectively and adequately is a must in order to prevent conflict, its negative causes and to influence the concentration of employees in their work environment, without being influenced by other internal or external causes.

The study aims to analyze the employee-supervisor conflict management in Albanian organizations. The questions raised on this research study are:

1. What style of conflict management is used in resolving employee-supervisor conflict in Albanian organizations?
2. Do demographic factors impact the choice of managing the conflict?

The formulated hypothesises of the research are presented as follows:

1. Albanian organizations use all five styles of conflict management.
2. Demographic factors impact the choice of conflict management styles.

## 2 Literature Review

A considerable amount of research has paid attention to conflict in organizations and its impact on work outcomes, reflecting a growing concern about the harmful effects of conflict on group and individual performance. It should be noted that many of the problems cited in the work environment are related to interpersonal conflicts and conflict styles. (Friedman et al., 2000)

Rahim (2001) argues that relationships between entities, such as individuals, groups or organizations, can have conflicts or disagreements when: two or more of them want the same resource which is available but lacks quantities to satisfy all parties; when they have in part preferences and attitudes referring to joint actions; or when they display contrasting attitudes, behaviors, mindset, values as well as abilities.

Social conflict studies have been important by scholars of various disciplines. The consequences of the conflict are functional and dysfunctional. The outcomes of the





functional conflict are distinguished in terms of improved decisionmaking in organization, innovation, growth and creativity, synergy in solving problems, improved performance inside the group, seeking new approaches from individuals and groups; clarification of the positions of individuals and groups. Dysfunctional outcomes include conflict as a cause of stress, job abandonment, and dissatisfaction; reducing communication between groups and individuals; developing a climate of mistrust and suspicion in the work environment; damages the relationships between colleagues; reducing work outcomes; expanded resistance to change; organizational commitment and devotion can be affected.

## 2.1 Type of conflict in the organization

Relying on the theory of Pygmalion, employee performance is determined by their attitude and expectations, as well as how they are largely treated in the workplace. A conflict situation between the supervisor and employees results on feeling created in the employee perceptions meaning that their supervisors have low expectations for them. Based on those perception the employees will try to avoid the conflict.

The confrontation with different types of employees, peers and other team members require the implementation of several and different styles of coping with the conflict. If the organization has an approach that favorise the use of only one style of conflict management concerning to all the types of conflicts than this strategy would generated the expected results. The kind of approach used by the supervisor to cope with the conflict within the organizational context affects the relationship between them and their employees but also the trust and loyalty of employees. Despite this, exist also other factors that cause conflict. By considering the differences within the types of conflict, the managers can use the appropriate style for resolving the conflict. If the conflict remains unresolved, it could have serious consequences.

We can evaluate the essence of the conflict by focusing on the sources that generate the conflict, which are relationships, tasks and processes (Robbins - Judge, 2021). Relationship conflicts are always unfunctional and are the most psychologically exhausting (Robbins - Judge, 2021). The conflict related with the work tasks slightly reduces the extent to which people collaborate, and moderately increases the degree to which they compete with one another. This has a strong negative effect on their trust and job attitudes. From low to moderate levels this type of conflict is always functional and supports employees to seek clarification or to generate new ideas in terms of accomplishing their goals (Robbins - Judge, 2021). The conflict that occurs in the frame of disagreements for the work process in low levels results always functional. When this kind of conflict takes a very personalized shape can be easily transformed into a relationship conflict (Robbins - Judge, 2021).



## 2.2 Division of the conflict's category

Conflict within the organizational context can be divided as conflict inside the organization and conflict between different organizations. The conflict inside the organization can be divided further at individual level, group level etc. (Rahim, 2001). Interpersonal conflict occurs when an organizational member is required to perform certain tasks and roles that are inconsistent with his or her expertise, interests, goals, and values. Interpersonal conflict refers to conflict between two or more organizational members of the same levels or different hierarchical units. Studies on superior-subordinate conflict relate to this type of conflict (Rahim 2001, p.23). Conflict within the group refers to the conflict between members of a group or between two or more subgroups within a group over its goals, tasks, procedures, etc (Rahim, 2001, p. 24.) Intergroup conflict refers to conflict between two or more entities or groups within an organization. Conflicts between line and staff, production and marketing, and headquarters and field personnel are examples of this type of conflict (Rahim, 2001, p. 24).

## 2.3 Consequences of interpersonal conflict

Previous studies generally show that one style of problem solving or integration by members of an organization leads to greater satisfaction and effectiveness of the members of the organization. Misquita (1998) reported that when subordinates perceived that their supervisors were treating the conflict in an integrative style, their organizational engagement increased. If subordinates perceived that their supervisors were using evasive and dominant styles, their organizational engagement diminished. Weider - Hatfield (1995) explored the relationships between five conflict management styles and their perceptions of organizational effectiveness, using a human resource model as a guide. The results showed that the use of integrative style subordinates was positively correlated with six individual and organizational outcomes (job satisfaction, global equity, system outcomes, work outcomes, performance outcomes, and interpersonal outcomes). Also, compromise style was positively associated with interpersonal outcomes, dominant style was negatively associated with job satisfaction, and dominant and avoidant styles were negatively associated with interpersonal outcomes.

## 2.4 Management of conflict in organizations

According to Rahimi (2002, p. 206) conflict and its constructive management are important for the optimal functioning of organizations however, most conflict management recommendations still focus on reducing, resolving or minimizing conflict, due to the negative impact that may have on organizations and individuals. Conflict management needs to focus more on continuous transformation. This decision can bring worries and distractions from work, affecting the decision-



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making process, relationships and individual effectiveness, as well as productivity and creativity (Cowan, 1995 p.24).

In addition, there is evidence that conflict can negatively affect organizational processes, productivity, and increased spending (Burton, 1990). Despite these claims, if managed constructively, conflict can contribute positively to job satisfaction, well-being (De Dreu et al, 2004 p.115) and even stress reduction (Friedman et al., 2000). Conflict management styles are generally studied as individual characteristics or trends. An individual conflict style contains a general behavioral orientation or expectation, around the individual approach to conflict. Individuals usually choose a certain style, a model of principles to guide them through different episodes of conflict.

Based on the fact that the nature of managerial conflict is a phenomenon that occurs at individual level according to perception processes and individual's experience, the sort of analysis implemented to understand it needs to be in terms of observing individual's manifestation of behaviour.

There are several studies on the conflict management area that rely on the Dual Anxiety Model, a model developed by Blake and Mouton (1964). A 28- item questionnaire was created and projected to estimate and evaluate the styles of relational conflict between subordinate-supervisor, and colleagues (Rahim 1983 as cited by Weider – Hatfield, 1995).

Authors have identified five kinds of intentions to handle the conflict: competing style, collaborating style, avoiding style, accommodating style and compromising style (Robbins - Judge, 2021).

### **3 Methodology**

This study is based on primary and secondary sources for collecting the data. A designed questionnaire has been implemented to collect the primary data, meanwhile other data have been collected by studies conducted from several studies realized by different authors.

The drafting and construction of the questionnaire was based on works listed in the literature review. The questionnaire was created by using the appropriate survey software (SurveyMonkey) enabling it completing online. Using the electronic questionnaire can be very useful as it is fast, low-cost, does not require help, and can be easily distributed to a large number of people (Williamson, 2002). The questionnaire is formulated in Albanian language. All surveyed people are Albanian citizens and live in Albania.



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The questionnaire aims to analyze which conflict management styles are most used by Albanian employees to handle the conflict with their supervisor. The questionnaire is divided into two sections.

The first section includes demographic data of respondents such as: gender, age, level of education and years of experience in organization. In this section are used closed-ended questions. The second section contains 28 items of the Rahim Organizational Conflict Inventory, ROCI-II ( 1983a, 1983b; Rahim & Magner, 1994) with a 5-point Likert scale ( from 1 - strongly disagree to 5- strongly agree) that reflect conflict management styles. The five conflict management styles reflect different combinations of 'concern for self' and 'concern for others'.

The instrument built by Rahim highlights five styles of employee –supervisor conflict management respectively, collaborating style, accommodating style, competing style, avoiding style and compromising style. The competing style is uncooperative and individuals who use this method try to solve their own problems and satisfy personal expectations at the expense of the other party. The collaborating style is based entirely on collaboration between individuals. who try to find a favorable solution that fully solves the concerns of both parties. The compromising style tries to find an acceptable solution that only partially meets the needs and resolves the concerns of both parties. The avoiding style is unassertive and uncooperative. Individuals who use this style avoid conflict without trying to resolve it. The accommodating style is unassertive and cooperative. Individuals who use this style try to satisfy expectations and solve the other person's problems at their own expense.

The sample of participants consisted of 110 individuals of different professions, employed in various organizations in Albania. For the selection of the sample, the combination of the convention technique with the snowball technique (used in the non-probabilistic samples) was used.

Processing and analysis of data collected through questionnaires was performed through SPSS Statistic 24. software. The analysis for deriving the results was performed through descriptive analysis, correlation analysis and simple regression. Prior to performing the main data analysis, the research instrument was tested for reliability using the Cronbach Alfa coefficient. The Cronbach Alpha, also known as the Alpha Coefficient, aims to prove whether multi-question questionnaires rated through the Likert scale are reliable (Cronbach, 1951). For the instrument to be considered reliable, the value of Cronbach alpha must exceed a minimum of 0.6. (Hair et al., 2006).

Pearson's correlation coefficient and regression analysis were also used to determine the relationship between demographic factors and the choice of conflict management styles. Various authors suggest different interpretations of the correlation coefficient, however, this study followed the guidelines of Davis, (1971), where: value intervals of 0.70 and more consist of a very strong relationship;



intervals from 0.50 to 0.69 consist of a significant relationship; intervals from 0.30 to 0.49 consist of a moderate relationship; intervals from 0.10 to 0.29 consist of a weak relationship; and <0.09 the relationship is considered negligible. The simple linear regression model created to explain the association between the explanatory variable and the dependent variable has the general form as following:

$$Y = b_0 + a_1X_1$$

Each element in this equation explains how the dependent variable depends on the weight (role) that the independent variables has in its modeling in terms of the assumed link model.

The table below explain the type of variable, their construction and the number of items use to measure each variable.

Table 1. Explanation of the variables

Variable type	Variable names	Variable constructs	No. of items
Dependent variable	The styles of conflict management	Collaborating Accommodating Competing Avoiding Compromising	7 statements 6 statements 5 statements 6 statements 4 statements Rahim (1983, 1986)
Independent variables	Demographic factors	Gender Age Level of education Years of experience	2 options 4 options 4 options 5 options

Source: SPSS output

## 4 Results

### 4.1 Characteristics of respondents

Table number 2 shows the demographic data of individuals who completed the questionnaire by education level, gender, age groups, and years of background in organization.



Table 2. Demographic data

Characteristics		Percent (%)
Gender	Male	17,6
	Female	82,4
Age	18-34	75,9
	35-44	14,8
	45-54	4,6
	55-64	4,6
Level of education	High school	20,4
	Student	13,9
	High education	27,8
	Master/PhD	38,0
Years of experience in organization	Less than one year	37,5
	One to three years	30,8
	Four to six years	10,6
	Seven to nine years	5,8
	More than ten years	15,4

Source: SPSS output

According to the demographic results, the gender dispersal is not balanced, subsequently 17,6% of participants are male meanwhile 82,41% female. Regarding the age groups, the largest one is 18-34 years old (75.9%), the second one is 35- 44 (14,8%). The study sample is represented by the youngest group of participants.

From the study participants 38 % of surveyed people has master degree or doctoral degree, 27,8 % has completed the higher education, followed by respondents that has high school and students respectively with 20,4% and 13,9%. According to the years of backgrounds within organization, the major group is represented by the respondents that have less than 1 year of work experience in organization (37,5%) followed by the group of respondents that has 1 – 3 year of work experience in organization (30,8%).

## 4.2 Descriptive Analysis

Table 3 shows the results concerning the use of the five conflict management style from the respondents.



Table 3 Descriptive Result: Conflict Management Styles

Statistics		COLL.S.	ACCOM.S.	COMP.S.	AV.S.	COMPR.S.
N	Valid	110	110	110	110	110
	Missing	0	0	0	0	0
Mean		4.15	2.99	3.25	3.25	3.89
Std. Deviation		.551	.668	.783	.652	.646

Source: The table is generated as SPSS output

As we can see from the table, respondents from different organization prefer to use the Collaborating Style (4.15) and Compromising Style (3.89) to resolve the conflict with their supervisor. Results show the less use of the Accommodating Style (2.99), Competing Style (3.25) and Avoiding style (3.25).

Going in the depth of the results, we will compare mean of the conflict management styles within gender, age group, level of education and year of experience to see if there are any differences. The results show that there is no difference between females and males concerning the choose of the style for handling the conflict with their supervisor. There are some differences between age groups and the choose of the style for handling the conflict with their supervisor. Age group 45-54 prefer to use more the Compromising style compering with other age groups.

Table 4 shows the results concerning the differences within respondents with different level of education and the choose of the style for handling the conflict with their supervisor.

Table 4 Compare Means: Levels of Education – Conflict Management Styles

Report		COLL.S.	ACCOM.S.	COMP.S.	AV.S.	COMPR.S
Level of Education						
High school	Mean	4.32	3.12	3.46	3.48	4.07
	N	22	22	22	22	22
	Std. Deviation	.308	.554	.707	.600	.519
Student	Mean	4.23	3.11	3.73	3.30	4.13
	N	15	15	15	15	15
	Std. Deviation	.365	.786	.598	.667	.516
Higher education	Mean	4.01	2.99	3.19	3.14	3.73
	N	32	32	32	32	32
	Std. Deviation	.823	.674	.896	.746	.894
Master/PhD	Mean	4.15	2.87	3.00	3.20	3.84
	N	41	41	41	41	41
	Std. Deviation	.413	.677	.695	.584	.466
Total	Mean	4.15	2.99	3.25	3.25	3.89
	N	110	110	110	110	110
	Std. Deviation	.551	.668	.783	.652	.646

Source: The table is generated as SPSS output



Respondents with level of education: high school and students prefer to use more the Compromising Style comparing with the respondents with other level of education.

As we can see from the table 5, respondents that have more than 1 year of work background and respondents that have less than 10 years of background, prefer to use more the Compromising Style to handle the conflict with their supervisor, in compare with respondents that have less than 1 year of work experience and more that 10 year of work experience.

Table 5 Compare Means: Years of Experience – Conflict Management Styles

Report						
Work Experience (year)		COLL.S.	ACCOM.S.	COMP.S.	AV.S.	COMPR.S.
< 1 year	Mean	4.15	3.11	3.45	3.26	3.88
	N	41	41	41	41	41
	Std. Deviation	.542	.669	.743	.691	.671
1-3 years	Mean	4.18	2.97	3.12	3.30	4.00
	N	33	33	33	33	33
	Std. Deviation	.414	.650	.783	.641	.519
4-6 years	Mean	4.24	2.95	2.92	3.44	4.02
	N	13	13	13	13	13
	Std. Deviation	.321	.934	.858	.488	.581
7-9 years	Mean	4.19	3.11	3.53	3.39	4.04
	N	6	6	6	6	6
	Std. Deviation	.334	.344	.327	.404	.188
>10 years	Mean	4.03	2.71	3.15	2.93	3.54
	N	17	17	17	17	17
	Std. Deviation	.922	.505	.847	.710	.858
Total	Mean	4.15	2.99	3.25	3.25	3.89
	N	110	110	110	110	110
	Std. Deviation	.551	.668	.783	.652	.646

Source: The table is generated as SPSS output





### 4.3 Regression Analysis

First step of the analysis consists in performing the reliability analysis. In terms of quantitative analysis, the Cronbach alpha coefficient has been found to be quite satisfactory in relation to all the five styles of the conflict management (Table 3 in Annex). According to the methodology for a tool to be considered valid, the Cronbach alpha coefficient value should be above 0.6. In our case this coefficient result above .0.6 which mean that the constructs measures are reliable.

The second step of analysis consist in performing the Pearson correlation, which will show the possible link within demographic factors and the styles of conflict management. As mentioned in the methodology, their relationship depends on certain intervals that determine the weakness or strength of their relationship. Value intervals of 0.70 and more consist of a very strong relationship; intervals from 0.50 to 0.69 consist of a significant relationship; intervals from 0.30 to 0.49 consist of a moderate relationship; intervals from 0.10 to 0.29 consist of a weak relationship; and <0.09 the relationship is considered negligible ( Davis, 1971). As we can see from the table below, we can identify only one meaningful correlation within demographic factors and the styles of conflict management.

Table 6 Correlation Analysis

Correlations		Gender	Age	Level of Education	Work Experience	CMS
Gender	Pearson Correlation	1	.184	.087	.169	-.006
	Sig. (2-tailed)		.054	.365	.077	.951
	N	110	110	110	110	110
Age	Pearson Correlation	.184	1	-.252**	.549**	.079
	Sig. (2-tailed)	.054		.008	.000	.415
	N	110	110	110	110	110
Level of Education	Pearson Correlation	.087	-.252**	1	-.070	-.247**
	Sig. (2-tailed)	.365	.008		.469	.009
	N	110	110	110	110	110
Work Experience	Pearson Correlation	.169	.549**	-.070	1	-.173
	Sig. (2-tailed)	.077	.000	.469		.071
	N	110	110	110	110	110
CMS	Pearson Correlation	-.006	.079	-.247**	-.173	1
	Sig. (2-tailed)	.951	.415	.009	.071	
	N	110	110	110	110	110

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

Source: The table is generated as SPSS output

The meaningful relationship is between level of education and conflict management style (-.247\*\*), but as we can see from the table the value show a weak relationship. In relation with conflict management style variables, the significant relationship is



identified between level of education and competing style (-.275\*\*), but as we can see from the table the value show a weak relationship.

The last step of the analysis consist in performing the regression model to see the impact of level of education to the competing style.

Table 7 Regression Model

Model Summary <sup>b</sup>				
Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.275 <sup>a</sup>	.076	.067	.756
a. Predictors: (Constant), Level of Education				
b. Dependent Variable: COMPS				

Source: The table is generated as SPSS output

In the summary table of regression analysis, the values of R Square is .076, this coefficient of determination indicates that the level of education explains 7.6% of the variance of the data. If we refer to the confidence interval it should be at the extent of 90%, 95% and 99%, we see that the model is within this interval (Sig. 0.004).

Table 8 Coefficients of the model

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error			
1	(Constant)	7.574	1.456		5.203	.000
	Level of Education	-.189	.064	-.275	-2.975	.004
a. Dependent Variable: COMPS						

Source: The table is generated as SPSS output

In the table of the coefficients of the model, the coefficient X1 (Level of Education) has the value, - .189. This means that for every unit of change on the variable X1 when the other factors of the model are kept constant, the Competing style is impacted negatively by 0.189 units.

The regression equation is as follows:

$$Y = 7.574 - 0,189X_1$$



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## 5 Discussion

According to the data analysis it's distinguished that there are two preferred styles to manage the conflict within the organization in the Albanian context compared with the five styles described by the literature, respectively collaborating and compromising style.

The data analysis results also show a correlation within the level of education and the style of conflict management. Specifically our study shows according to the correlation analysis that exists a low correlation within education level and Competing Style ( $r = -0.275^{**}$ ).

According the regression analysis the results suggest that as the level of education of employees changes, the Competing style is impacted negatively (this component explained 7.6 % of the variance in Competing style).

### Conclusion

Some empirical evidence concerning the use of two out of five conflict management style and the slightly impact of demographic factors (Level of education) on it. There are many international implications related with the conflict management approaches in different cultures based on the fact that each culture considers the styles of conflict management with different lenses. There are indirect methods used to preserve the relationships in collectivist cultures, meanwhile differences of directly opinions are managed openly in individualistic cultures. Based on the fact that we didn't found out an important impact of demographic factor on the choose of the style from employees to manage the struggle with their chief and the fact that the culture influences the handling of the conflict, for further research we will consider the influence of cultural factors on the choice for managing the conflict.

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# Characteristics of the wine industry in Poland and in the world - analysis based on a selected entity in the supply chain

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*Abstract: This paper presents the wine industry, taking into account the analysis of the wine market in Poland and in the world. The characterization of the industry was carried out taking into account the perspective of producers as an important link in the supply chain. The aim of the article is to describe and analyze the situation of the wine industry in Poland and in the world, together with the presentation of possible development directions for a selected entity in the supply chain. The analysis of production trends occurring in the wine industry was used to make the inference, taking into account additional non-numerical factors affecting the existing numerical data. The main conclusion resulting from the analyzes carried out is the identification of various trends in wine production depending on the geographical area, which results in the necessity to apply different competitiveness strategies operating in these areas of the supply chain entities.*

*Keywords: wine market; polish wine market; wine production; wine supply chain; trends in wine industry; trend analysis*

## 1 Introduction

Wine is the oldest alcoholic drink known to mankind. The grapevine that occurs naturally in the Mediterranean basin and Asia Minor, along with the colonization and settlement of people on new lands, has been spread and is cultivated almost all over the world. Due to the fact that wine produced in different regions of the world has unique organoleptic characteristics, a need has arisen to consume wine from a region other than that of the consumer's residence. This need made it necessary to create increasingly complex and complex supply chains with many links (Garcia et al. 2012). An extremely important link in the entire supply chain is the link that



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supplies the finished product, wine. Without wine producers, there would be no product, and therefore no world wine market (Hornsey, 2007, Varriano, 2010).

In the wine market, as in any other market, various types of trends, both consumption and production, are common. Consumption of low- or non-alcoholic beverages is gradually increasing, necessitating producers to take appropriate steps to adapt the product to consumer needs. The marketing of experience is also noticeable (Bouszewicz-Kreft, 2006), which in the wine industry manifests itself in the form of enotourism - visiting a vineyard, learning about its history and people working in it, and tasting wines produced in a given vineyard. An important trend in the wine industry is the ecological trend. Due to the increasing environmental awareness of both consumers and producers, more and more attention is being paid to the ecological aspects, reduction of the carbon footprint and sustainable production techniques in the production process and throughout the entire supply chain.

With the warming of the climate and the possibility of growing grapes in countries that were previously considered too cold for cultivation, the wine market is enriched with new wines, and countries where grape growing and wine production were considered a hobby are becoming wine countries. An example of such a country in which global warming allows for the cultivation of grapes on a larger scale is Poland, which in the 2020/2021 economic year obtained the status of a wine country due to exceeding the limit of 500 ha of grapevine cultivation. The new, emerging wine countries represent an extremely interesting aspect in the context of the development of the entire wine market and the creation of new wines.

Grape-growing and wine-producing on almost every continent in the world are clearly concentrated in a few centers. Due to the significant influence of climatic conditions on the crops, it is extremely difficult to make accurate forecasts of the yield and the final wine production. The inability to make accurate forecasts makes it almost impossible to perfectly match the volume of world wine production with its consumption. The aim of this article is to investigate the world wine market in terms of quantity regarding production trends and confirm the existence of wine overproduction, as well as to identify non-quantitative aspects affecting wine production.

## **2 Literature review**

There are many trends in the world wine market, both in terms of consumption and production. Wine producers have to adapt their offer to all customer needs. Knowledge of the local and world market plays a key role in the wine production planning process. Knowledge of the volume of wine consumed in the home country, the willingness of foreign customers to import wine from a specific location,



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consumer preferences regarding the country of origin of the wine, or the price range of wines purchased in the home country allow the planner to plan a marketing and pricing strategy (Popescu, 2019). When analyzing trends, it is also important to know the region under analysis, as the habits and behavior of consumers differ not only between distant regions of the world, but also between neighboring countries. Therefore, it is important to analyze the market of individual countries in order to obtain such basic information as the type of wine preferred by consumers or the region from which wines are most often imported, as well as the ratio of wine import to export (Stoian et al. 2013, Ma, 2017).

In addition to trends, wine producers and grape growers must take into account climate and weather conditions and their variability in the production process. The weather and the climate in which the grapes are grown influence many factors regarding the quality characteristics of a wine. Therefore, it is important for wine producers to be aware of the importance of advancing climate change on the global wine market (Ashenfelter – Storchmann, 2014).

Consumers of developed countries, especially in the European Union and the USA, show greater concern and awareness of their own health. They also believe that wine consumed in adequate amounts is a healthy product (Vecchio et al. 2017, Paschall – Lipton, 2004). This is a manifestation of the trend of taking care of your own health.

A similar phenomenon is the desire to consume alcoholic beverages with a lower alcohol content or alcohol-free, the so-called non-alcoholic beers or wines, which should taste the same as their alcoholic counterparts, but without the negative effects of alcohol on the body. The desire to consume low-alcohol equivalents of proper wine is growing in popularity, especially among young consumers in developed countries (Bucher et al. 2018, Castellini – Samoggia, 2018). It is worth noting that low-alcohol wines are more appreciated by consumers who are less knowledgeable about wine, and consumers are not very well informed about the differences in naming and distinguishing between low-alcohol and low-alcohol drinks (Saliba et al. 2013, Meillon et al. al. 2013). Additionally, among some consumers, a reduced alcohol content in wine may result in an aversion to purchasing a given product (Stasi et al. 2014).

In times of advancing climate change, consumers and producers pay more and more attention to the sustainable production of their products and the ecological aspects of their operations (Rabadán – Bernabéu, 2021). The use of appropriate, organic production and distribution methods allows to significantly reduce the carbon footprint of the product and the impact of production on the climate (Niccolucci et al. 2008). However, the multitude of labels regarding various solutions and ecological standards used by producers confuses customers and can potentially cause them negative emotions related to a given terminology (Bhaskaran et al. 2006).



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Enotourism is a good way to gain new customers and introduce them to a given wine. Enotourism, or wine tourism, consists of visiting vineyards and wineries, talking to the hosts and tasting the wine produced in a given place. It is an important element of tourism, especially in wine regions. Thanks to enotourism, individual regions are more attractive to visitors, and wine producers have the opportunity to gain new customers and keep them for longer thanks to experience marketing (Alant – Bruwer, 2004, Hall – Mitchell, 2000). Enotourism is also extremely important for new wine regions and places that were already associated with wine but were not particularly visited by enotourists (Bramble et al. 2007, López-Guzmán et al. 2009).

An interesting subject in the analysis of wine trends are countries where the wine drinking culture is not widespread and deeply rooted, as well as new wine countries. A country that meets both of these criteria is Poland, which only became a wine country in 2021, and wine in Poland is not the most consumed drink. The conducted research (Schaefer et al. 2018) shows that the level of wine consumption does not depend on demographic factors but on the specific characteristics of a given consumer. This is an important observation, which does not exclude the statement that Poles are reluctant to consume wine because they consider it to be an expensive drink, a high-end product and a product that you need to know about in order to enjoy it properly (Rekowski, 2013). At the same time, in recent years, the total alcohol consumption has been increasing, and fluctuations in the structure of wine consumption can be noticed (PARPA, 2021, Podstawski et al. 2017). The SARS-COV-2 coronavirus pandemic, which contributed to a general decrease in the frequency of drinking alcohol, also had an impact on alcohol consumption in Poland (Szajnoga et al. 2021). To become an attractive wine market, Poland must experience far-reaching social changes regarding the type of alcohol consumed, its quantity and frequency of drinking.

### 3 Methods

The method chosen to carry out the research is the analysis of statistical data for the period 2016–2020 on the basis of data on world consumption and wine production, with the use of the trend analysis tool resulting from the linear regression function and comparison of secondary data presented by international organizations (Zięba, 2013). The selected mathematical methods make it possible to clearly and objectively describe the situation of world wine production and consumption, to determine the increase or decrease in production and consumption over the years, and to calculate and accurately determine the overproduction or shortage of wine production in relation to world consumption. The quantitative and numerical nature of the selected methods allows to draw objective conclusions, but at the same time, does not allow for the direct inclusion of non-numerical factors in the analysis.





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These factors need to be analyzed separately in order to draw conclusions about their impact on world wine production and consumption.

All the calculations in this paper were done in Microsoft 365 Excel. The data provided by the organizations was properly ranked and then summed up. The sums for the production and consumption of wine were copied to the new tables, and then a graph was created from them, on the basis of which the linear regression lines and the corresponding formulas for linear functions were determined. Using the linear regression function, it is possible to determine a trend line based on appropriately sorted data. In the discussed case, the data was arranged according to the country of consumption and production and the year of data origin. The trend line not only allows for some kind of data averaging and better visualization, but can also be used to forecast data in the future. In the trend line formula of the form  $y = ax + b$ , the coefficient  $a$  determines the direction of the rate of growth or decline, while the intercept  $b$  allows us to determine a certain constant change in production or consumption. An analysis was conducted using the data prepared in this way and the literature on the subject.

## 4 Results

The datasets used for the research are presented in Tables 1, 2, 3 and 4. Table 1 shows the consumption of wine in millions of hectoliters in selected countries. Table 2 presents data on wine production in millions of hectoliters in selected countries. Table 3 presents a comparison of the production and consumption of wine in various parts of the world. The data in Tables 1, 2 and 3 is secondary data provided by the OIV (Organization of Vine and Wine).



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Table 1 Wine consumption in the world (m hl)

Country	2016	2017	2018	2019	2020	Change 2020 to 2019
USA	31,3	31,5	32,4	33	33	0,00%
France	28,3	28,6	26	24,7	24,7	0,00%
Italy	22,4	22,6	22,4	22,8	24,5	7,50%
Germany	20,2	19,7	20	19,8	19,8	0,20%
UK	12,9	13,1	12,9	13	13,3	2,20%
China	19,2	19,3	17,6	15	12,4	-17,40%
Russia	10,1	10,4	9,9	10	10,3	3,00%
Spain	9,9	10,5	10,9	10,3	9,6	-6,80%
Argentina	9,4	8,9	8,4	8,9	9,4	6,50%
Australia	5,4	5,9	6	5,9	5,7	-3,70%
Portugal	4,7	5,2	5,1	4,6	4,6	-0,60%
Canada	5	5	4,9	4,7	4,4	-6,00%
Brasil	3,1	3,3	3,3	3,6	4,3	18,40%
Romania	3,8	4,1	3,9	3,9	3,8	-1,90%
The Netherlands	3,6	3,7	3,6	3,5	3,5	-0,30%
Japan	3,5	3,5	3,5	3,5	3,5	-0,80%
South Africa	4,4	4,5	4,3	3,9	3,1	-19,40%
Switzerland	2,7	2,7	2,6	2,7	2,6	-1,60%
Belgium	2,8	2,8	2,7	2,7	2,6	-3,10%
Austria	2,4	2,4	2,4	2,3	2,3	2,20%
Sweden	2,4	2,3	2,3	2,3	2,2	-2,30%
Czech Republic	2,1	2,2	2,1	2,1	2,1	2,00%
Other	34,8	33,1	37,3	37,7	32,2	-14,70%
<b>World total</b>	<b>244</b>	<b>246</b>	<b>244</b>	<b>241</b>	<b>234</b>	<b>-2,80%</b>

Source: OIV, 2021

The first five countries listed in Table 1 account for almost 50% of world wine consumption. These are the United States, France, Italy, Germany and the United Kingdom, respectively. In the United States, wine consumption slowly increased during the analyzed period, while in France it decreased, while in the other three countries it was at a relatively stable level. At the same time, worldwide, wine consumption gradually decreased over the period considered.

The situation in China has significantly contributed to the decline in world wine consumption. It can be noted that during the analyzed period, wine consumption



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decreased from 19.2 million hl in 2016 to 12.4 million hectoliters in 2020. Seven million hectoliters corresponds to almost three percent of consumption in 2020, which makes it possible to conclude that there is a significant decrease. A possible reason for the decline in wine consumption is the very restrictive national quarantine that took place in China in early 2020 and caused significant drops in national consumption. However, given that it is the third consecutive year that Chinese wine consumption has declined drastically, it is possible that the significant increase in wine consumption that began at the beginning of this century is about to end (OIV, 2021).

Figure 1 shows the global consumption of wine with a marked consumption trend. The trend has been represented by linear regression and can be written by the formula of the linear function:  $y = -2.5x + 249.3$ . The value of the function means that wine consumption can be expected to drop steadily by a certain amount each year. This information is particularly important for wine producers who, when planning production for the next year and the potential development of their business, should take into account the decreasing demand for wine.

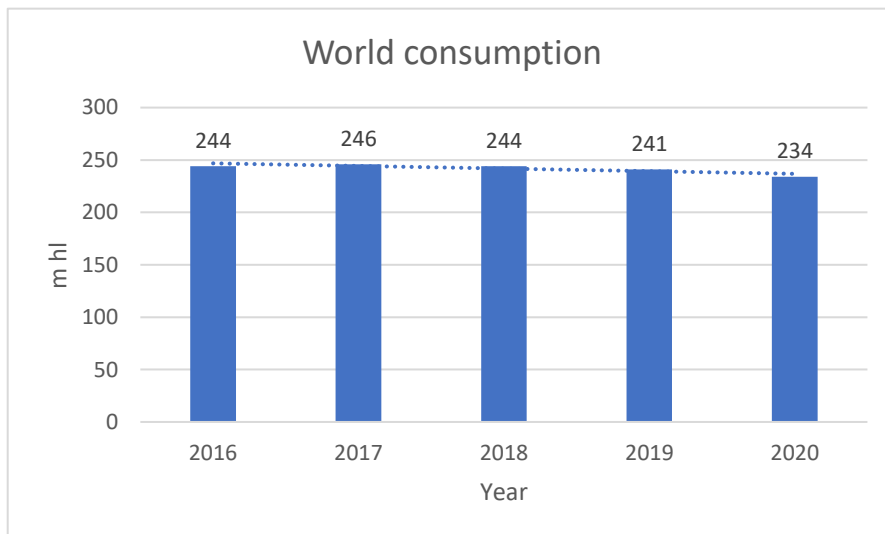


Figure 1  
Wine consumption in the world (m hl) (OIV, 2021)

World wine production and the associated grape production can be divided into several areas. The first is the Old World area, mainly covering the territory of the European Union and the Mediterranean region. The so-called New World stands out as the second-most important area of the wine market. The concept of the New World includes North and South America and Australia. In North America, the main wine producing countries are the United States, while in South America, Chile and



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Argentina. China should also be distinguished, whose share of the world wine market is constantly growing (Rekowski, 2013).

Table 2 Wine production in the world (m hl)

Country	2016	2017	2018	2019	2020	Change 2020 to 2019
<b>Italy</b>	50,9	42,5	54,8	47,5	49,10	3%
<b>France</b>	45,4	36,4	49,2	42,2	46,60	11%
<b>Spain</b>	39,7	32,5	44,9	33,7	40,70	21%
<b>USA</b>	24,9	24,5	26,1	25,6	22,80	-11%
<b>Argentina</b>	9,4	11,8	14,5	13	10,80	-17%
<b>Australia</b>	13,1	13,7	12,7	12	10,60	-11%
<b>South Africa</b>	10,5	10,8	9,5	9,7	10,40	7%
<b>Chile</b>	10,1	9,5	12,9	11,9	10,30	-13%
<b>Germany</b>	9	7,5	10,3	8,2	8,40	2%
<b>China</b>	13,2	11,6	9,3	7,8	6,60	-16%
<b>Portugal</b>	6	6,7	6,1	6,5	6,40	-2%
<b>Russia</b>	5,2	4,5	4,3	4,6	4,40	-4%
<b>Romania</b>	3,3	4,3	5,1	3,8	3,60	-7%
<b>New Zealand</b>	3,1	2,9	3	3	3,30	11%
<b>Hungary</b>	2,5	2,5	3,6	2,7	2,40	-12%
<b>Austria</b>	2	2,5	2,8	2,5	2,40	-3%
<b>Greece</b>	2,5	2,6	2,2	2,4	2,30	-6%
<b>Brasil</b>	1,3	3,6	3,1	2	1,90	-5%
<b>Georgia</b>	0,9	1	1,7	1,8	1,80	2%
<b>Other</b>	16,8	16,5	18,1	16,6	15,40	-7%
<b>World total</b>	270	248	294	258	260,20	1%

Source: OIV, 2021

When analyzing wine production, it is worth looking at the division of production into larger regions—the Old World, the New World and China—as well as the separate division into continents. When divided into larger regions, the share of production of the Old World countries (as well as Georgia and Russia) in the total wine production in the world is 65%. On the other hand, the share of the New World and China in total production is almost half of that of the Old World (29%). The remaining 6% of world wine is produced throughout the rest of the countries designated by the International Organization of Vine and Wine (OIV) as "other countries." The division of production into continents is equally interesting. In this case, in Europe (Russia and Georgia are also taken into account here), the share of



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world production is the same as in the previous division, at 65%. The share of North America, mainly the United States, is 36, which is 9% of world production. The same is true of the production from South America. Australia and New Zealand produce 5% of all world wine, and China and Africa, 3% and 4%, respectively. The missing 6% of production is produced in other countries.

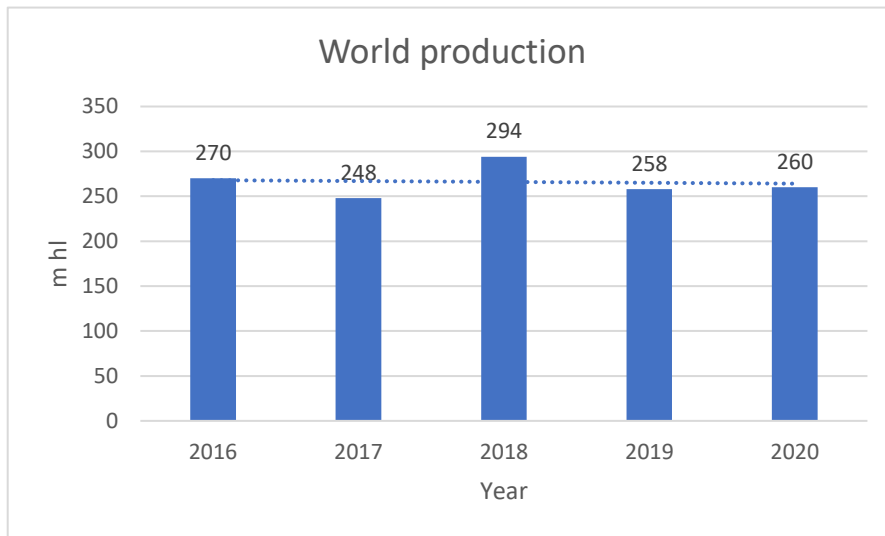


Figure 2

Wine production in the world (m hl) (OIV, 2021)

Figure 2 shows the world's wine production with the consumption trend marked. The trend has been represented by linear regression and can be written by the formula of the linear function:  $y = -0.96x + 268.92$ . The value of the function means that less and less wine is produced each year. This means that wine producers are gradually adapting to the decreasing consumption and demand for wine. It is worth noting the dependence of the volume of wine production on weather conditions, because with favorable weather conditions throughout the year, the harvest of grapes, and hence wine production, will be significantly greater, as can be observed in 2018. However, in the event of unfavorable weather conditions resulting in a poorer grape harvest, wine production will decrease significantly, which could be observed in 2017. The dependence of wine production on the prevailing weather conditions makes reducing the production volume to the level of consumption an extremely difficult and virtually impossible task without exposing society to shortages of the product.



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Table 3 Comparison of world production and consumption of wine (m hl)

	2016	2017	2018	2019	2020
<b>world production</b>	270	248	294	258	260,2
<b>world consumption</b>	244	246	244	241	234
<b>difference</b>	26	2	50	17	26,2

Source: OIV, 2021

Having data on consumption and production, it is possible to check whether there is an economic equilibrium or whether there is an excess of demand or supply, i.e. consumption or production in this case. When calculating the difference between production and consumption in the years 2016-2020, the following results will be obtained for each year, respectively: 26, 2 50, 17, 26 million hectoliters. Relatively high results were obtained after performing the calculations. Keep in mind that one unit in this case is one million hectoliters of wine, which is equivalent to over 133 million bottles of wine with a capacity of 750 ml. On the basis of the analyzed data, it can be concluded that there is a significant overproduction on the world wine market, amounting to an average of 24.2 million hectoliters of wine over the last five periods examined.

Such a large overproduction on a global scale means that millions of hectoliters of wine may not find a recipient, and thus will become waste. In order to minimize the waste of the final product, manufacturers should take steps to reduce the production volume. Possible solutions to reduce wine production could be:

- reducing the area of crops,
- the use of grapes for the production of products other than wine,
- reducing the intensity of cultivation.

At the same time, it should be remembered that wine production is extremely dependent on the prevailing climatic and weather conditions. Thus, even with a significant reduction in the area and intensity of grape cultivation, during a "good" year for farmers, wine production may significantly increase, which could be observed in 2018, when wine production was exceptionally high.

Wine producers should bear in mind that, according to the calculations made, wine consumption decreases about twice as fast as wine production.

An interesting case of a wine country is Poland, which became a wine country in 2021, because a wine country is considered to be a country with at least 500 hectares of grape cultivation. Due to the better and better conditions for growing grapes caused by the progressive warming of the climate, more and more people in Poland are deciding to cultivate grapes not only as a hobby. In Table 4, the creation of new farms, increasing the cultivation area and the increase in wine production over the years are presented.



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Table 4 Wine production in Poland (hl) (

Year	Number of wine producers in Poland	Vineyard surface (ha)	Wine production (hl)
2009/2010	21	36,01	412,49
2010/2011	20	37,02	437,13
2011/2012	26	51,28	428,47
2012/2013	35	96,87	903,05
2013/2014	49	99,49	1 978,95
2014/2015	76	134,35	2 737,10
2015/2016	103	194,24	5 135,35
2016/2017	150	221,23	6 993,82
2017/2018	201	331,38	5 207,13
2018/2019	230	394,84	12 750,48
2019/2020	294	475,35	14 361,34
2020/2021	329	563,97	14 171,65

Source: KOWR, 2021

Based on the data contained in Table 4, it is possible to conclude that the Polish wine market is constantly growing. Using the arithmetic mean method, it was calculated that one producer has 1.71 ha of grapevines, producing 43.1 hl of wine. It should be noted that vineyards differ significantly in terms of the area of grapevines, production methods and cultivated species. At the same time, vineyards with a small area prevail in Poland, and the largest Polish vineyards do not exceed 40 ha of arable land, which makes Polish grape cultivation highly decentralized.



Figure 3

Wine production in Poland (hl) (KOWR, 2021)

On the basis of the presented data, it is possible to conclude that Polish winemaking is constantly developing at a relatively fast pace. According to the KOWR (KOWR, 2021) data, since 2009 there has been a more than fifteen-fold increase in the cultivation area and an almost 15-fold increase in wine production. The progressive warming of the climate is also supporting the cultivation of grapes because, due to the increasingly milder winters, more entrepreneurs in almost all regions of Poland will be able to cultivate the cultivation. It is also important to exceed the threshold of five hundred hectares of grape cultivation because, thanks to this, Polish vineyards will be taken into account in the European Union statistics on the wine market.

## 5 Discussion

The mathematical analysis carried out allows for the conclusion that there is a significant overproduction in the world wine market. The analysis of the trend and the comparison of production and consumption justify the decisions of institutions aiming to limit wine production and reduce the cultivation area in order to limit production (Giacomo – Romano, 2021, Brodnicka, 2019, Poczta – Zagrocka, 2016, Rekowski, 2013). Based on the presented data, it is not possible to determine the impact of production and consumption trends on the volume of production and consumption.





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## Conclusions

Despite the declining trend of wine production and consumption from a global perspective, individual regions are characterized by growing wine production due to changing climatic conditions. An important aspect that allows you to gain new customers is the use of enotourism as a marketing tool. By including an element of experience and contact with production in the marketing message, new customers will be more likely to reach for a given product in the future, and existing customers will strengthen their ties with the brand. By associating wine with a pleasant experience, consumers will be less willing to change consumer habits.

At the same time, the ever-expanding segment of the low- and non-alcoholic wine market is becoming more and more attractive in developed countries, especially among young consumers and consumers with less product knowledge. However, it is still many years before the technology for producing low or non-alcoholic wines is at a level such that it can serve wines with a lower alcohol content and the same other characteristics as traditional wines. Producers who want to expand their offer with wines of this type should bear in mind the need for continuous improvement in technology and the relatively small size of the market segment at present.

Ecological trends will play an increasingly important role in the global wine market, mainly due to the increasing environmental awareness of consumers and the need to shorten supply chains or modify them in order to minimize logistical costs. Both ecological cultivation and proper certification of the finished product can be important when acquiring new customers, especially those who do not have extensive knowledge about wines.

Potentially attractive for investors and consumers may be new wine markets located in areas where, due to climatic conditions, there was no previous industrial wine production. An example of such a new wine market is the wine market in Poland. Growing grapes and wine production in Poland are constantly growing at a rapid pace, and the economic conditions in the European Union allow for additional development of enterprises, despite the need to maintain appropriate procedures related to food safety. Finding customers for the finished product can be a potential problem in emerging markets. Due to the lack of an origin-related brand, foreign customers may not be particularly interested in a product from the new wine region, and it will take time to attract new foreign customers. The situation on the domestic market is also not optimistic, as there is no culture of drinking wine in Poland and wine is still considered an expensive drink, not for everyone and not perceived as an "everyday" alcoholic drink. Changing Poles' views on wine requires time, educating the public, and changing eating habits in terms of drinking alcohol, which may take many years.



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# Examination of Financial Investment Opportunities Based on the Investment and Risk Tolerance of Hungarian University Students

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*Abstract: With the broad availability of the internet and today's technology, people have the opportunity to invest their savings in endless types of ways. However, the eternal recurring question is what to invest in? How risky is the investment, how much return can we expect? Are young people aware of the wealth of opportunities available to them at all? The aim of the research is to reveal the financial awareness, risk tolerance and investment willingness of young people studying in the Hungarian higher education within the framework of a quantitative questionnaire research. Describe patterns of behavior, emotionally influencing factors that can influence even the best investors on making successful decisions. Describe and analyze the investment opportunities in correlation to the results of the primary research, which are easily available to students in Hungary. The aim of the research is to provide a starting guideline for young investors on investment opportunities, and the basic mindset behind controlling emotions, analyzing large firms and making successful long-term decisions.*

*Keywords: Investing; Savings; Shares; Risk; Return*

## 1 Introduction

Based on the research of the Central Statistics Office, Hungarian real estate and apartment renting prices were increasing steadily in the past years. Young adults in Hungary are still living with their parents until an average age of 27. It becomes clear that with the postponement of time spent in higher education and young adults starting to work at a later age of their lives, they are in a very difficult position in saving money and starting their independent life without significant financial support. Young adults tend to stay at home even after finishing their studies, to be able to increase their savings. With average paying jobs it would take ten or even more years to gather the savings needed for an independent apartment. It is more and more important for young adults to get financial experience early in their lives and to create their own savings in order to help themselves later moving forward.



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We are living in a technologically advanced era where financial decisions can be made even with our mobile devices. With the help of different financial applications, investors can trade crypto currencies and buy stocks of the world biggest companies within minutes. Investing became very easy, and it is available to everyone with a credit card. It can be stated that investing does not require any more, large amounts of capital, and it became very easy to place savings in different investing opportunities. However, the financial information and experience does not come with these modern applications, investing overall became more approachable but did not become easier to manage.

The first goal of the research was to understand the financial opportunities, the most common investing strategies, and the way of controlling emotions in order to achieve the correct mindset required for investing. But under the research period it became very clear, that the uncovered information about finances and the current state of economy, would be very useful to understand at the young adult stage in order to help others to the necessary, straight to the point and relevant knowledge. Undoubtable that the results of the research would have helped the researcher a lot in investing and in creating savings for the future even in the past few years.

The aim of the research is to discover the most common behavioral and influencing factors of decision making. Along the uncovered aspects showcasing the Hungarian characteristics and mentality in investing. Based on these factors suggest investing opportunities and strategies that are meeting the expectations of the Hungarian nation.

The methodology of the research is based on an online quantitative research which was distributed with snow ball method in order to gather relevant data on the Hungarian knowledge, risk awareness, and decision making on the territory of finance and investments. Based on the results, investment opportunities and strategies were uncovered in the framework of an extensive literature review. The presented investment opportunities, based on the available data, were valued and their expected return were calculated considering the past years. The aim of the analyzation was to confirm that the research truly showcases forms of investments that are relevant, easy to understand for young adults, investors without experience, and are led to increase in their returns in the past years.

## **2 Emotions in decision making**

It can be stated that even experienced investors are often making their decisions based on emotions and irrational bases. Emotions on the financial field can be very difficult to overcome. The fear from missing out on a promising investment or the dread from losing money can lead to investing or selling positions in otherwise rationally unfounded situations. (Graham, 2003) Thanks to smart phones, investors



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can check on their investments every minute, and can make financial decision within seconds. That is why it is very difficult to keep themselves to their regular investment strategies. Their months of investigating and analyzation can be ruined within seconds, thanks to their temporary emotions. Based on the research of Kahneman and Tversky from the year of 1979, the fear of losing money is twice as high as they joy of earning. This often leads to the result that the average investor is buying high and selling low. (Kahneman & Tversky, 1979)

That is why it is considered crucial that investors not only have to understand the market but must get to know their emotions. They must be able to control them. Self-control and inaction must be achieved. The investor must have a strategy which is trusted and is built upon real information gathering. Investing experts suggest that collecting information and listening to advices are important but they must be valued with care. (Miller, 2006) The final decision always should be made based on the investor's own calculations. Investing in opportunities that the subject trusts, lowers the fear of losing money and the chance of sudden bailing out. (Kiyosaki, 1997)

The herd behavior can highly influence the movement of the crowd and the formation of public opinion. It can significantly change the value of stocks, or the judgement of companies based on rumors and news which temporary affect the emotions of investors. People in a position of trust and influencers can significantly change the market even with a single statement, even if their judgement has nothing to do in reality with the company's actual growth in the future. (Ante, 2021) In many cases, however, the challenge is not to follow these rumors but to learn making good use of the crowd's expected reaction. (Hensman – Smith, 2010)

### **3 Primary research**

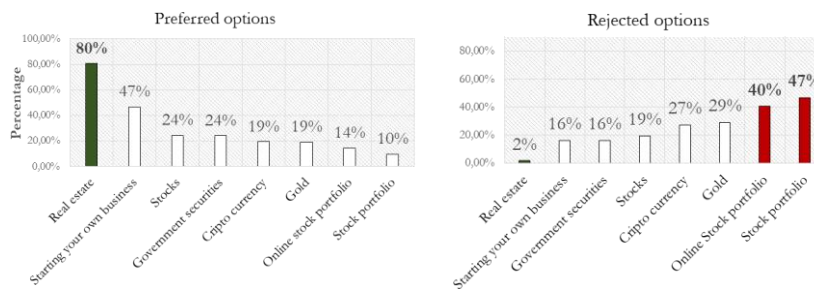
The aim of the primary research was to get relevant information on the opinions of young adults on the topic of financial knowledge, risk awareness and investments. The research was conducted in a form of an online questionnaire, shared in online Facebook and University groups with snowball methods. In this period 927 answers were gathered. From the respondents, 63% lives in Budapest and 84% studied or studies in higher education. It must be stated that based on the respondents, the research results cannot be extended to the whole Hungarian society, but more likely represents the financial judgements of students living in Budapest. 66% of answerers studied finance, 73% saves money for a given future goal, but 66% does not invest their savings at all.

From the primary research three key aspects must be highlighted because these results are key to understanding the investment opportunities showcased later in the research. The first topic is the preferred forms of investments by the respondents.





The answers showcased that investing into real estate is the most preferred option. With 80% of agreeing, real estate leads the investment opportunities significantly. It must be mentioned that government securities despite their low risk, only takes the fourth most preferred place, while prebuilt stock portfolios are mostly rejected by the respondents. In the case of crypto currencies, high distribution could be noted within the answerer’s preference. Most responses could not decide confidently whether it is worth investing into the crypto market.



1. Figure: Preferred and Rejected investment options  
Source: Own research; n = 927; Own editing

It was very important to get information of the sources of financial advice that the respondents actually trust and consider following when making investment decisions. In the case of respondents, it can be stated that the lack of visible trust is significant. Only 52% of answerers would accept financial advice from their families and other sources received even higher level of rejection. Bank clerks and online experts are the most untrusted based on the answers.



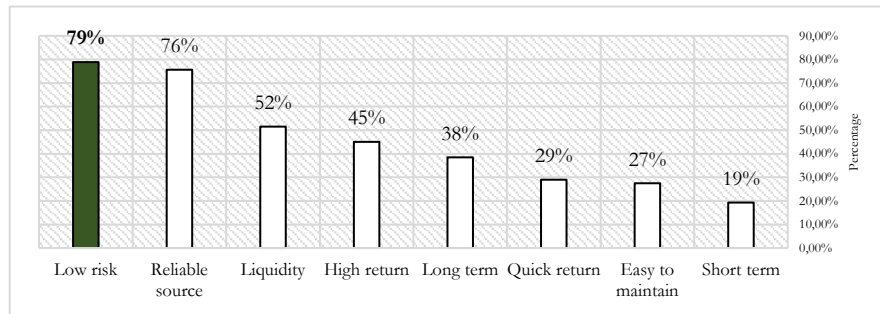
2. Figure: Preferred and Rejected sources of information  
Source: Own research; n = 927; Own editing

Reviewing the expectations towards investments are crucial because the aim of the research is to reflect on the primary research and to highlight forms of investments that takes into consideration the needs of the respondents. In this case the answers are completely in line with the secondary literature. For the answerers, low risks in investments are the highest priority. The second is to get the investment information





from a reliable source, while liquidity, therefore, to be able to reach their money whenever they want is at the third place. It is important to mention that the expectation of high return is only on the fourth place and the need for high income is significantly lower than the before mentioned aspects.



3. Figure: Expectations toward investments

Source: Own research; n = 927; Own editing

The primary research highlighted that the asked multitude lacks financial information. Underestimates itself in terms of investment awareness. The respondents are distrustful and 66% of them does not invest their savings in any form. Separating the young adult respondents from the older generation, it could be seen from the results that the level of trust actually did not improve over the years. The young generations are just as distrustful as their ascendants, and they are continuing the rejection of information from bank employees. Most young adult has the opportunity to save money, but would not like to risk losing their hard earned savings. Most respondents would only consider investing 1 – 25% of their savings.

Respondents had the opportunity in a form of an open question to highlight the reasons behind not investing their savings. The four most common answers were the lack of information, the lack of sufficient savings, the lack of trustworthy source of information and the difficulty of making the final decision.

## 4 Investing opportunities and expected returns

Based on the results of the primary research, low risk was the highest priority in investing for the asked population. Therefore, government securities were chosen as the benchmark opportunity for investing. The reason for this is that government securities are having guaranteed interest payments by the government and are tax free. Because of the support of the government, it can be stated that they are relatively risk free. However, it was interesting to see that significant number of respondents rejected this opportunity of earning low but confident returns. The secondary research highlighted that behind this judgement, often political aspects



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or the lack of information lies. People does not know that government security investment returns are guaranteed by the government, therefore they value them on a higher risk level. (MNB, Máp plusz ismertető, 2020)

#### **4.1 Real estate market**

Investing into real estate was the most preferred option based on the questionnaire. More than 80% of respondents would invest their savings in this form. Buying and managing real estate requires more experience and it is riskier than the government securities. The owner must count with amortization and taxes after the purchase and regular incomes. However, reviewing the past 6 years in Hungary, the prices in the real estate territory and renting are rising steadily. There is no doubt that investors could achieve relevant yield on this area as well in the past years. Calculating the expected return of the real estate market is harder to estimate and the variables can change based on the environment and aspects which the owner cannot influence. The return on the real estate market was determined based on the data provided by the Central Statistics Office, using the average cost of buying and renting an apartment in the past five years in Hungary, corrected with the 4% fee upon purchasing the real estate, taxes, and calculating with risks which appear in the form of annual 2% amortization and only 11 months of rent out income. (Szendrei, 2020)

#### **4.2 Stock market**

In the case of buying stocks, the strategy of defensive investing was reviewed which method was first introduced by Benjamin Graham. The reason for this is that the respondents highlighted the real estate investments as highly preferred option, and the defensive investor strategy has common aspects with it. The defensive investor purchases stocks of high quality, prospering, well-known companies that are paying dividends frequently. (Cunningham, 2013) The goal is to earn the expected yield from buying stocks at the right time and keeping them for long years, while enjoying the dividends and the rise of the company in valuation, instead of constantly trading with stocks at the market. This way the investor's two sources of income will be similar to the real estate investments. The income comes from general value increase and the frequent dividend pays. Investing into stocks are requiring information and the right timing, but with the correct mentality it can be relatively managed at low risks. Investing into stocks requires the earlier mentioned predetermined investing strategy that an investor has to choose for themselves based on the risk aversion and the ability to manage emotionally stressful situations. (Hill, 2005) The defensive investor strategy is good for unexperienced investors and provides easy to follow steps in valuating companies. However, it is crucial that the investor follows the predetermined strategy. Any difference or bold move increases the risk, distrust and fear of losing money, which may lead to thoughtless, emotional decisions. (Firer, 1995) The return on stocks were calculated following Benjamin



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Grahams guide of company evaluation and was corrected by Hungarian tax regulations.

### **4.3 Gold and Crypto currencies**

Crypto currencies and gold highly divided the respondents. It can be stated that both ways of investing are highly volatile and requires experience. Some expert investors do not consider these options as classical forms of investments and more as speculative opportunities. Both cryptocurrencies and gold do not pay dividends nor interest. The yield only comes from the balance of the demand and supply created by the investors themselves. The investor must get information on the project in the case of crypto currencies whether it is trustworthy, while the gold must be bought from well-known and trusted vendors as well. Both investing options require high attention, caution and the right timing. (Lewis, 2018) The herd behavior can be very dangerous in the case of these investing options. However, for both of them, considering the past years, it can be said that they are stable investment options. The gold is often viewed as security capital, as its demand often changes in the opposite direction as the market. It can be used as a cover in times of depression, or wars. Calculating returns was based on the data provided by Yahoo Finance and corrected by Hungarian tax regulations. (Wiedemann, 2021)

### **4.4 Portfolios, investment funds**

The last, reviewed option is investment funds. Based on the survey it was clear that the respondents are mostly rejecting funds and prebuilt stock portfolios. The bank employees and financial advisors lack the trust in the eye of the customer. This is an issue because in case of the investment's funds, trust and honesty would be key. The investor has to hand over their hard-earned savings and allow an expert to manage it. Banks and trust funds need to work on their transparency and trust because otherwise prebuilt portfolios would be a very good option for investing savings. The investor could place their money in well rounded, diversified portfolios which would allow them to mitigate risks. (CIB Bank, 2021; Ittelson, 2020)

### **4.5 Return calculation**

Based on the previously mentioned forms of investments, annual yield and internal return rate was calculated, weighted with inflation with net present value calculation. The calculation's aim was to prove that in the research, relevant investment options were showcased, which do lead to real returns over the years. The lowest risk, government securities options could lead to an average annual 2,28% yield in the past five years. While real estates with significantly higher risks can provide 5,5% annual return. Based on the Intelligent investor strategy, choosing



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the stock of the international company Target, stocks could lead to a 42,6% increase annually in the past years. Gold showcased a stable 3,2% growth, while crypto currencies, considering bitcoin performed a stunning 1.369% increase in each year in the past five years.



4. Figure: The growth of TARGET (Green) and the downfall of EXXON (Red) in the past five years  
Source: Yahoo Finance

Investment option	Yield (annual)
Government securities	2,28%
Real estate	5,5%
Stocks	42,6%
Gold	3,2%
Cryptocurrency	1369,2%

5. Figure: Calculated return  
Source: Own calculation; Own editing

## Conclusion

Based on the primary research it can be stated that the asked multitude is risk averse, distrustful and mostly lacks the required financial information for confident investing. However, information is not the problem anymore. Because of the internet the investors can reach infinite data about companies and investment recommendations. The issue of the subject is more likely the lack of investment spirit. People are afraid from investments but are not motivated to gain information on the subject. The primary research showcased that the lack of trust did not decrease between the older and younger generations. This is an issue because



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financial institutions and banks could provide meaningful information and investment opportunities for their customers.

The analyzation of possible investment options showcased that all six reviewed forms of investments could lead to stable returns in the past years. However, it can be commonly stated that mastering the knowledge for investing is not enough. Investors must create their own investing strategies based on their emotional capabilities and they must learn to manage their feelings as well.

Schools and financial institutions should raise awareness and provide basic financial information to the young generation in order to keep them up to date on today's technology, the investment opportunities they have, and the emotions they have to manage in order to be able to successfully increase their savings.

It is understandable that it is very hard to earn the attention of young adults and to get them to make responsible decisions, but it can be stated that it would have been very useful in the past years if someone would have brought attention to investment options and to the importance of starting to save early. Even in the past five years, significant yields could have been earned. The key is that with today applications and opportunities, investors do not need large amounts of savings. Even ten or twenty euros can be placed into stocks or crypto currencies. The final conclusion of the research is not necessarily the need for financial education in high school. Young adults have all the necessary technology and opportunity to gain knowledge on the subject. However, it would be very important to raise awareness early for the young generation to warn them about the economic situation, about their future, and the possible positive aspects of investing even small amounts of their savings.

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## **Bullwhip effect for all? Non-sensitive supply chains**

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*Abstract: bullwhip effect (BWE) is a phenomenon that is highly in focus due to the impact on supply chain performance and financial results. It is necessary to keep focus on the phenomenon, but the cases need to be determined when investigation is relevant. The aim of this paper is the determination of the operational supply chain characteristics that makes the occurrence of the BWE less likely. This shows what are the attributes need to be checked to define if the examined chain or echelon is immune or not for the bullwhip effect. In this article the investigation is based on the triggering factors of the phenomenon. These causes are paired with the operational supply chain characteristics. Based on that we can define the key factors that are showing if the examined chain's operation is relevant or not for the occurrence of bullwhip effect. Beside the importance of tracking and elimination of the bullwhip effect we also need to consider that the phenomenon is not relevant for all product and supply chain type.*

*Keywords: bullwhip effect; supply chain performance; operational supply chain characteristics; bullwhip effect causes*

### **1 Introduction**

The bullwhip effect phenomenon is broadly researched in the scientific literature. The interest is not only significant from the academic perspective but also from the practical point. In the past 40 years several analyses researched the bullwhip effect but there is still no ready to use solution to avoid it. The business importance is mainly connected to the cost related impact that is generated as the consequence. The financial impact is not the only outcome, effective operation is also damaged. Indirectly this also result in further costs and improvement actions need to be initiated. Considering the current economic situation impacted highly by COVID'19 supply chain performance is crucial. Due the that, the efficient operation injured, and companies are still on the way back to normal operational performance.

The importance of the bullwhip effect phenomenon is indisputable in a typical supply chain. It is still worth to consider the question 'What makes a supply chain





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sensitive for bullwhip effect?'. The sensitivity is depending on the setup of the supply chain. The characteristics that are supporting the bullwhip- friendly environment need to be selected. This support to make the decision if the examination is relevant or not.

This article shows a literature review of the bullwhip effect focusing on the causes of the phenomenon. It also introduces the relevant supply chain characteristics. From the bullwhip effect perspective length of the supply chain, time need of the operation and the applied strategy is crucial.

To determine the cases that are not sensitive for the bullwhip effect we need to find connection between the causes of the phenomenon and the operational supply chain characteristics. This enables to define the non-sensitive chains.

## 2 Literature review

### 2.1 Bullwhip effect (BWE)

Due to the malfunctions faced in the supply chain when bullwhip effect occurs the analysis of the phenomenon is important. The research of the phenomenon has several approaches and directions. The main understanding of the phenomenon is still the same. The research of the phenomenon has long history. It was known as forrester effect based on the first researcher of the topic (J.W. Forrester, MIT Sloan School of Management). The term itself was defined in a 1997 study by Lee, Padmanabhan and Wang. From practical perspective the first recognition is attributed to Procter and Gamble. The scope of their analysis was the causeless fluctuation of the diaper demand and orders. The customer's needs were not explaining the level of variability. The phenomenon was also present at other sectors and companies. The authors phrased the upcoming definition: "the phenomenon where orders to the supplier tend to have larger variance than sales to the buyer (i.e., demand distortion), and the distortion propagates upstream in an amplified form (i.e., variance amplification). (Lee et al., 1997, p546)" Other definition approaches from a different perspective. It defines based on the difference between customer demand and the produced quantities. "The effect by which slow moving consumer demand creates large swings in production for the suppliers at the other end of the supply chain." (Wang & Disney, 2016, p691) Financially the bullwhip effect becomes crucial once the fluctuation of production leads to higher cost than the inventory holding (Wang & Disney, 2016). The occurrence of the phenomenon is also influenced by the market environment. Competition also needs to be considered as a factor. In addition, the structure of the supply chain is also impactful from the BWE perspective (Xuluo, 2021).





The main causes behind have been stated by Lee et al as below (Lee et al., 1997):

- Demand signal processing: focus is on the retailer's level of the supply chain but applicable on the full chain. Supplier has difficulty with tracking appropriately the retailer's signals; the true demand pattern is not getting through the chain. As sub-reasons forecast related items are categorized here:
  - low level of forecast accuracy
  - low level of understanding of the market information
  - applied forecasting strategy
  - stock out handling process
  - missing learning approach
  
- Rationing game: products with limited supply order can exceed the real needs to secure availability. The starting point of the issue is typically the manufacturer, but all level of the chain is affected. Here we also can define sub-reasons:
  - number of supply chain members
  - missing transparency
  - missing synchronisation and control
  - local vs global approaches
  - fear of shortage (multiplicative impact)
  
- Order batching: can be caused by periodic review processes and the cost of the orders. Bullwhip effect can be result of different rules and strategies applied in the chain without proper harmonisation. The sub-reasons of order batching are as follows (Potter & Disney, 2006):
  - implemented lot size
  - required ordering timelines
  - lack of harmonisation of replenishment strategies
  - capacity limitations
  
- Price variation: supply chain resilience needs to be considered during the promotional planning. If the plans are not in line with the flexibility of the chain oscillation can happen. Below price related sub-reasons can be stated:
  - fluctuation of material price
  - fluctuation of finished goods price
  - unplanned and not properly planned promotions

These categories have been completed later with others, the most significant is lead time. Due to the long geographical distances keeping lead time as 0 became impossible in the typical cases. This lead time related information also need to be considered during the forecasting and replenishment process (Geary et al. 2006). Information sharing is also present in several approaches as reason of the bullwhip



effect. This is hardly connected with the globalized supply chain concept. Even though, the impacts are realised on echelon level. The process is still driven by supply chain echelons and partner connections between them (Bhattacharya and Bandyopadhyay, 2010).

The consequences of the bullwhip effect can differ highly. It can lead to overstock some cases, but in other cases it can result in stock out situation. Both mentioned outcomes mean financial impact beside the decreased efficiency. This impact can be result of a lost sales opportunities as indirect cost or it can increase the warehousing cost directly. This financial impact can go through multiplicative impact in the chain. By the time manufacturing location is impacted the potential loss can grow significantly. This influence is not limited to the financial area. Distortion of the information is also significant; it endangers the efficient operation (Szegedi, 2012). The mentioned elements increase the uncertainty of the planning that can influence the accuracy as well. The expenses also appear due to production and transportation capacity utilisation (Warburton & Disney, 2007).

The co-operation is more challenging as today's supply chains are more likely considered as networks than chains. The idealised supply chain is characterised by transparent information flow, coordinated processes, and harmonised, common strategy. If these circumstances are present the bullwhip effect is less likely to happen. Nonetheless, from the realistic point in real-life surrounding these characteristics are limitedly available, and it is almost impossible to have all of them at the same time. Information sharing can support increased accuracy in the forecasting process. The problem is not solved by granting the high level of accuracy, but the level of oscillation can be limited. Lead time is also a key element to be checked. To have better control bottleneck points and processes need to be defined. As a result, uncertainty can decrease, and manageability of the processes can increase. Limitation of the impacts of the order batching related difficulties (batch size, timeline) is also increasing the level of control. Finally, harmonisation need to be more in focus in regards processes. If complete harmonisation is not possible compatible methods should be used (Towill et al, 2007).

## **2.2 Supply chain characteristics**

The supply chain has several characteristics. It can be defined using multiple perspectives. It can consider for example the location or the industry. From a different view point it can consider the length of the supply chain (and the number of echelons) and the applied strategies. From the bullwhip effect perspective, it is crucial to work with the time and strategy perspective.

Supply chains became through the years complex and complicated networks with heterogenous cooperation models and operational characteristics. Connections are located all around the globe in different regions and industries. The complex networks generated are competing under these complex circumstances (Sun et al,



2020). This setup is caused by the fierce competition of the market. Need of outsourcing of processes and adaptation of strategies. The consequence of this complex network and continuous adaptation to the market is greater risk of supply chain disruption (Chang, Lin, 2019).

This complexity has impact on the lead time. Supply networks are typically multiple echelons supply chains. Those are facing longer delivery time and greater uncertainty due to the complex outsourced processes. Longer lead time also impact the inventory level in the chain. It leads to increased stock level to cover the potential forecast error. Beside lead time, from vertical or horizontal cooperation, it more likely leads to disruptions (Chang, Lin, 2019).

Increased level of lead time also makes harder to respond on the disruption. Due to the distance in the chain real-time announcement of the disruption event cannot reach the supplier on time. This is due to the time needed by the supplier to physically fulfil the changed demand. At the end, due to the delayed reaction of the supplier the impact on customer can hardly be eliminated. In contrast shorter supply chains are shorter in replenishment time and more flexible in demand change. Early awareness of an event can be handled in a more agile way (Chang, Lin, 2019).

Lead time reduction play important role in reducing the probability of the bullwhip effect. It also reduces operational costs. The impact is the highest on the manufacturing and remanufacturing level (Lin et al., 2021).

Beside lead time and length of the supply chain applied strategy is also important. Supply chains typically operate with push or pull strategies. Mostly these strategies are not present on their own but on a mixed way. Still there is a lead concept applied in the supply chains. Main difference is on the serving of the customer. Push strategy uses the inventory to satisfy the customer demand. In contrast pull strategy uses the production to satisfy the demand. Push strategy is characterised by high-capacity utilisation but leads to higher inventory. Pull strategy required more flexibility in demand processes and manufacturing and may lead to long delivery lead time (Liu et al., 2020).

### **3 Methods and results**

This article aims to show a possible way to decide if bullwhip effect is relevant or not. The sensitivity regarding the phenomenon can depend on the supply chain characteristics. These elements are determining the basic operational features of the supply chains. They also impact the essentials of the way of working.

To decide on sensitivity, bullwhip effect reasons need to be checked. The analysed information is showing the circumstances that are the characteristics of a bullwhip sensitive chain. To see the non-sensitive cases, the opposites need to be specified.



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For the deeper investigation the bullwhip effect reason groups are not detailed enough. It needs to be divided further into sub-reasons. As a result, it becomes more tangible, and realistic. The defined sub reasons are opposed with the supply chain characteristics. The opposition is based on the potential malfunctions generated by the given characteristics.

Beside the supply chain it turned out that the product itself also need to be considered. As the product type leads to typical supply chain models. Based on the potential consequences of the BWE and the probability of the occurrence we can create a matrix that shows how deep analysis of the phenomenon is needed.

### **3.1 Bullwhip effect reasons and non-sensitive cases**

As it has been defined bullwhip effect is deeply analysed phenomenon. It has the interest of the academic and the industrial aera too. This is partly due to the typical characteristics of today's supply chains and supply network. In most of the cases the supply chains are containing numerous echelons, the scope of the chains is not limited by geographical borders. There are also intertwining of chains, common and conflicting interests need to be handled in huge networks. For the bullwhip effect the mentioned characteristics are ideal to make the phenomenon happen. Complex, unpredictable operation leads to low level of transparency and control.

Despite the complex, globalised supply chains and network there are still different approaches. In these extents bullwhip effect may not occur, or it does not lead to any significant problem. in table 1. the characteristics of the supply chain that is immune to the phenomenon is collected based on the main reasons of the bullwhip effect.

The unpredictability of the market can be handled better in pull strategy supply chains. The direct information flow leads to less fluctuation in customer demand. In these cases, there is less focus on forecasting. Monitoring of market trends and customer needs are also important here. Nonetheless, the potential loss generated by forecasting mistakes is smaller.

The length of the supply chain is also impactful factor. Long supply chains are more complex, there are multiple echelons involved and mostly multiple countries. This leads to difficulty in achieving the transparency and high level of overall control. It is more difficult to avoid local approaches that are not in line with the chain level goals. In contrast, short supply chains are more controllable.



Table 1.: BWE reasons and non-sensitive cases

BWE reason group	BWE reasons	Non-sensitive cases
Demand processing signal	inaccurate forecast	Pull supply chain
	forecasting strategy	
	handling of stock out	
	misunderstanding of market information	
	lack of learning	
Rationing game	number of echelons	Short supply chain: • number of echelons
	lack of transparency	
	lack of control and synchronisation	
	local approach	
	fear of shortage	
Order batching	lot size of the order	Short supply chain: • geographical distance
	replenishment policy	
	capacity limitations	
	ordering timelines	
Price variation	fluctuation of material prices	Product type, local sources
	fluctuation of finished goods prices	
	changes in other related costs	
	planned and not planned promotions	

Source: Author's creation based on Lee et al. 1997; Potter & Disney, 2006; Geary et al, 2006

Shortness can mean the number of echelons or the geographical distance. In both cases the complexity is reduced, and cooperation has less difficulty. It also decreases the fear of shortage as transparency and control makes the degree of predictability higher. In these cases, it is much easier to avoid the reasons mentioned under the rationing game. Smaller geographical distance can support also in the harmonisation of processes. Policies, measures used, timelines and other mechanisms applied on echelon level can be harmonised much easier. Considering the reasons under order batching group shorter supply chains can make the occurrence of the reasons listed less likely.

The price perspective shows smaller direct dependency on supply chain operation. It is more difficult to avoid them with the tools applied. Still the shorter size of the chain and geographical distance can have positive influence on the operation. From



promotional perspective planning with limited number of echelons is much easier and predictable. In addition, usage of local material sources can also support. Price changes can still happen, but availability is more plannable, so the related costs are less problematic. This way shorter chain's higher flexibility can support the price factor also. The type of the product can also impact the degree of sensitivity. Special, made to order products are less sensitive for the phenomenon.

### 3.2 The sensitivity – product perspective

As it has been described in chapter 3.1. the supply chain setup is influencing the probability of the bullwhip effect. Beside that the product itself is also an important factor. There are groups of products that are typically not generating the bullwhip effect. These are for example limited edition items with given number of produced quantities. We can list here also make to order crafts items that are unique. Below figure shows a matrix of probability of the bullwhip effect and expected level of negative consequences.

Once the bullwhip effect occurs it has not only performance decrease consequence, but also direct or indirect cost comes with it. In the matrix the consequence axis can be understood as cost. This is included in the matrix with three level of intensity (low, medium, high). The other axis shows the probability of the occurrence. This is based on the characteristics of the chain producing the product and the specific features of the product.

Low probability typically goes with pull strategy and/or short supply chains with high possibility of control and transparency. High probability goes with push strategy make to stock products (mass production items).

Some additional specification factors can also be considered here. For example, food industry would mean smaller consequence relative to other industries on cost level. Nevertheless, if overstock is generated due to the shorter shelf life decrease the chance to figure out any solution.

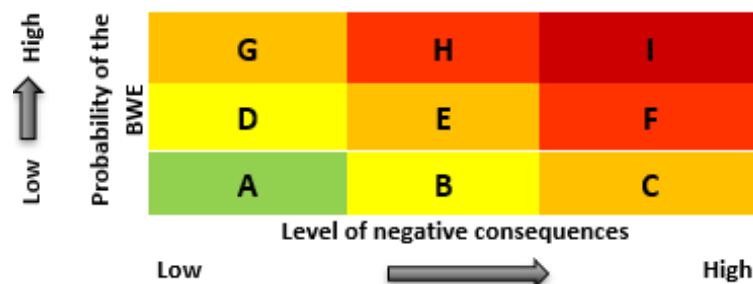


Figure 1: Probability & consequences matrix

Source: Author's creation



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As example craftsman to user business can fit in to cell 'A' as the consequences and the probability is low. Contrary, cell 'I' is with high probability and high level of consequences. Global supply chains can be used here as example with push strategy sales and expensive product. Such as some of the electronic devices. Beside seasonality changing technology and trends are also increasing the unpredictability. The length of the chain has high influence on the bullwhip effect and the geographical extent due to the uncertainty generated by the complex and complicated network.

In between the extremes we can consider all the different supply chain setups. For cell 'B' pull strategy car manufacturing can be mentioned as example. Probability is low but potential consequences are still needed to be considered. For cell 'H' high probability of occurrence and medium consequence external product packed with normally sold items as gift can be an example. Planning of these items are always a risk as it is not known how the market will accept it. Forecasting can go wrong and can result in oscillation.

Establishment of any rule that can punctually define the grouping of the enterprises is hard. Several factors need to be checked at the same time as length of the chain, profile of the company, producing and sales strategies. In addition, exceptions can be determined based on unique characteristics. This matrix is just helping to understand level of influence bullwhip effect can make. Based on this a proper level of source can be allocated to tackle the issue on company level.

## 4 Discussion

Table 1 has collected the cases supply chain can appear non-sensitive or less sensitive in regards the bullwhip effect. Length of the supply chain is impacting the phenomenon. With increased number of echelons joining a network it becomes less controllable and transparent. The shortening of the geographical distance also supports the manageability. Products are accessible easier, and changes can be pushed through faster. The shortest, from maker to customer chains are limited from both mentioned perspectives. Due to the short chain, bullwhip effect has no room to develop and increase the degree of the oscillation.

Pull supply chains are representing a different way of working. The understanding, and cooperation with the market differs from the push approach. Customer's importance is not smaller these cases, but the role in the business process is different. Due to this even if trends need to be monitored importance of the day-to-day forecasting is smaller.

BWE is important but it needs to be in focus only in the relevant cases. This article shows three different perspective that can support the immunity. For clarification it



would be worth to check further potential characteristics or management models that has direct or indirect impact on the phenomenon. Chains that are less vulnerable from bullwhip effect perspective need less effort on the analysis of it. This support to keep the focus in the proper place. In the same time chains that are impacted by the phenomenon with high potential should put higher priority on the key performance indicators that support the deeper analysis. These cases should consider the chosen trade off. From cost perspective, it may be worth to keep the complexity on high level, but it would mean decrease in flexibility. As both side is important from competition perspective it need to check which gives more benefits.

### **Conclusion**

Occurrence of the bullwhip effect is highly influenced by the characteristics of the supply chain. Increased complexity of the chain also means higher probability of the bullwhip effect. Reason can be the applied supply chain strategy, length of the chain, or high variety of products. Lead time is important factor in the complexity. Long lead times increase the chance of supply chain disruption. Considering the push and pull strategies none of them rules out the possibility of the occurrence of the bullwhip effect. Nonetheless, the pull environment is less favourable for the phenomenon.

As today's most typical supply chains are long, push strategy chains with consumer products the chance for the change is more for the newly built supply chains. Choosing the flexibility against cost supports the increase in customer satisfaction and complete customer service.

The end user is getting more and more into the focus. High level of customisation of the products is demanded by the market. To fulfil the changed requirement flexibility is needed. That can be highly supported by regionalisation approaches. Due to the mentioned changed direction of customer requirements short chains can become widely used on long term. This would also help the fight against the harmful impact of the bullwhip effect.

This article aims to show the possible non-sensitive supply chain setup. The goal is to support the operation to have the focus where it should be placed. If the phenomenon is impacting the operation, it needs to be analysed. On the other hand, if the probability is lower different measures can be in focus. The level of impact is also important. Even with high probability if the impact is low measures may requires review.





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## Creative as a sustainable career in Africa

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*Abstract: Art is a way of life (Bauman, Z. 2013) as "Artitude" epitomises freedom of self-belief and grassroots expression of the African connect. The creative arts industry is seen as low-hanging fruit for a lot of economies, especially in Africa. Very little attention is given to the creative arts industry, albeit a multi-billion industry in other parts of the world.*

*Numerous people in Africa may have a depraved perception of people pursuing art programmes, especially pupils in high school. Although there are some remarkable successful art stories, numerous people still don't perceive art as a sustainable career. Parents and guardians are still indifferent and sceptical about their children pursuing courses in the creative trade but would be quick to hail science and business-related courses. How do we change these misconceptions?*

*The research collects key insights from various stakeholders (students, parents, institutions, artists(es), agencies, and the general public) in Ghana, and also define the social and cultural indicators connected to these misconceptions. The document would further highlight the execution of an initiative (pilot project) with the sole objective of demystifying this misconception amongst all stakeholders. It highlights the model and findings of the employed strategy.*

*The execution strategy was categorised into four core areas: Workshop, Expose, Mentorship and Internship. This gave young creatives a platform to interact with practising creatives in commercial and non-commercial art spaces. Parents and institutions also took turns to engage practising creatives, to understand their ways and the relevance of art in society.*

*The research indicates the impact and lessons from the initiative. The document further analyses how a perfect synergy of positive perception in arts can build a stronger creative economy in Africa*

**Keywords:** *Artitude; Perception; Young Creative; Misconception; Creative Economy; Artlife Matters*



## 1 Introduction

It is widely believed that art is a way of life and barely seen as a revenue stream in most parts of the African continent. Despite the abundance of artistic heritage of the continent, society looks down on creative arts and its ecosystem. To them, people who study the art subjects are perceived as those who may not do well with the so-called tough subjects like as mathematics, engineering, etc. Some aborigines who may buy artefacts also have the perception that they're chaffy and should be available to them for free. Some also marker art as idolatrous or fetishist and for that matter advise their religious pals and associates to desist from acquiring artworks. The effect of these misconceptions about the arts also reflects in the education system. A significant number of scholars end up in the arts classes because they couldn't make the grades to enrol in their preferred courses, and not because they wanted to pursue arts. Another misunderstanding about the arts is that, "art is all about drawing and painting". In today's world the creative economy cuts across Photography, Literature, Advertising, Architecture, Gaming, Music, Audio and Video Broadcasting, Craft, Fashion, Cultural Tourism, Software, Dance, Magazines, Design, Visual Arts, and more. Until Africa changes these misconceptions, it would be difficult to realise significant impact of the creative economy.

## 2 Literature review

"Goleman (2006) justified that there are two kinds of intelligence: intellectual (left-brained) and emotional (right-brained) which constitutes the learning process of an individual. The pursuit of art requires cognitive and top performance derived from both the left and right brain" [4]. This means the study of art is for intelligent students contrary to what most people in society perceives. Scholars such as Caldwell and Vaughan (2012), Dwyer (2011), Hartle (2015) and Reeves (2007) noted that art education merit an extraordinary part in the heart of education curriculum because it has a lot of benefits mainly in reasoning and critical thinking. "Melnick (2011) highlighted many cognitive advantages from art education like higher academic achievement, creativity, imagination, self-expression, rouses the mind of students and stimulates the brain" [4].

"Goma (2010) itemised misconceptions about art as: 'not everybody can understand art'. Understanding art is like understanding any other thing in life. It requires questioning and learning. There is no limit to learning; learning is a lifetime process" [2]. "Grayson Perry (2013) indicated that we live in an era where anything can be art, not everything is art." [7]. E Dissanayake (2015) believes every human society is characterized by behaviours that can be called "art," and in most societies in developed countries, the arts play an integral part in social life. The above



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statements may explain why it is a bit difficult for the ordinary indigene to understand the relevance of art.

Ntim-Ofosu (2018) stated that the “creativity of children in Africa is overly controlled, meaning parents are constantly telling them what to do and how to do it” [6]. Such controls may leave children feeling like their originality is a mistake and exploration is a waste of time. Apart from parents, teachers and peers continuously suppress the power of creativity. “Ntim-Ofosu (2018) established that these actions smother the child’s inquisitive nature to be creative and adventurous” [6].

“Bolanle (2017) perceives Africa as the cradle of civilisation, as the birthplace of artistic exploration and that, the continent has produced the rhythms that are still influencing the contemporary music landscape” [2]. Recently, Beyonce paid tribute to Yoruba deities in her groundbreaking visual album. Aside from music, Africa has a footprint on modern art, dance, theatre, and others. Notwithstanding the significant influence, Africa’s global share of creative industries remains insignificant.

There was an absence of literature that highlighted the direct correlation between these social misconceptions and the performance of the creative economy in Africa.

### **3 Methodology**

The research is a case study that seeks to understand these misconceptions in Africa and its impact on the social and economic well-being of the continent. The approach used was qualitative method via focus group sessions, survey forms, online subscription and observation. The research was executed in a continuous project that identifies misconceptions, executes activities intended to correct these misconceptions and evaluates the results. The evaluation seeks to improve subsequent activities. The project has been running for three years.

#### **3.1 Project – ARTITUDE**

Artitude was a capacity-building project designed to expose young creatives, institutions, parents and the general public to the potentials within the creative arts space while demystifying the misconceptions when it comes to the pursuit of the arts, powered by Artlife Matters. Every participant went through a mandatory subscription process that collected data on their views on the misconceptions and what their expectations were in the upcoming activities. This gave participants a sense of ownership.

The project was executed in four structures with the main focus on the senior high school students and young adults who had an interest in the arts.



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Workshop gave the students a hands-on experience to work with, learn from and interact with practising professionals in an area of interest within the creative arts space. We had a total of fourteen workshops: Sculpture, Architecture, Music Production, Poetry, Talk Sessions, Acting, Fashion, Film making, Music Business, Picture Making, Content Creating, Advertising, Photography and Dancing. Engaging with a professionals made participants confident as well as gave them a glimpse into their prospective futures in the arts.

Exposé gave participants an opportunity to showcase their creative talents to parents, industry players and the general public. There were Art installations, Art Competitions, Dance Performances, Art Performances, Exhibition by art institutions, Online Radio Production and an Open Concert. Parents also got a unique platform to interact with twenty-seven top practising creatives to explore the potentials within the creative arts industry. Most parents were surprised to know careers like Architecture, Psychology, Design and others were related to arts. It was an eye opener to know that a sculpted table-top bust could cost more than fifteen thousand US dollars. This revelation gave the research assurance that perceptions were being changed.

Mentorship in the form of art clubs were formed organically because there was the need for frequent engagement. As mentioned by some school authorities, perceptions could be changed with consistency. The research team and creative facilitators visited the clubs periodically.

Internship opportunities were given to participants who were interested in jump-starting their career. Industry players have reached out to talents and Arlife Matters have also assigned students as interns with partners.

## **4 Results**

### **4.1 Finding before execution**

In 2019, the research team (Arlife Matters) engaged senior high schools to evaluate the misconceptions around the study of the arts. Figure 1. below shows our findings after engaging five hundred and twenty-four students pursuing studies in the arts in five senior high schools. Method employed were focus groups, and printed/online survey forms.

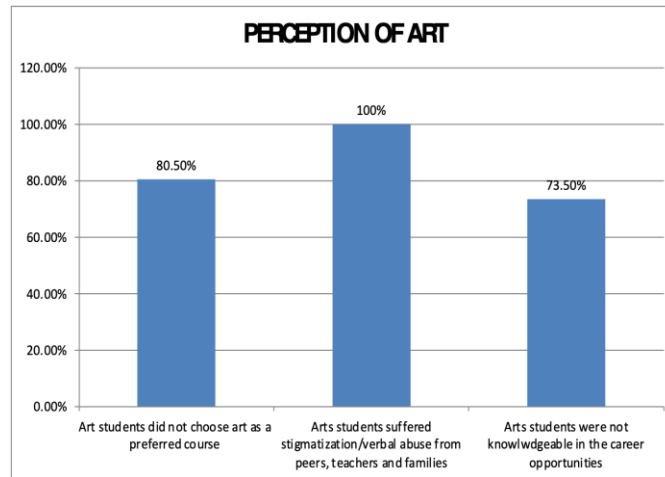


Figure 1

Survey: Focus group with arts students in Ghana.

It was surprising to know that even in recent years with the advancement in technology and communication, not much had changed when it came to the misconceptions surrounding the arts. The students were still being stigmatised with negative comments from teachers, peers and guardians alike

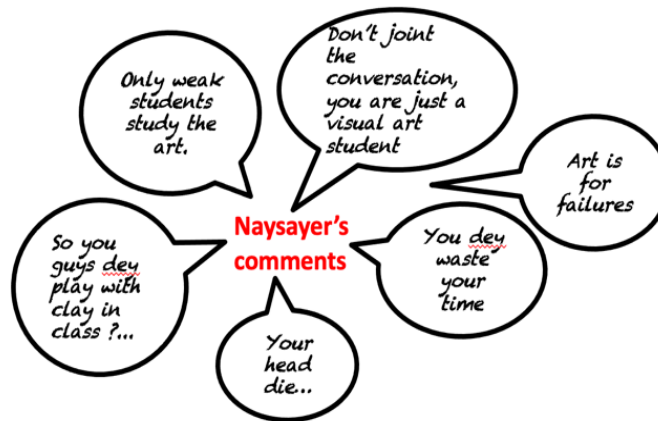


Figure 2

Naysayer's comments curated during the insight sessions.

According to our findings, the visual arts programmes were preferred by students who did not gain admission into their chosen courses. This explained the emotional and psychological struggles that some students experienced in order to adjust and understand a topic they were not connected to. On the other hand, there were some



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students who wanted to study the arts, but their guardians insisted they pursued the course they perceived to be more important.

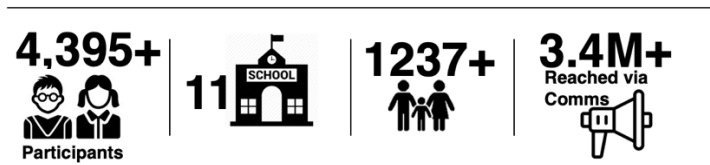
The creative process was intense and required heavy use of studios within the schools' departments. That meant that studios needed proper maintenance schedule to keep materials and the facilities up to standard. Our observation was that very little attention was given to the various art departments. Most of the renovations by the government and old students' associations prioritised other programmes than the arts. None of the schools under this study advanced digital creative studios with high performing computers and other technology enabling them to compete on a global scale

Visual art students had very little recognition both internally and externally. During speech and prize giving days, open days or any form of award scheme, science related courses were prioritised. The National Science and Maths competition has gained so much traction in Ghana recently. It has become a source of pride for high schools and their alumni to fiercely compete in Math and Science. The same enthusiasm and pride are yet to be witnessed in Ghana with regards to an art related programme at the high school level.

The students also highlighted that there was very little external engagement with institutions, organisations and practising artist during their study period. They further intimated that linkage programmes connecting them to careers after school may assure them in the pursuit of arts.

## 4.2 Impact After Execution

Over three years of project “Artitude”, the team has been able to engage over four thousand, three hundred and ninety-five young adults in eleven institutions. Through Art Exposés and presentations at Parent Teachers Association (PTA) meetings, our message and activities have reached over one thousand, two hundred and thirty-seven parents/guardians across eleven institutions.



Figures 3  
Campaign reach over the period.

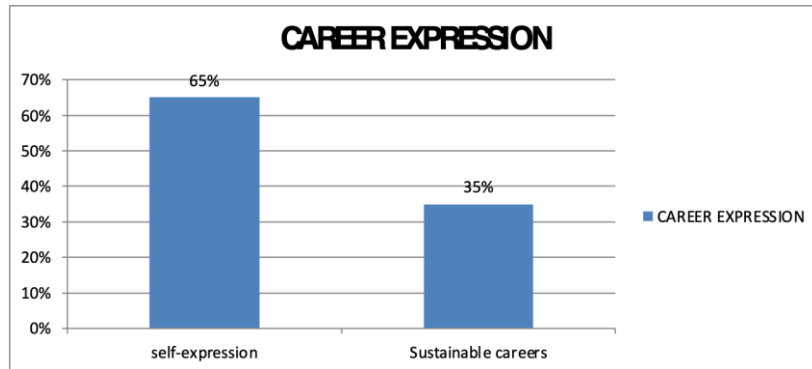


Figure 4  
Interest category of participants. (2019-2021)

Through observations, the participants were grouped into two categories. The first category (65%) was those that participated in the activities because they had an interest in art as a way to express themselves. They partook in every activity with passion and the hope to be part of a group that resonates with them. They love art but do not have the zeal to pursue it as a career.

The second category (35%), were those that engaged beyond passion. They asked a lot of questions and followed up with the team and workshop facilitators in search of avenues to improve their skills and ability to succeed through the arts.; to an extent of talking to parents on their behalf.

Every participant understood the true purpose of art and how they wanted to inculcate it into their everyday lives. A common response on their feedback form after their workshop activities highlighted their insight into the potentials within the creative space.

Through the career dating exercise during the Exposé, parents engaged with a lot of creative professionals and they were enlightened about the job opportunities, the incentives and success in these careers. In an interview with one parent, he was convinced in the prospects of the arts and encouraged the daughter to pursue visual arts in Achimota Secondary School in Accra- Ghana. This was a proof of the impact of Artitude in helping to shape the misconceptions about arts.

Achimota School (Accra-Ghana) was used as a controlled group to monitor the impact over three years. The school enrolls an average of four thousand five hundred students each year. These students come from the sixteen regions and neighbouring countries like Togo, Benin, Burkina Faso, Sierra Leone and Nigeria. Through surveys and observations, teachers in the art department recorded significant transformation (positive) in how students related to art activities. Student groups registered new art clubs in photography, dance, music, drama and writers/poetry after the workshops in 2019. The team recorded that the students and the school





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authorities wanted more search projects. A mural that was executed as part of the renovation for the department had made the art department a hot spot for non-art students, staff and the public.



Figure 5

Renovation of the Art Department

The project was executed with a campaign message that sought to enlighten the general public on the possibilities within the creative arts space. The campaign was broadcast on radio stations, television stations, social media platform and focus group presentations (old school associations and PTA meeting). With a media reach of three million four hundred thousand people over the three-year period, it may be worthy to note that a significant number of people have heard the message.

The results showed that the misconceptions were somewhat evolving with the numbers that were engaged over the period of the research. However, further work is required to reach an exponential impact across the continent.

## 5 Discussion

R. Wallis (2008) highlighted that creativity is homegrown. The domestic environment must support and protect creatives, education and entrepreneurial efforts. The extraordinary international and local success of the Swedish music industry in recent years is an impeccable example domestication. Creatives individuals with basic music skills, performing talent, IT knowledge and entrepreneurs have created hubs of expertise that can compete with major resources of traditional music industry centres (London and Los Angeles). African music and dance somehow have a global appeal but without significant economic gains. Very few independent/private creative entities have been diligent in protecting their intellectual properties and benefits across the globe. The continent needs a collective domestic environment that would grow, protect and guide the creative potentials both home and abroad. In 2020, Ghana passed a creative arts bill in parliament, but the industry is yet to understand and actualize the benefits. The Africa Continental Free Trade Area founded in 2018, should have a practical system in integrating the economic activities of the creative industry to reduce unemployment.



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“According to R. Wallis (2008), modern information and communication technology has made creative industry more interactive. “Art institutions increasingly embrace new media for the display, promotion and conservation of their collections, aiming to create a unique experience for their visitors” [9]. It is agreed that through digital technology, a lot of artists have had a lot of cultural and economic exchanges in Africa. As much as there is a massive positive contribution of digital technologies, creatives also acknowledge that there are threats like copyright, originality, and others which has become a global conversation, and African needs to contribute in others to protect its creative interest

If Africa could focus its efforts on bringing life to its creative arts sector, a new economic age would be birthed on the African continent. It has been argued that the forms of art include making and earning money, but the best form of art is a good business. If the continent could position itself as the focus for worldwide creative arts, content, creative artists and large economies would flourish.

### **Conclusion**

African art has been gaining traction over the past few years. Projects like Artitude, Gallery activities, Cultural programs, Music exchange among others have contributed to this awareness but a lot more would have to be done.

1. The public should be educated about the importance of the arts.
2. Art courses must be inculcated in the academic calendar at the early stages. If possible, art courses should be a core subject at the Senior High Schools to boost their interest
3. There should be a lot more galleries and art institutions focused on exhibitions, talks, workshops, conferences to enlighten the public about art endeavours.
4. African creatives need a legal framework that protects and govern the affairs of the industry
5. Artists should see themselves as a respectable brand and carry themselves in an admirable way that would attract a new narrative.
6. Ministry of Art and Culture in various African countries pass a creative bill that would guide the group of the industry through relevant agencies and partners.

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# Why can't we have nice things – a transaction economy model of information system usability in firms

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*Abstract: Poor usability of B2B applications is nothing new, every scientific database is full of articles on how to improve them, but why does it happen in the first place? Turns out the answer might lie in transaction economics, once we view the purchase and use as different transactions. But buying a bad used car (a “lemon”) in the market is also nothing new – what new is that getting rid of IT is hard, because usage itself increases costs of switching to a new supplier. Most papers either deal with the internal workings of a software development company, or treat technology as something developed internally – yet this is rarely the case anymore, and buyer-seller relationships of technology, along with caveats in the SaaS licensing scheme might give us the answers on the sorry state we might find ourselves in.*

*Keywords: transaction cost economics; lemon market; usability; technology acceptance model; task-technology fit; software as a service; organizational impacts of information systems*

## 1 Introduction

### 1.1 A personal motivation as a university lecturer

Why is this particular digital information system for a certain business process inside my institution so hard to use? This is a question many people, including academics certainly ask themselves. If that academic happens to study and teach software ergonomics, the question is even more profound, especially if the task is to document exams and graduations, as the author did the days before writing this paper.



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The paper will go through certain models of firm behavior related to information systems and technology acceptance, a definition of usability in terms of quality, and what comes of it.

## 1.2 Our example scenario

In order to achieve this goal, we have to provide a hypothetical scenario first, and so we generalize what brought this paper to life: executing a certain business process, which has legal implications (and therefore, compliance requirements), and is mainly about information handling – the given case, grading students in a public university, which of course has legal implications in that it allows students to apply for other academic programs. In order to give a more general case, it can be also declaring compliance to a law. In most countries, incomes and expenses are to be declared towards the respective tax office. In Hungary, invoices are to be declared regularly (Áfa Tv. - 2007. Évi CXXVII. Törvény Az Általános Forgalmi Adóról - Hatályos Jogszabályok Gyűjteménye, n.d.) in a digital channel, and therefore invoicing is a basic business process which can be applied to all Hungarian firms.

Given that such regulatory data is regularly handled by a digital information management system inside a firm, we should be dealing with the usability of that digital information system – documenting grades in the academic case, and filing an invoice in the general firm case. We take it for granted, that the frequency of the task, the e-government oriented legislation around them gave rise of such a system. This is certainly a case in Hungary, but the author hopes that such analogies can be found in universities and firms of most of the developed countries inside and outside the European Union.

## 1.3 Expected technology landscape

In our model, we expect the user and the technology provider, to be part of two distinct organizations: that is, the user is unable to change the underlying technology without the help of the technology provider. This is certainly the case of most situations, as most users lack the technical knowledge and rights to do so, and even if they did, as we will see, it would cause a lot of costs for the user organization.

The technology provider is responsible for the operation of the system in exchange for regular payments, in our model, instead of a single sum: this is again, a very standard model of such information systems, commonly referred to as Software as a Service (SaaS). If we didn't add this to the model, a technology provider might be interested in acquiring new and new customers. With this added, however, as long as customers keep paying the regular fee, and it is sufficient to cover the incurred costs, the technology provider can be alive on market without acquiring any new customers.



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## 2 Literature review

### 2.1 Definitions

#### 2.1.1 Defining usability

This paper primarily bases usability on the ISO/IEC 9241:11 definition, as an extent of user effectiveness, efficiency and satisfaction for a certain scenario. (Speicher, 2015). However, in order to understand it from a quality standpoint, we must define usability as a quality in use (Estdale & Georgiadou, 2018), as it is done by the ISO 25000 standard family. This standard family differentiates “functionality” and “usability”. In the ISO 25000 series, effectiveness and efficiency are only resulting qualities of usability and functionality, while in the ISO 9241 series, they are the very definition of usability.

#### 2.1.2 Defining quality

We could define quality as any property that differentiates a product or service on the market, but perceived quality upon purchase and quality in use should be differentiated: while customer attraction is an important factor in market success (Carlgren, 2013), use of such a digital information management system happens usually after the purchase transaction happened (as it will be detailed shortly in the lemon market theory). As we will see in discussion, this has important implications.

#### 2.1.3 Defining functionality and the difference from usability

For the sake of clarity, in this paper, functionality is what a technology is capable of, and usability is the measure on how well users can leverage that capability. Therefore, when there is something a perfect user might be able to achieve with a technology, the functionality is there, and when it isn't it's an opportunity cost. However, there are cases, where functionality of the product is unachievable by any of its users due to usability issues: if we would provide a white button on a white background with a white text, is the functionality there? Still, literature as we will see differentiates between the two. We will use the differentiation of “cost” and “gain”, that is, with functionality, a user is gaining capabilities, but it still costs time to leverage them, or cover the errors. We should note however, that some usability errors once put the City of New York in close danger of literal nuclear extinction, so some errors are infinitely expensive to cover.



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## **2.2 Theories**

### **2.2.1 Transaction cost economics**

As (Williamson, 1981) suggests, in some situations we should focus on transactions to analyze firm behaviour. In terms of transactions, we need to differentiate a few: there is a purchase transaction for the information system technology, but there is a transaction where the member of the firm is using the product (and therefore, spends salary). Between the two, there is a transaction of introduction (with different costs and actors) and a transaction of changing the underlying, already purchased/licensed software through development.

### **2.2.2 Lemon market theory**

Akerlof stated in his paper (Akerlof, 1970), that information asymmetry, especially in underdeveloped countries, has detrimental effect on the market, as the user might not know the true qualities of the product before much later after the purchase was made. While early focus was on producer (seller) behaviour, later researchers (Vimarlund et al., 2001) (Dimoka et al., 2012) focused on the consumer's situation. In our market model, the seller is the organization providing the technology for the firm, and the consumer is the user of that technology, trying to execute a business process. The transaction we will be focusing on is purchasing technology for the given information system, as this is where the information asymmetry occurs: in order to see the day-to-day usability of the product in all scenarios, it has to be used day-to-day. We should note however, that there is an inverse information asymmetry as well: the seller doesn't necessary know the actual day-to-day activities of the user. However, as long as the purchase is made, this might not need to bother them.

### **2.2.3 Innovation fashion theory**

If we take information asymmetry for granted, when it comes to transactions, especially in purchasing technology for a given tasks, an interesting pattern emerges: word of mouth causes choices to be made based on fashion (Abrahamson, 1991). Since decision makers don't know which technology would lead them to the least expenses later, they might follow other decision makers who had to make a similar decision lately.

### **2.2.4 Task-Technology Fit**

An important connection should be made: generally, individual performance is closely linked to this phenomenon, according to (Goodhue & Thompson, 1995) and it also affects organizational performance, as we see in (Zigurs & Buckland, 1998). However, what is missing is the human characteristics – it is treated as an external variable, but usability research tells us it is not the case.



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### **2.2.5 The Technology-Organization-Environment framework**

Baker's framework (Baker, 2012) tells us, that the external environmental forces, like regulatory requirements, the internals of the firm, including formal and informal processes and structures affect adoption just like the properties of the technology itself.

### **2.2.6 Technology Acceptance Model**

This model tells us that perceived usefulness and perceived ease of use might result in intent to use a system (technology) and therefore, its purchase. It has been extensively studied for SaaS situations (Naqvi et al., 2019). The Lemon Market Theory however tells us, that "perceived" and actual usability might be strikingly different as shown in : suppose we simply bought an application from an application marketplace (Google Play Store, or Apple AppStore), based on screenshots and reviews (fashion!), and only later would have found out, that it doesn't support our particular situation. Therefore, it is fundamentally important, during which transaction does the perception occur.

### **2.2.7 Cost model of information technology systems**

We know that the customer organization will have to pay for the technology provider organization. But based on what? We will use models from (Ohridski et al., 2015) (Herman et al., 2018) and (Alseadoon et al., 2021) to understand what costs we should bear. As for the distribution of such costs, (Yang et al., 2008) tells us that design and code of the system is responsible for more than half of the costs, and there are transition costs to bear (we will separate transition to migration and learning for technical purposes)

## **3 Methods**

In order to marry our models together, we must first make a distinction between purchase and use. Usability, when taken as a cost (effort spent on using the product) happens during use, but this cost might not be imminent upon purchase, even with demo runs.

Let's start with the classic TAM model based on (Davis, 1989; Venkatesh et al., 2003), defining "ease of use" as usability, and usefulness as functionality :





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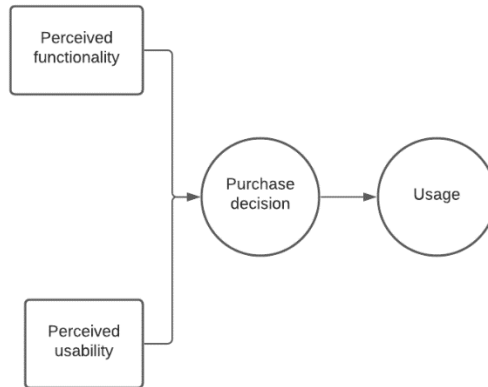


Figure 6 The Technology Acceptance Model viewed as a set of transactions and factors affecting it (based on Davis89)

Usage is a transaction here – but what it contains? Of course, the gains and losses resulting from usage:

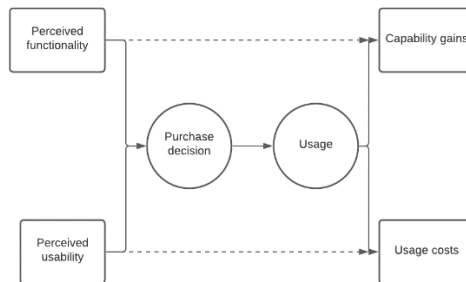


Figure 7 The previous TAM model with resulting gains of functionality and cost of usage added

But in itself, there is a difference, let's call this actual instead of perceived:

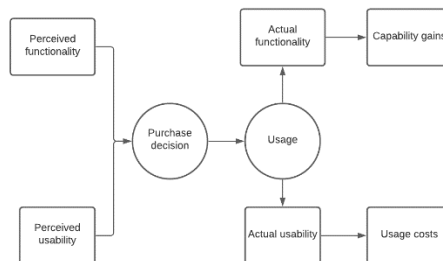


Figure 8 Differentiation between perceived and actual parameters



Of course, the purchase decision isn't only affected by this alone, usually there is a cost to be paid for the technology provider. Also, there is a learning cost for anyone trying to actually use the system. The difference here is internal and external: no matter how much we pay for the technology provider, every and each user has to pay efforts to learn the new system!

## 4 Results

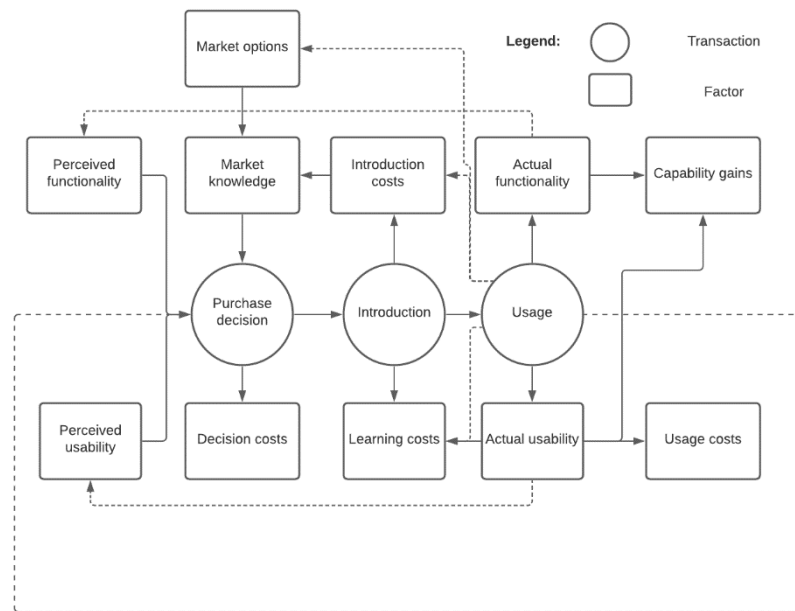


Figure 9 The resulting extended model, marrying TAM with TTF model, showing the asymmetry of the market as 3 separate transactions

### 4.1.1 Transactions

We define 4 different transaction points, providing the backbone of our discussion:

- Purchase decision – the financial transaction involving purchasing, developing, or modifying a technology, or the decision towards it
- Introduction – the costs of introducing the contracted changes - we separate it from the purchase itself as to a lot of customers, its costs are not visible upfront
- Usage – the actual usage transaction (filing an invoice, or grading a student)



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#### **4.1.2 Factors affecting purchase**

Purchase is affected – according to the TAM – by

- perceived usefulness
- perceived ease of use (together perceived task-technology fit)

and of course every purchase is affected by:

- market knowledge, including:
  - the known available technology vendors and
  - the offered price

The introduction cost is a sum paid for the technology vendor upon introduction. However, total cost of ownership incurs internal costs, such as:

- Learning costs: training of personell, or lost productivity while learning a new / changed system, changing of documented business processes
- Migration costs: changes related to introduce existing data to the new information system and to introduce existing procedures or modify them around the information system

#### **4.1.3 Factors affecting use**

Usage comes with time of use, which is directly correlated with the usability of the product. The time spent on using the product is the usage cost.

Usability is not only dependent on the perceived ease of use, but it is the result of actual ease of use. The difference is what we call tacit needs.

Use also comes with the costs of the license fee associated with the technology. It might not involve any kind of change: license fees can be offered for the pure operation of the system by its technology provider, which might only mean providing electricity and networking to a computer.

#### **4.1.4 Factors affecting change**

Whenever a change happens, there is a learning cost: if only momentarily, the user needs to re-learn the interface to execute the same tasks. Also, documentation related to connected business procedures might also need to be updated. If the change was requested by the user organization, it might need to bear its development costs; but it could happen, that it is a result of market change by the technology provider.



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## 5 Discussion

### 5.1 Usability is a property of technology, but not its quality

From the user organization's perspective, usability is not a quality: actual usability might not affect the purchase decision – as long as other external (eg. legislation) and internal (eg. supporting business procedures) needs are met. However, it is a property, and it changes to a context only when either the context or the technology changes.

It becomes a quality only when it is

- apparent at the moment of purchase (perceived vs. actual ease of use), and
- when there are other market options (including deciding not to introduce technology for the given process at all).

If any of the above two conditions are not met, usability remains a property, but not a quality of the product.

### 5.2 A cost model for a technology provider

It was shown many times, that compared to development costs, the rest of the costs for a technology provider are largely diminishable. Development only occurs when change occurs. This change might be initiated by external factors (legislation changes, market demand changes, underlying technology changes), or internal factors (new market initiatives, new technology adoption). There are still operational costs like cost of support, electricity and replacement of broken technology, but in the SaaS business model, regular income continuously has to cover these costs while also gradually covering development costs.

### 5.3 A stable market

There is a certain notion, that the “market always changes” – in itself it is certainly false: certain markets don't change, let's say, at midnight most local stock exchanges are frozen. For a technology provider of an information management system, the market can change essentially in four ways:

- New customers are acquired from the market
- Existing customers are not retained and lost
- The customer value of existing customers increases (or decreases)
- It expands its activities to new markets

When a market change occurs, that means that the technology firm's performance of acquiring new customers or retaining existing ones is changed, or the technology firm itself has changed to a different market.



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But each of these come with a transaction cost from the side of the customer: if the customer chooses a new technology, it has to stand all the costs related to the introduction of the technology. It even has to bear costs unrelated to its own needs: If expanding to a new market by the provider leads to a generalization of technology (let's say, instead of just a single "issue an invoice" button the technology provider decides to add an "issue a payment receipt" button which requires user to choose between the two options) it might increase usage costs (the decision time between the two buttons) and adds re-learning costs (to update procedures to reflect new system behaviour) even if the given functionality is not used by the given firm.

Therefore, the customer might be

- Interested in keeping things the same
- Its only choice would be to change technology vendor, which would invoke both purchase (or development) costs as well as introductory costs.

#### **5.4 Warning for custom developments**

An interesting situation occurs, when for whatever reason, the customer is the sole customer of the technology, and the provider is the sole provider: the provider is not interested in change, as it would not result in acquiring new customers (there is no one else interested), as the sole provider it has monopoly over the technology (the customer has nowhere to change) so therefore it can retain the customer basically indefinitely. Customer is not interested in increasing the usability of the product, as it would have to bear all development costs of such change, even to a profit, and it's up to the discretion of the provider whether to do the change or not.

This can also happen if the system changes: suppose that as a result of change in a business process, the technology needs to be altered: at that moment, no matter how many providers are there, only the current provider can change the technology to suit new needs, for whatever development costs, and disregarding usability – as long as the sole change is even a tiny bit cheaper than replacing the whole system, they are keeping monopoly on this micro-market. Therefore, integrated systems are a trap: the more business function a single technology provides, the more likely is that they can force the customer into a vendor-lock in situation.

#### **5.5 Infinite cost of migration versus new customers**

Another common situation is, when the migration costs get high: in practice, migration costs rise over time simply because there is more data to migrate, and its entropy also increases over time. Let's suppose that right after purchase, there is no data to migrate, but immediately after first use, the cost of migrating existing data would be infinite.



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Upon surveying medical GPs, out of the 35 asked, more than 30 used the same program for keeping EHS records they started their career with – and most of them 30 years prior (the average age for GPs was 58 at that time). Therefore products from the 90s were dominating the market, with easy to measure usability issues between the older and newer ones.

Social networks are such phenomena: if people have most of their friends on Twitter, or Facebook, it's hard to migrate activities to a different one.

Yet TikTok and Instagram are well and alive. The reason is the constant influx of new users. Since the GP market is relatively stable, as in, no significant amount of new users are expected, the situation also does not change and competition does not force improved usability.

### **5.5.1 When negligible costs become a showstopper**

Compared to migration costs, learning costs seem to be negligible, and we might wonder, why it is included separately at all; that is, until we realize that each user has to pay it as a natural person: users unwilling to learn a system can be a showstopper, especially if the investment in the learning costs of the previous system is providing the status (and leverage) of the individual. But besides personal costs, this simple step of deployment costs in itself could be prohibitive: a system we were working on failed to be introduced to a new market as its learning cost was two weeks, during which all employees of the potential customer were to be out of their daily job. Therefore, while in software development literature, it is simply part of migration, that is true only from the technology provider's perspective; from the user's perspective it is an internal cost to bear, compared to the external cost of paying the trainer and the developers of the provider.

## **6 Conclusions**

Where is the way out? First off, if we learn to minimize change costs, we are able to minimize usage costs and maximalize gains faster. Good usability minimizes learning costs, and if we separate backend and frontend systems, we might be able to minimize usage costs without paying the full price of migration.

### **6.1 Further research needed**

We need to conduct empirical research supporting this model. It might be detailed more on the technology side, like, what happens if for a single backend (eg. a governmental database of invoices, or university database of exams) there are



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competing frontends (client applications) available, or how to calculate when the usage costs outweigh the benefits of capabilities.

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## Pollutions in the Oceans

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*Abstract: Water covers more than 70% of the earth's surface, with the oceans accounting for 96 percent of that. Many living organisms, such as fish, marine mammals, algae, plants, and so on, call the oceans home. They also assist humans in a variety of ways. However, this environment is currently in grave jeopardy. Over the decades, the fast-growing human population has resulted in a rise in human demands and wants, resulting in more production and waste, as well as more pollutants released into the environment, especially the oceans. This research focuses on the different types and sources of pollution and pollutants in the marine ecosystem, as well as the effects and consequences that pollution can have on water quality and living creatures, particularly pollution from wastes and its influence on oxygen production. An online survey, addressing people of various ages, places, and vocations, is used to investigate people's awareness, and understanding. The quantitative responses are then compiled and analyzed to form a basis for a deeper understanding of how the danger can be mitigated. While the purpose of the study is to increase people's awareness and understandings of the pollution in the oceans and the marine ecosystems and seek measures to decrease the pollution released recommendations will be formulated on the basis of the international literature and the quantitative research's results.*

*Keywords: pollution; ocean; human; awareness; understandings*

### 1 Introduction

Most people are well aware that the earth we live on is covered by water for more than 70%. Water is fundamental for all living beings and is one of the world's most valuable natural resources. Water derived from natural resources encompasses both saltwater and freshwater, and it can be found in a variety of water bodies in a variety of locations. Oceans are the largest bodies of water.

Oceans are the most diversified environment on the planet, providing innumerable benefits to humans and other living species. First, oceans assist in climate regulation by absorbing carbon dioxide and additional heat, lowering the earth's temperature. Without the oceans, there would be no weather patterns and the temperature would be unstable enough to support life. According to a World Meteorological Organization report, more than 90% of the energy trapped by greenhouse gases ends



up in the oceans. Second, oceans provide a source of food for both animals and humans. It's a food-rich ecosystem that feeds billions of people. It is also a mode of transportation. Although it takes longer than air or land transportation, it is more cost-effective and practical when moving large cargo containers across vast distances. Fourth, oceans are vital to the economy. Fisheries, tourism, and other ocean-related activities generate jobs and increase currency circulation. Fifth, the ocean is the biggest habitat on earth, it is a home to many organisms (NOAA, n.d.; FAO, 2017). The benefits of the oceans are not limited to what was mentioned earlier, but those have been studied and are the most well-known to human.

## 2 General presentation of water pollution

Goel (2021) defines water pollutant as physical, chemical, or biological factors that cause detriment or damage on aquatic life and on those who consume the water. A factor could be beneficial or harm to the environment depends on the conditions. In some cases, naturally existing chemical elements are essential for the ecosystem, but when they are present in excessive quantity, it leads to water pollution – changing in quality and/or composition to become less suitable for specific purposes.

The cause of pollution in water is mainly from anthropogenic activities. The sources of the water pollution caused from anthropogenic activities could be classified into three major sources, which are domestic, agriculture, and industry (FAO, 2017). Domestic water pollution refers to the discharge of waste and sludge that contain organic matters and soap to the water bodies, usually rivers and seas (eni school energy&environment, n.d.-b). Agricultural water pollution is generally coming from the leakage or the discharge of water that is already polluted from chemicals, fertilizers, and pesticides. Agricultural pollution is threatening because the pollutants are usually not biodegradable. It stays in the water bodies and soil while destroying and damaging lives and the environment (eni school energy&environment, n.d.-a). Agricultural pollution tends to increase as the world's population increases because the demand of food is higher. Industrial water pollution appears to be the most dangerous and threatening. Pollutants from industrial origin contain all kinds of substances that are toxic and non-biodegradable. The industrial pollutants are coming from production processes, accidental breaks or leaks of containers containing polluting products, or the pollutants could be carried by rainfall to the water bodies (eni school energy&environment, n.d.-c).

The cause of marine pollution is from human, as mentioned in the previous paragraph, but the introduction of the substances from human into the marine could be done directly or indirectly. The sources of the pollution in the oceans are mainly



land-based, it is said to be 80% of the pollution in the marine environment (NOAA, 2021).

One of the most threatening pollutions in the marine ecosystem is the runoffs. Runoff is a process occur when water, including rainwater, snow melts, and irrigation, flows along and makes its way to rivers, lakes, ponds, seas, and oceans. Polluted runoff is when the runoff is mixed with chemicals, toxic materials, oil and gas, dust, fertilizers, bacteria, salt, heavy metals, and debris. Rainwater or irrigation washes chemicals and fertilizers in the soil and on land or road surfaces to the water bodies, resulting in runoffs from agricultural and industrial areas. (National Geographic Society, 2012).

Meanwhile, it may not appear to be linked, yet one of the causes of pollution that impacts the oceans is atmospheric pollution. Atmospheric pollution, in this situation, can be defined as pollutants delivered by the wind to the oceans. SO<sub>2</sub> and NO<sub>x</sub> from combusting processes, greenhouse gases that could raise ocean temperatures and contribute to ocean acidification, and light dust and debris mixed with dangerous chemicals and heavy metals are examples of atmospheric pollution (Islamic University of Gaza, n.d.).

The shipping industry also contributes a significant amount of maritime pollution. Not only can carbon dioxide, greenhouse gases, oil spills, discharges, rubbish and sewage, and bilge water (which may contain water, oil, urine, detergents, solvents, chemicals, pitch, particles, and other items) that damage the oceans and destroy marine living organisms (Islamic University of Gaza, n.d.), shipping activities may contribute to noise pollution, and ship collisions may result in the death of marine mammals in the vicinity (IMO, n.d.). Ocean dumping, deep sea mining, oil spills and gas leaks from oil and gas drilling, and offshore mining are some of the other forms of marine pollution.

## 2.1 Types of water pollution

Depending on the indication utilized, water pollution can be identified and categorized into a variety of categories. It can be divided into three categories based on its source: point-source, nonpoint-source, and transboundary (Mayer, 2019). Physically, chemically, and biologically, it can also be classed based on the properties of the water that are influenced. Pollutants and their sources could be used to define pollution kinds. Table 1 summarizes the contaminants and their sources.



*Table 1 Type and source of marine pollution (data source: GDRC, n.d.)*

Type of pollutants	Sources
Excessive nutrients	Runoffs, sewage, forestry, agriculture, land use, airborne from power plants, car, et cetera
Sediment and residue	Erosion from mining, forestry, agriculture, and coastal dredging and mining
Pathogens	Runoffs, sewage, and livestock
Non-native species	Ballast water, canals linking bodies of water, and fishery
Toxins that persist, such as PCBs, heavy metals, DDT, and others	Industrial discharge, wastewater discharge, land-based sources, pesticides from agricultural activities, forestry, domestic waste, and runoff from landfills
Oil	Cars, heavy machinery, industries, oil tanker operation, shipping activities, accidental spills, and offshore drilling
Plastics	Fishery, cargo and cruise ships, shipping activities, oceans dumping, ocean littering, atmospheric pollution, landfills, and industrial waste
Radioactive substances	Discarded nuclear submarine and military waste, atmospheric pollution, and industrial waste
Thermal	Colling water from power plants and industrial origins
Noise	Shipping activities, supertankers, and large vessels and machinery

source: GDRC, n.d.

One of the most threatening pollutants is plastic. Plastics that are released into the oceans became harmful and toxic to marine organisms and the ocean itself overtime as it does not breakdown easily and release chemicals to the oceans. Plastics are frequently infused with chemicals to make them stronger, more flexible, and long-lasting. These additives extend the product's life, making it more difficult to break down; some could take up to 400 years to break down (Parker, 2021a).

### 3 Pollution's effects on aquatic environment

Changes in water or aquatic ecosystems that make the water unsuitable or dangerous to humans and/or other living species are referred to as water pollution. Eutrophication, which may result in decreased biodiversity in the aquatic ecosystem, and plastic pollution, which degrades the seafloor, are some of examples (Pohl et al., 2020), toxic chemicals and heavy metal that kill and damage fish, aquatic invertebrates, crustaceans, zooplankton, algae, and marine mammals (IPEN, 2021; Han et al., 2020; Zeitoun, 2014), ocean acidification effects on marine ecosystems (Kroeker et al., 2013; Guinotte and Fabry, 2008), impacts on oxygen production, adverse effects on human health, and effects on the economy (OECD Water - Water, n.d.). Since waters are one of the most important habitats for living species and a valuable resource for humans, water pollution affects more than just life. Awareness of people based on quantitative data



## 4 Methodology

The goal of the study is to learn more about people's knowledge and understanding of pollution in the oceans and marine ecosystems, as well as to find ways to reduce pollution. Quantitative data was obtained through an online survey (Google Form) that targeted people of various ages, localities, and jobs to better understand people's knowledge and understandings. The 16-question survey of demographic and ocean pollution-related data (see Annex) was produced in two languages: English and Thai. The survey was then distributed using the snowball sampling technique, in which participants were requested to forward the surveys to more recipients. The data was collected and processed using SPSS 13 software, which is a statistical analysis program for social research. The study was based on the hypothesis that individuals who live near water bodies and/or work or study in an environment-related sector will have a better comprehension and awareness of pollution in the oceans.

### 4.1 Primary data

There are 226 responses from participants, representing a wide range of ages, localities, jobs, and points of view. However, these responses do not represent the worldwide population; rather, they reflect the participants' understandings and awareness.

Age: because the snowball sample technique began with a group of university students earning a bachelor's degree, the largest age group that participated in the survey was 20–24 years old.

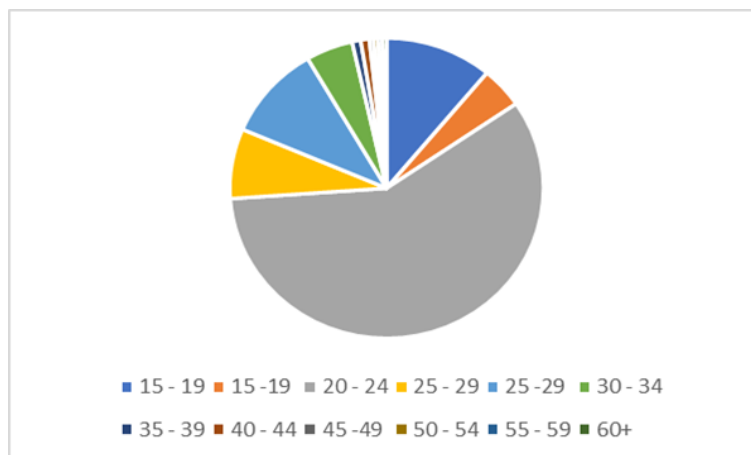


Figure 1 Age range of the participants

Localities: the majority of the participants were Asian, 181 participants from 226, which is 80.1%. Followed by 21 participants from Africa (9.3%), 12 participants from North America (5.3%), 9 participants from Europe (4.0%), 2 participants from Australia (0.9%), and 1 participant from South Africa (0.4%).

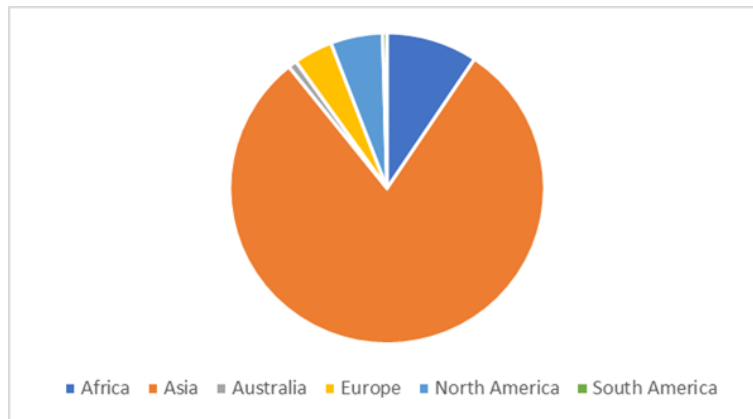


Figure 2 Locations of the participants

Background education: most of the participants has or are pursuing bachelor's degree (66.8%), high school (20.8%), master's degree (8.9%), Ph.D. (0.9%), and diploma (0.4%). 5 participants (2.2%) prefer not to say their educational background. Background education of the participants was asked to determine the hypothesis, if educational levels are related with understandings and awareness of the pollution.

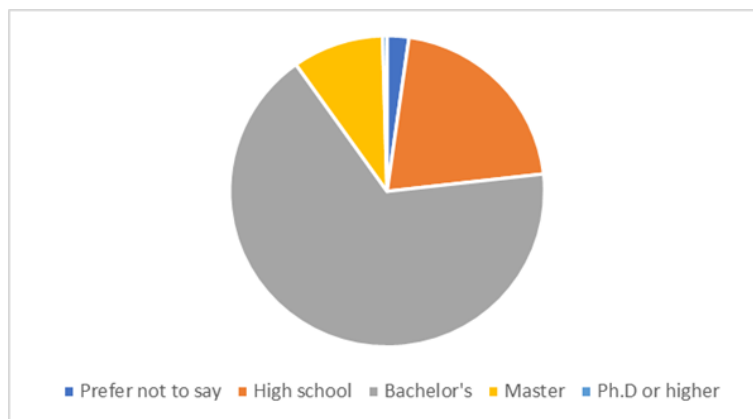


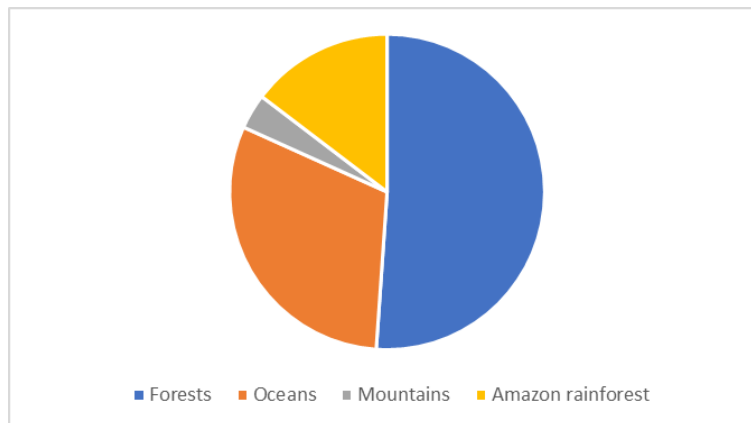
Figure 3 Background education of the participants

Job: job titles are diverse and have many varieties, which is the reason the data is classified as student and people who work. This question was asked to collect

further data about participants' field of studies and/ or work, whether if it is related to the oceans or the environment. This field of data helps to analyze if there are patterns between people who are related to the environment and their understandings and awareness about the pollution. Students were the majority of the participants as the total was 61.5%, while working people are 38.5%.

Faculty and major: this question was asked to determine ration between students who study in field related to environment and ocean and students who study in other fields. This will help to analyze the patter for the hypothesis. The students who study in the related field are calculated as 10.8% and there are 89.2% of students who study in other fields.

Source of oxygen production: participants thought that forests are the main source of oxygen production (50.9%), then oceans (30.5%), Amazon rainforest (14.6%), and mountains (3.6%).



*Figure 4 Participants' opinions about source of oxygen production*

Quality of the water bodies: 59.3% of the participants think that the quality of the water bodies that they visited were fair, 33.2% think that it was good in quality, and 7.5% think that it was poor in quality.

Human responsibility: 93.40% of the participants think that humans are responsible for the health of the oceans, while 6.6% think that they do not have anything to do with the health of the oceans.

Human activities' impact on the oceans on a scale of one to five, one represents no impact at all and five represents a significant impact: 66.4% of the participants think that human activities have had a significant impact on the oceans, 23.0% on a scale of 4, 10.2% on a scale of 3, and 0.4% on a scale of 2.

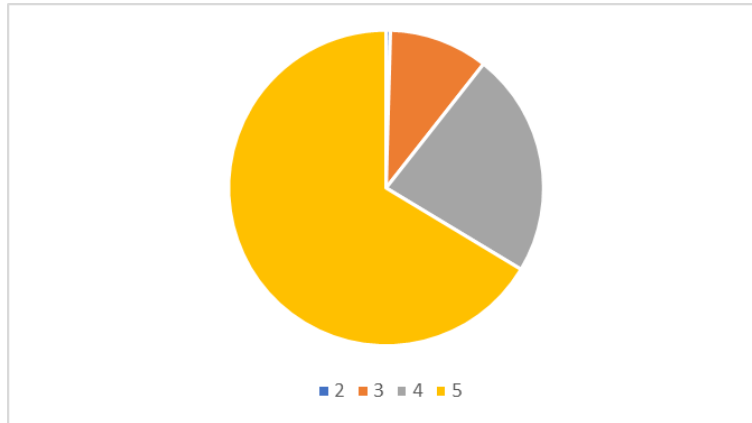


Figure 5 participants' opinions about impact of human activities on the oceans

Knowledge and understandings on a scale of one to five, one represents not being informed at all and five represents being well informed: 4.0% of the participant think that they are well informed, 34.1% think that they are fairly informed, 43.8% think that they are somewhat informed, 15.0% think that they are slightly informed, and 3.1% think that they are not informed at all.

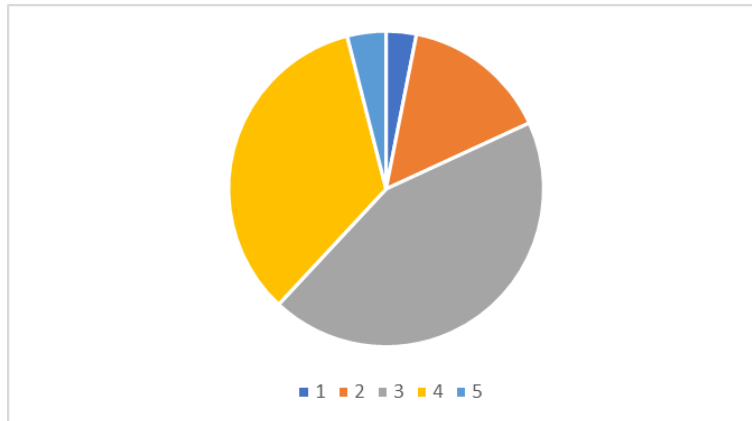


Figure 6 Participants' understandings about marine pollution

#### 4.1.1 Cross tabulation

Cross tabulations are used to examine the relationship between demographic data and the participants' perceptions and awareness. It should be noted that the results of the analysis do not reflect the views of the entire world's population. It just represents the views of 226 individuals. One of the interesting finds from many



cross tabulations is from the cross tabulation between background education and participants' opinion about importance of the oceans.

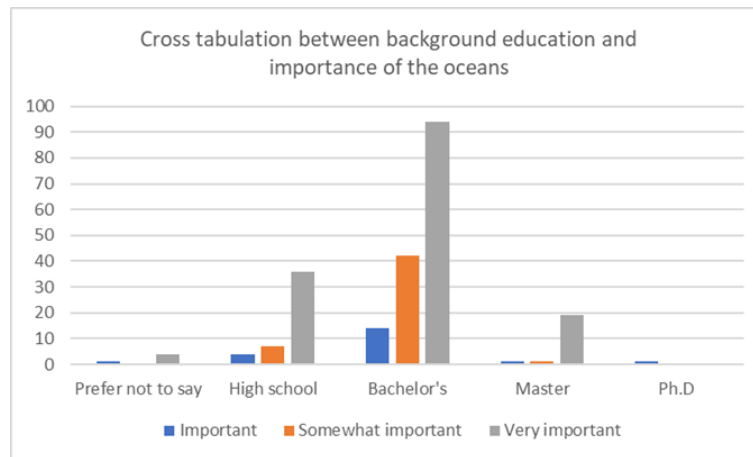


Figure 7 Relationship between background education and importance of oceans

#### 4.1.2 Group statistics and independent sample t-test

The tests were conducted from the data based on the focus of participants who know that the main oxygen production is from the oceans and the participants who does not know. The level of significance set in this test was 0.05. The only group that has statistically significance difference value is the group of “What was the quality of lakes, rivers, seas, or oceans you visited”. The group has significance value of 0.000, which is less than the level of significance set in the first place. This indicate that the value that we should be dealing with is equal variances assumed and the significance value (2-tailed) is 0.02, which is considered as statistically significance difference. The other groups' values do not indicate any statistically significance difference. Full analyzation of groups statistics and independent sample t-test can be found in Appendix B – Group Statistics, and Appendix C – Independent Samples T-Test.

## 4.2 Results

Statistical tests were used to discover if participants who live near water bodies and/or work or study in an environment-related sector have a better understanding and awareness of ocean pollution. The independent samples t-test shows results that there are no significance difference values, which means there is no pattern in the relationship between participants' location and background education with their awareness and understanding about the ocean pollution.



## Conclusion

Oceans are huge body of saltwater that is a habitat for many lives and provides many benefits to living organisms, include humans. However, human activities for instance, agriculture, industry, fisheries, water transportation, and many more are contributing to pollution in the ocean. The pollution creates many adverse effects to the oceans and living organisms that has symbiotic relationship with it. The effects of the pollution could harm and kill marine organisms, which could lead to major problem such as reduction of oxygen productivity. Marine pollution could also have impacts on human health, economy, and society.

The survey was conducted to understand people's awareness and understanding of the pollution in the oceans and the marine ecosystems. The responses of 226 participants indicate that they are not well aware and understand on how the oceans are important to human and what are the problems oceans are facing. This is a result of 226 participants, and it does not indicate understandings and awareness of global population as a whole.

Marine pollution and any other pollution are created from human. Thus, human should be the one who resolve the problems. Pollution developed to the point that the marine ecosystem is in danger over time, clearly, it would also take time to resolve and restore the oceans to be safe again. The pollution can be reduced starting at one person. Reduce the demand for new things as much as possible, reuse to cut the production, and recycle to lessen the amount of new raw materials. Certainly, one person would not help to resolve the whole problems. The cooperation and participation of government, policy makers, entrepreneurs, researchers, scientists, and every global citizen are needed to make changes happen.

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## Annex

### A) Questionnaire

The survey consists of 16 questions, including demographical questions and questions related to ocean pollutions. The questions are as follow:

1. What is your age?
2. Where is your home located?
3. What is your educational background?
4. If you are a university student, please specify your major or faculty
5. What is your job title?
6. Where do you think is the main source of oxygen production?
7. How often do you go to lakes, rivers, seas, or oceans per year?
8. What was the quality of lakes, rivers, seas, or oceans you visited?
9. Do you think oceans are important to human?
10. Do you think humans are responsible for the health of the oceans?
11. Do you think that human activities have an impact on the oceans?
12. To what extent do you believe that you are informed about local and global problems of the oceans?
13. In your opinion, which of the following activities created the most pollution to the oceans?
14. Are you willing to change or adjust your lifestyle to be more ocean-friendly and/or eco-friendly?
15. Based on your consumption, are you considering on buying sustainable and/or eco-friendly products?
16. If you are considering on buying sustainable and/or eco-friendly products, why is that so?

