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IJ **BESAR**

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Is The Oil Price a Determinant of Employment in Oil Intensive Romanian Communities?

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ABSTRACT

Purpose:

The purpose of this study is to determine the resilience of oil intensive Romanian communities to oil price fluctuations.

Design/methodology/approach:

The methodology employed is based on identifying the communities with the most extensive oil extraction activities using GIS (Geographic Information System) software. We then apply a random effects panel regression model to check the significance of the oil price as a predictor of employment.

Finding:

Results indicate that the effect of oil price fluctuations is limited, with employment in the identified communities following the national trend.

Research limitations/implications:

Unfortunately, our study is hindered by data availability issues and a short time series. Nevertheless, conclusions are backed by the country's characteristics – a diversified economy, integration with refining operations, and the presence of related manufacturing and services activities.

Originality/value:

The study adds to the existing literature by focusing on a mature region with a long history of hydrocarbon extraction activities. We argue that the study of local communities in mature regions is of great importance in the context of the ongoing energy transition, particularly of those located within the European Union.

Keywords:

random effects, oil,
resource curse,
local community

1. Introduction

Natural resource exploitation activities have been marred by controversy, being associated with environmental degradation. Apart from environmental issues, resource wealth has the potential to generate conflict and erode the quality of institutions by encouraging rent-seeking behaviour. Economic benefits have been questionable, both at national and local levels. Large fiscal revenues and other incomes related to extractive industries tend to present the same volatility as that of the prices of the commodities exploited. Resilience to this volatility is a key issue for both nations and local communities, with the latter potentially more vulnerable to shocks. The aim of this paper is to assess the resilience of Romanian local communities in oil intensive regions to oil price volatility. Specifically, we aim to find whether the oil price is a statistically significant predictor of employment in these communities. The interest in Romania is motivated by several factors. Firstly, this is a mature hydrocarbon region and such regions have not enjoyed great interest from the literature, as scholars prefer to focus on the effects of resource booms. Secondly, operations are extensive and geographically dispersed which helps in our assessment. Thirdly, the country is part of the European Union (EU) which has recently stated the boldest environmental ambition among all major economic

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powers. This is known as the Green Deal, the main goal of which is achieving climate neutrality at the EU level by 2050 (European Commission, 2019). Fossil fuels sectors active in the EU will undoubtedly be affected by these ambitions. This makes this analysis highly relevant for policymakers.

In order to provide additional context, the next section offers a short history of the oil and gas industry in Romania. We then highlight the relevant literature. The following section presents the data used and explains the methodology. We next discuss the results and finally we offer conclusions.

1.1 The Romanian oil and gas industry – a brief history

The history of oil and gas in Romania is a long one; dating back to before its establishment as an industry. It has been thoroughly documented by Ivănuș et al. (2008), based on which we offer only a brief overview.

The origins of petroleum's utilisation in the Romanian space are unknown, but archaeological evidence points to it having been used in ancient times for various purposes: e.g. heating, lighting, as a lubricant for wheels and axels, and for waterproofing ships. The first written documents to mention it date back to the 15th century. Activity ramped up gradually throughout the middle ages up to the 19th century, with oil exploited manually in pits or dug wells and used for roughly the same purposes as before.

1857 is the landmark year credited with the establishment of the petroleum industry in Romania. Three achievements make it stand out: the world's first industrial-scale petroleum refinery at Ploiești, the first oil production in the world recorded statistically (275 tons), and Bucharest becoming the first city in the world lit by oil lamps. In the following years, all aspects of the industry developed including drilling and geological research. The legislative framework improved with the 1893 regulation which allowed both locals and foreigners to obtain concessions, and the 1895 Mine Law. This paved the way for foreign capital to enter the Romanian oil industry and resulted in a veritable oil boom. By 1900 Romania was the world's third largest oil producer after the US and Russia, with 250 thousand tons. Foreign presence included J.D. Rockefeller's Standard Oil (1903), but by 1905 most of the capital in the Romanian petroleum industry was German (~64%), with only ~14% Romanian.

We should also note that oil contributed to Romanian mobility before the large-scale introduction of the automobile. Oil-burning equipment was developed for locomotives in 1887 and later perfected. This allowed locomotives to burn the low quality coal (lignite) extracted locally by mixing it with oil (Turnock, 2001).

The exploitation of natural gas began later, after it was accidentally discovered at Sărmășele (Transylvania) in 1908. This gave birth to the Romanian chemical industry with the use of the gas as a feedstock for nitrogen fertilizers (1917) and carbon black (1935). The latter is primarily used in the production of tires.

The Romanian petroleum industry declined in the aftermath of the Second World War, as much of the equipment was plundered by Soviet forces or used to pay war reparations to Moscow. It recovered and reached its peak during the communist regime, with connected industries, such as manufacturing of drilling equipment, also developing significantly. After 1990, the decline mirrored that of the rest of the economy with some stabilization and growth after 2000.

Despite being a top exporter of tools and equipment for the petroleum industry and participating in various international projects, the actual competitiveness of the industry during the communist era is hard to determine in the absence of a market economy along the entire value chain. As with the rest of the Romanian industry, the petroleum and related manufacturing sectors found themselves with outdated equipment and processes in need of "retechnologisation". Nevertheless, today the remaining facilities have benefited from investments and have proven resilient to the current low oil price environment. Many are still concentrated around the old oil-rich regions, notably Ploiești. Transylvania is still a key natural gas producing region and considerable resources have been identified in the Black Sea.

The purpose of this section has been to point out the existence of a range of connected industries and services that were developed over a long time span. We expect this to be beneficial for the resilience of the industry in Romania and to mitigate at least partially the negative effects of oil price volatility. Moreover, our analysis is focused on the most oil intensive communities. The results do not reflect the impact at the national level since operations are highly geographically dispersed, with some offshore in the Black Sea. Gas producing regions are also excluded from the analysis for reasons which will be detailed in a later section.

2. Literature Review

The controversial nature of the extractive sector is reflected in the academic literature, much of which portrays the availability of large volumes of natural resources as a curse. This is based in part on the "Dutch disease phenomenon" – the observation that a booming tradable sector has a negative impact on other tradable sectors. The name is connected with the discovery of the giant Groningen natural gas field in the Netherlands. The negative impact is explained by the movement of production factors to the booming sector, thus depriving the others of resources, and the inflationary effect of the positive income shock which affects the competitiveness of the other tradable sectors (Corden & Neary, 1982). The theory was backed by empirical evidence of a negative correlation between resource abundance and economic growth (Sachs & Warner, 1997), which was later criticised for failing to distinguish between resource abundance and dependence (Brunnschweiler & Bulte, 2008; van der Ploeg & Poelhekke, 2010). Nevertheless, the volatility of resource revenues resulting from that of commodity prices has been identified as one of the main

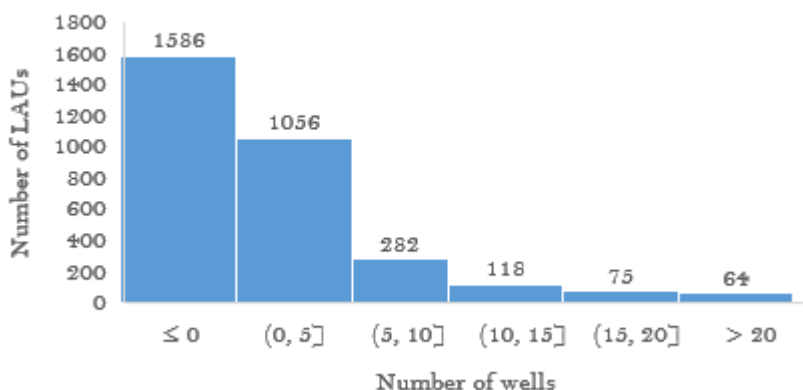
determinants of the poor economic performance of resource dependent countries, with the effect mitigated by the presence of developed financial institutions (van der Ploeg & Poelhekke, 2009).

Other explanations for the poor performance of resource dependent economies have been suggested. These include a propensity for rent-seeking behaviour and corruption, as evidenced in the case of Brazil (Caselli & Michaels, 2013), and conflict generation (Lujala, Ketil Rod & Thieme, 2007). This paper is concerned exclusively with the effects of volatility at the local level, but the potential for conflict and corruption in communities where resources are extracted may motivate future research. The reason we restrict our analysis to the local level is the fact that while Romania has extensive hydrocarbon exploitation operations, the country is at this time a net importer of crude oil and natural gas. It is in no way resource dependent and one would be hard pressed to classify it as resource abundant even factoring in newly discovered natural gas deposits in the Black Sea. This does not mean that volatility cannot manifest negative effects at the local level. Gramling & Freudenburg (1990) found the boom and bust oil price cycle to be responsible for the boom and bust of two oil dependent local economies in Louisiana. They made the important assertion that cases of extreme volatility may be impossible for communities to adapt to or prepare for.

3. Data, Methodology and Empirical Results

The assessment of the level of activity in terms of hydrocarbon extraction is based on the number of wells drilled between 1970 and 2018, with more wells in a given LAU (Local Administrative Unit) indicating a greater hydrocarbon intensity. The LAU is the European classification for the smallest administrative units, typically municipalities, towns and communes. Well location data was collected from Wood Mackenzie. Geographic Information System (GIS) software (QGIS) is used to determine the number of wells corresponding to each LAU. The map data containing all LAUs comes from the National Zoning and Real Estate Publicity Agency (ANCPI). The distribution of wells is shown in figure 1.

Figure 1: Distribution of oil and gas wells

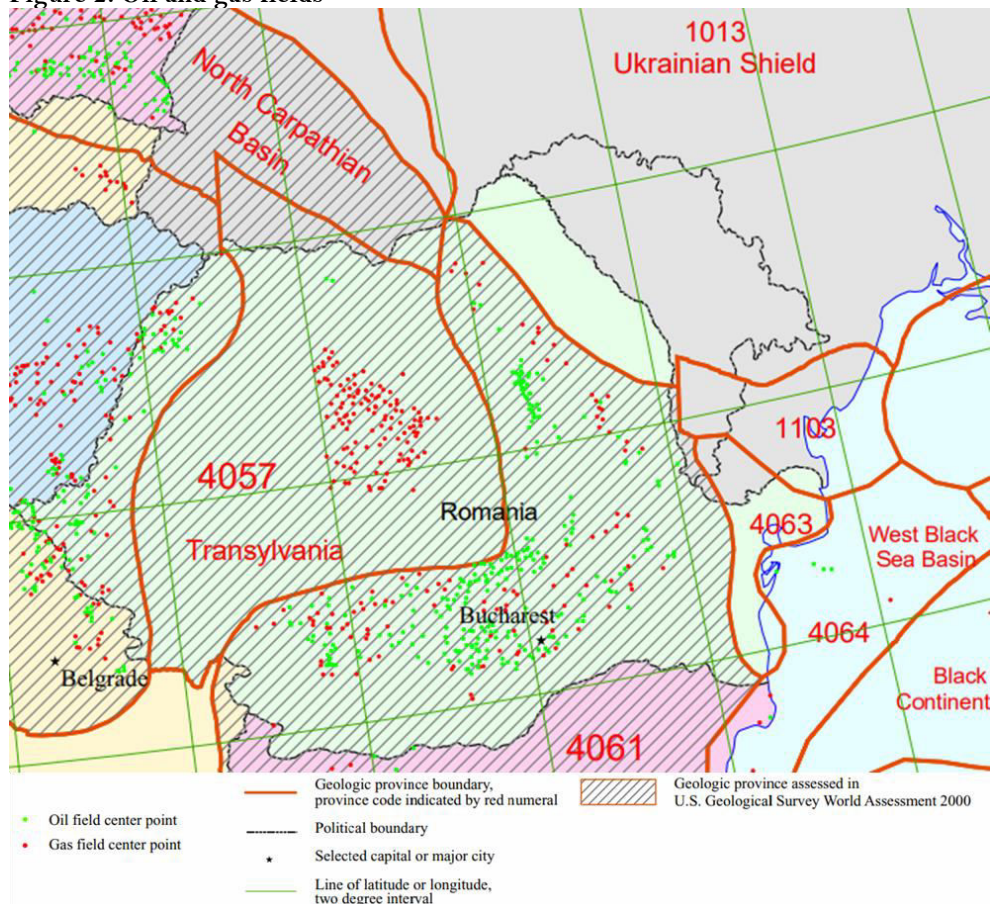


Source: Authors' calculations based on Wood Mackenzie data

We restrict our analysis to oil extraction activities for two reasons. The first is the fact that natural gas prices have been deregulated only recently. In the past, regulated prices were increased by the government with the goal of reaching the import price for Russian natural gas, according to a calendar agreed with the International Monetary Fund. In this context, local producers would be incentivised to increase production as much as possible. The second is the level of government ownership. Currently around half of the country's natural gas is extracted by Romgaz, a company in which the government has a 70% stake. A state-owned company may find it difficult to scale back its activities even in the context of a depressed market environment. This is because the government may have other objectives of a social or security nature, apart from profit maximisation.

Oil is extracted almost entirely by OMV Petrom, a subsidiary of Austrian OMV Group. The company was privatised in 2004, which is why we restrict our analysis to the 2004-2018 period. Some of the company's oil fields also produce natural gas, making a full separation between oil and gas areas impossible. Our identification strategy consists of correlating a geological map of Europe provided by the US Geological Survey (Pawlewicz, Steinshouer & Gautier, 2002) with the well location data. The map (figure 2) shows that oil fields are concentrated in the south, west and east. The centre (Transylvania) is exclusively gas producing and is thus excluded from the analysis. The selected LAUs are presented in figure 3. The oil rich LAUs are defined as those with more than 30 wells present, with the choice informed by the distribution presented in figure 1. Since there may be spillovers to adjacent communities, these are also included in the analysis and are identified using the same GIS software and map data. There are 117 LAUs in total.

Figure 2: Oil and gas fields



Source: Part of larger map provided by Pawlewicz, Steinshouer & Gautier (2002)

Figure 3: Oil intensive LAUs

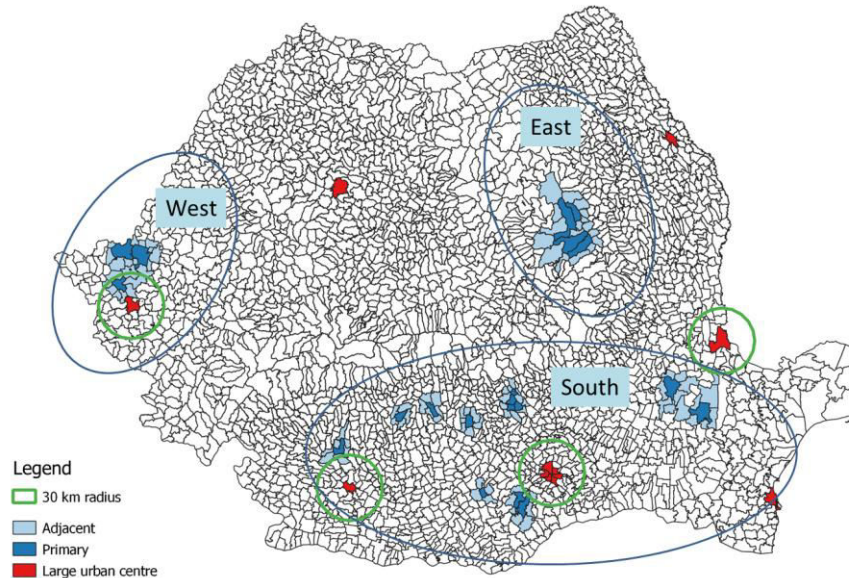


Source: Authors' calculations

Fixed effects panel regression models have been used extensively in the literature to study social and economic outcomes across resource rich local communities (for example by Drew, Dollery & Blackwell, 2018). This is an attractive approach since it uses dummy variables to control for the particularities of each cross sectional unit. However, Bell & Jones (2015) argue that random effects models are superior due to their greater flexibility in

allowing for the explicit modelling of these particularities. Indeed, in our case, the LAUs of interest are geographically concentrated, but the concentrations are located in different parts of the country. Furthermore, these are comprised of 3 municipalities, 10 towns and 104 communes; 17 are in close proximity (30 km radius) to large urban centres (population over 300 thousand); 20 are primary LAUs and the rest are adjacent. An overview of some of these parameters is provided in figure 4.

Figure 4: Oil intensive LAUs location and proximity to urban centres



Source: Authors' calculations

The time-invariant parameters identified above are modelled as dummy variables in equation 1. Apart from these, we add two extra independent variables: the national employment from the National Institute of Statistics and the oil price (Brent blend) from the BP Statistical Review of World Energy (BP, 2019). The oil price is lagged by one period based on the logic that price movements will start producing effects after a certain period. The rationale behind using the national employment is to account for countrywide effects such as the 2008 financial crisis. The variable of interest is the oil price as we aim to find whether it is a significant determinant of employment in the selected LAUs after accounting for all the other potential determinants. Variables are introduced in logarithm form.

$$EMP_{it} = \alpha + OIL_{t-1} + EMPT_t + M_i + T_i + W_i + E_i + P_i + U_i + \varepsilon_{it} \quad (1)$$

Where the subscript it represents LAU i and time t . EMP represents the number of employees for each LAU and each period. Data come from the National Institute of Statistics. For one LAU two values were missing and we estimated those through linear interpolation in order to obtain a balanced panel. OIL and $EMPT$ are the lagged oil price and national employment given subscript t as they only vary across time. M , T , W , E , P , and U are dummy variables pertaining to each LAU. These are time-invariant and are given subscript i only. The dummy variables are coded in the above-mentioned order, as follows: 1 if the LAU is a municipality, town, located in the west, east, is primary, is in proximity to an urban centre; zero otherwise. ε_{it} is the error term comprised of the LAU-specific (cross-sectional) and the combined cross-sectional and time series error components. α is the intercept.

The model was implemented in Matlab, using the Panel Data Toolbox developed by Álvarez, Barbero & Zofío (2017). Results are presented in table 1. The coefficients have the expected signs and the oil price is significant, albeit only at the 10% level. Of note is the lack of significance for the primary dummy, suggesting a lack of spillover effects. The east and urban proximity dummies are also not statistically significant. Unfortunately the R squared value is only 0.54 which would indicate that the model suffers from omitted variable bias. We also ran a fixed effects model with only the oil and national employment variables. The coefficients and levels of significance were similar, but the R squared value was much lower at around 0.1. The fixed effects approach is no cure for the lack of data.

Table 1: Panel model results (2004-2018 period)

Variable	Expected relationship	Coefficient	Standard error
OIL	Positive	0.0327*	0.0173
EMPT	Positive	0.6968***	0.1405
M	Positive	3.4356***	0.7169

	<i>(urban areas may be more economically diversified)</i>		
T	Positive <i>(same as above)</i>	1.9092***	0.4012
W	Positive <i>(the western region is typically more developed)</i>	1.0796***	0.3000
E	Negative/positive <i>(the eastern region is typically less developed, but the basis for comparison is the south which also contains less developed areas)</i>	0.1749	0.3003
P	Positive	0.3917	0.3003
U	Positive	0.0439	0.3346
α		-5.6203***	2.1784

Note: *p value < 10%; ***p value < 1%
Source: Authors' calculations

Since the time series start in 2004, the sample includes the 2008-2009 financial crisis, which might impact our findings. Figure 5 shows that the oil price and national employment have followed broadly similar trajectories before and during the crisis. These began to diverge significantly with the oil price rising rapidly and then collapsing in 2015, while employment grew steadily throughout the period. It would be useful to see whether or not this collapse had an effect on employment in the selected LAUs. To this end, we run the model on a restricted sample beginning in 2011. Results are presented in table 2.

Figure 5: Lagged oil price and national employment



Source: Authors' calculations

Table 2: Panel model results (2011-2018 period)

Variable	Coefficient	Standard error
OIL	-0.0221	0.0297
EMPT	0.3606*	0.2084
M	3.2858***	0.7190
T	1.8857***	0.4023
W	1.3307***	0.3009
E	0.0749	0.3012
P	0.3407	0.3011
U	-0.0137	0.3355
α	-0.2264	3.3094

Note: *p value < 10%; ***p value < 1%

Source: Authors' calculations

The oil price coefficient turns negative and loses its significance. National employment, type of LAU and western location are still significant. The R squared value increases slightly to 0.56. The conclusion we can draw from this is

that if there is an impact from the oil price, it is negligible at best. This does not mean that these communities are not at risk. Boom and bust cycles have been a staple of the oil industry for more than a century and the question for both companies and governments has been how to cope with this volatility. In light of the ongoing energy transition, the question should now become what happens when the resource loses its value completely? Oil has uses other than as a fuel source, such as a raw material for lubricants and various chemicals, but others may become useless. The low quality coal used in power generation is one such resource. Given mounting environmental pressure in Europe and throughout the world, this may occur sooner rather than later. Moreover, the geographical concentration of the resource makes local communities particularly vulnerable. Future research should concentrate on this area as a matter of urgency.

4. Conclusion

The purpose of this paper has been to assess the resilience of oil intensive Romanian local communities to the oil price. Specifically, we applied a random effects panel regression model to find whether or not the oil price is a statistically significant predictor of employment in these communities. We found that its impact is negligible or non-existent, but our model is limited by short time series and suffers from omitted variable bias due to data availability issues. Despite these limitations, the results are in line with the country's characteristics: a long history of hydrocarbon operations and the presence of related industries and services (e.g. refineries, equipment manufacturing). Nevertheless, extractive operations are faced with increasing environmental pressure, particularly those located in the EU. The energy transition is ongoing and will affect the entire energy industry. As noted previously, policymakers should not be lulled into a false sense of security since resilience to commodity cycles does not necessarily translate into resilience to a complete loss of value.

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Error Reports in the Light of Error Management Climate, Task Complexity and Personnel Composition

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ABSTRACT

Purpose:

This study examines the impact of error management climate, task complexity and personnel composition on the willingness to report errors in audit firms. A high willingness to report errors enables the proper conduction of an audit and is associated with higher organizational performance.

Design/methodology/approach:

We use a mixed-subject case-based experiment to gain data for the examination. A total of 53 certified Austrian and German auditors participated in the experiment. For the data analysis, we use descriptive statistics and nonparametric test procedures to investigate significant differences.

Findings:

The results indicate that a proper error management climate is the most important factor for the willingness to report errors, which increases under an “error-tolerant” error management climate. The impact of the error management climate is independent of the task complexity and the personnel composition in which the error occurred.

Research limitations/implications:

The use of other methods and approaches to manipulate and operationalize the variables may lead to different results.

Originality/value:

This study contributes to the growing body of literature on error management climate. The analysis of the influence of task complexity and personnel composition on the willingness to report errors offers new insights into the impact and significance of error management climate in audit firms.

Keywords:

Error Management Climate,
Personnel Composition,
Error Report, Audit Quality,
Task Complexity

1. Introduction

The purpose of auditing is to ensure that the financial information has been prepared in accordance with the relevant legal framework. Therefore auditors aim to identify any material misstatements in financial statements. During the audit process, errors can occur on the part of the auditors. These errors may lead to misstatements not being detected. As the accuracy of the audit process is of severe relevance for the audit quality, it is incredibly relevant to know which factors affect the audit team members’ willingness to report (hereinafter referred to as WTR) such errors. Specifically, in audit firms, the WTR should be high, as otherwise, high liability claims could lead to seriously high costs. So it is essential to create a motivating environment for the employees (e.g. Herzberg, 1968 or Steven, 2013) to increase their WTR. As reporting errors may cause severe costs (e.g. damaged reputation or increasing work effort), individuals consider a trade-off between costs and benefits of an error report (Zhao and Olivera, 2006).

Error management is especially designed to handle errors quickly and efficiently in order to reduce potential losses and damages (Li, 2016). Error management climate (hereinafter referred to as EMC) is a critical factor for the individual’s WTR. The EMC is the attitude of an organization concerning errors made by their members (e.g. Gold

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et al., 2014; Seckler et al., 2017). It mainly includes organizational error related methods, practices, and procedures (Li, 2016).

Task complexity is a crucial factor that influences audit quality and assessments made throughout the audit process (Bonner, 2008). Task complexity decisively determines the necessary resources and the necessary audit intensity (Bonner, 2008; Pummerer et al., 2013). Previous research examined the impact of the error type (mechanical vs. conceptual errors) on the WTR. Thus far, however, there is no study on the influence of task complexity on the WTR.

Joint-audits are discussed intensively with regard to audit quality and the audit process (e.g. Cameran et al., 2017; Baldauf and Steckel, 2012). As joint-audits and teamwork are becoming more and more common, errors may occur in different personnel compositions. So far, different studies examined the effect of the error originator (own vs. peer error, often called “whistleblowing”) on the WTR. Until now, however, no study has dealt with errors committed in different personnel compositions with shared responsibility.

Due to these insights, we aim to analyze the impact of (1) EMC, (2) task complexity, and (3) the personnel composition on the auditor’s WTR. We pay particular attention to the overall effect of EMC. Hence, the following research questions occur:

RQ 1: How does the error management climate (EMC) affect the willingness to report (WTR) in audit firms?

RQ 2: How does task complexity affect the willingness to report (WTR) in audit firms under different error management climates (EMC)?

RQ 3: How does the personnel composition affect the willingness to report (WTR) in audit firms with diverse EMC?

The study should lead to a better understanding of the impact of the EMC, task complexity, and different personnel compositions on the auditor’s WTR. Therefore, our contribution aims to identify existing differences in the WTR between self-made errors and joint errors in small and large teams towards task complexity and the EMC. The results should help to improve organizational structures in audit firms. Seckler et al. (2017) show that various levels and measures are needed to provide a suitable error management climate. This is also a link, our study refers to, as we analyze the effects of different factors. Further our paper brings new insights to the behavioral literature on error management climate by elaborating on the complementing and supplementing effects of task complexity and personnel composition.

The remainder of the paper is structured as follows: After the introduction, where the problem statement, the research motivation as well as the research questions are presented, a literature review with the development of the hypotheses on the covered topics is following. Afterwards, the research method and design, as well as the results, are described and discussed. The last section contains the conclusion and discussion of the findings.

2. Literature Review and Development of Hypotheses

2.1 Error Management Climate

Literature on error management from different disciplines consents that errors and their management are crucial to understand the quality of work (Seckler et al., 2017).

An error is defined as the unintentional deviation behavior from the original plans, objectives, rules or standards (Keith and Frese, 2011; Frese and Keith, 2015). Generally, preventing and handling errors is an important task to be fulfilled by the auditor and therefore is important for the auditor’s daily work (Seckler et al., 2017). In addition to handling errors, error management also contributes to the further development (learning from errors) and prevention of possible future errors (Li, 2016; Homsma, 2009; Frese et al. 1991). The EMC, as part of the organizational climate, is determined by the behavior and the treatment of an organization with errors of its members. In addition to the visible and outward value concept system, EMC also includes an internalized atmosphere (Li, 2016). Van Dyck et al. (2005) define EMC as the sum of norms and common practices regarding the organizational treatment of errors. They classify EMC into error management culture and error avoidance culture. Gold et al. (2014) have a similar approach and divide EMC into “open oriented” and “blame oriented”. An open oriented or error-tolerant (hereinafter referred to as “high”) EMC tolerates errors and accepts them as normal, humanly and an opportunity for further development. By contrast in a blame oriented or error-averse (hereinafter referred to as “low”) EMC, errors are attributed to incompetence and lead to blame and incomprehension (e.g. Gold et al., 2019; Gold et al., 2014; van Dyck et al., 2005).

Seckler et al. (2017) developed a multi-level model of error management and identify error management activities on the organizational, the team and the individual level. According to their model, a firm’s error management is dependent on organizational structures, the prevention procedures and resilient practices on the team level as well as the individual’s error orientation. They suggest considering the role of formal error prevention and the role of information error resilience as well as their interaction. Hence, various levels and measures are needed to provide a suitable error management climate. This is also a link, our study refers to, as we analyze the effects of different factors.

Non-audit related studies show a positive effect of EMC on the organizational performance (Wang, 2000), on the employee innovative behavior (Zhu and Pei, 2014), and on the knowledge socialization and internalization (Ma, 2015). Kaptein (2011) links a positive organizational climate to a high WTR. Gold et al. (2014) and Gronewold et al. (2013) show that the WTR increases when the EMC is error-tolerant (“high”). Hence, we develop the following hypothesis:

H1: If the EMC is error-tolerant (high), the WTR increases.

2.2 Task Complexity

In addition to person-specific and environmental-specific factors, task complexity in particular influences the quality, difficulty, and effectiveness of the audit process (Bonner, 2008; Stuart et al., 2012; Mala and Chand, 2015). Increasing task complexity harms the judgment performance of the auditor and requires a higher use of resources in order to achieve a corresponding audit quality (Haid, 2018; Bonner, 2008).

Due to the significant impact of task complexity on the audit, the question arises whether it also influences the WTR. So far, studies have concentrated only on the impact of the error type on the WTR. In this regard, Gold et al. (2014) used the categorization of Ramsay (1994) and divided errors in “mechanical” and “conceptual” errors. Mechanical errors relate to deviations from accuracy or completeness, and conceptual errors relate to complex, subjective, significant matters and the accuracy of the audit work as a whole (Gold et al., 2014; Ramsay, 1994). Gold et al. (2014) assume that in an open EMC, the superior is unlikely to invoke sanctions or attribute the error to incompetence. By contrast, a conceptual error might lead the superior assigning easier tasks to the auditor in order to gain more experience. The auditor may perceive this consequence as “punishment-like” and may, therefore, be worried about reporting a conceptual error (Gold et al. 2014). The results of the study by Gold et al. (2014) show that a high EMC results in an increase in the WTR of mechanical errors, but not to an increase of conceptual errors.

Based on the argumentation of Gold et al. (2014) regarding the influence of the error type on the WTR, we assume that errors occurred under a very complex situation can be assigned to inherent auditor incompetence, whereas errors under a situation with low complexity can be more assigned to sheer carelessness or inattentiveness. While the report of an error that has occurred in a simple task can lead to calls for mindfulness, the report of an error in high complex tasks can lead to degradation or mandatory additional training to withstand complexity in the future. Hence, reporting an error made in a high complex task may cause more costs than in a low complex task which leads us to the following hypothesis:

H2a: Increasing task complexity leads to a lower WTR.

Following the results of previous studies (e.g. Gold et al., 2019; Gold et al. 2014; Gronewold et al., 2013; van Dyck et al., 2005), we further assume that a high EMC increases the WTR of errors that occur in both highly complex and low complex tasks. Hence, we develop the following hypothesis:

H2b: If the EMC is error-tolerant (high), the WTR increases in highly complex and low complex tasks.

2.3 Personnel Composition

Previous studies find that the error origin affects the WTR. The study by Gold et al. (2014) examines the effect of the EMC on the WTR of errors caused by different error originators. It is examined whether the WTR of own errors differs from the WTR of errors made by other people (peer error). The results show that a high EMC increases the WTR of peer errors. Rathert and May (2007) find that individuals feel more comfortable when reporting self-made errors than reporting peer’s errors. Miller and Thomas (2005) show that the WTR is the lowest if they were committed by fellow team members. Teams consisting of members with equal positions tend to share the responsibility. Cameran et al. (2017) synthesize a broad body of literature and point out the relevance of auditing teams, their efficiency, dynamics and management for audit quality. That means, research on personnel composition is able to identify factors of how to improve audit quality.

Based on the different results of former studies on the influence of the error originator on the WTR, we assume that different personnel compositions have no impact in this respect. However, following the results of Gold et al. (2014), we assume that a high EMC will have a positive effect on the WTR in different personnel compositions, which leads us to the following hypotheses:

H3a: The personnel composition does not influence the WTR.

H3b: If the EMC is error-tolerant (high), the WTR increases for (a) self-made errors (b) joint errors of a small team and (c) joint errors of a large team.

3. Research Design

3.1 Research Method

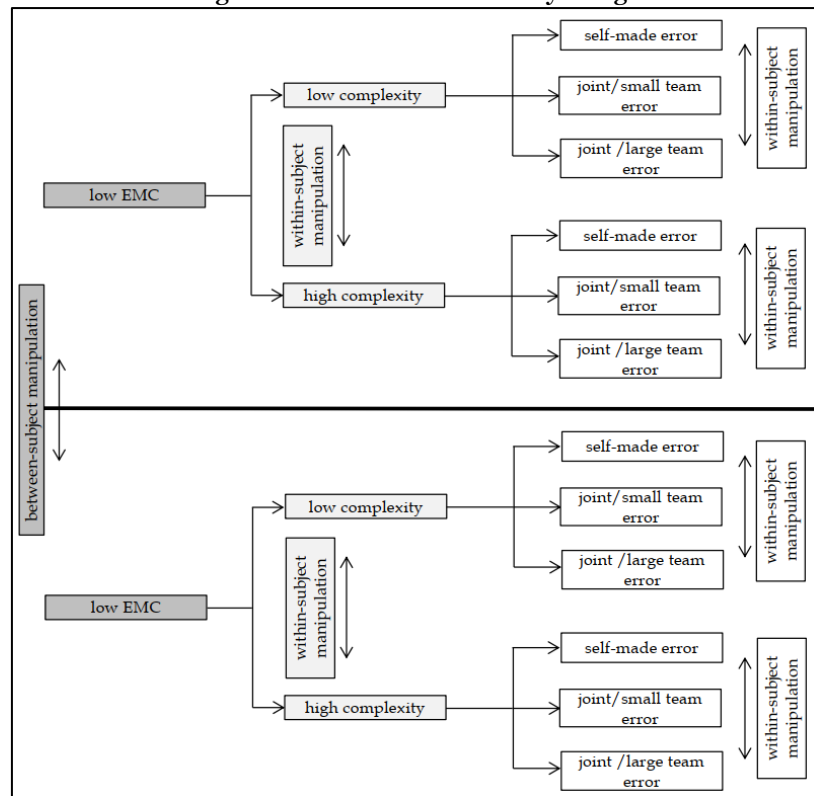
The empirical examination of the impact of the EMC, task complexity and the personnel composition on the WTR requires the measurement of all variables involved. We use a laboratory experiment to test the hypotheses. The choice of the research method enables us to control each variable and to measure the impact on the WTR in a standardized setting. This method seems to be most suitable as we can observe individual’s behavior in various situations, and it allows the identification of cause-effect-relationships. Furthermore, the direct measurement of the variables enhances construct validity compared to archival studies. Concerning the use, challenges and constraints of experimental accounting and auditing research see, e.g. Stefani (2003), Libby et al. (2002) or Smith (2011).

3.2 Study Design

We conduct the laboratory experiment in a 2x2x3 mixed-subject design to examine the impact of the EMC, the task complexity and the personnel composition on the WTR. Thus, the independent variables are the EMC, the task complexity and the personnel composition. The WTR is the dependent variable. We manipulate the EMC (low vs. high) between-subject; the task complexity, and the personnel composition were manipulated within-subject. The participants are randomly assigned to one of the EMC groups (low vs. high). The WTR of all participants is then

measured both in the low complexity manipulation and in the high complexity manipulation, each under three different personnel compositions (self-made, joint/small team and joint/large team error). Hence, we perform six measurements of the WTR per participant. Figure 1 illustrates the study design.

Figure 1: Overview of the study design



Hence, the participants are divided into two EMC groups (low vs. high); and the WTR of all participants is measured six times.

3.3 Data Collection and Manipulation Check

The experiment is divided into three parts. Part 1 contains the description of a fictitious audit firm. The participants work for this firm in the experiment. Part 2 consists of several scenarios in which errors have occurred. The WTR of the participants is measured in each of these scenarios. In the last part, we perform manipulation checks and collect demographic data.

The research design was pre-tested several times with students as participants before it was finalized. Data collection was carried out between 2016 and 2018. We use the data collection period and questions regarding the audit procedure as control variables. Manipulation checks are used to check whether the manipulation of the independent variables is recognized by the participants. The experiment was conducted using an online survey.

3.4 Participants

We have collected a total of 59 data sets. Six had to be excluded due to missing data. In order to ensure that the participants received and understood the information and descriptions correctly, manipulation checks were carried out on the EMC, the task complexity, and the personnel composition. All participants have passed the manipulation checks. In total, 53 valid data sets are used for the analysis.

The participants of the study are Austrian and German auditors with an active professional certification. Sixteen persons are female (30.19%), and 37 persons are male (69.81%). On average, the participants are 41.6 years old, and over 90 % (48 individuals) graduated from university. Thirty-six participants work for the Big Four. Twenty-nine participants were assigned to the high EMC and twenty-four to the low EMC.

3.5 Variables

3.5.1 EMC

For the operationalization of the EMC, we use the categorization and insights of Gold et al. (2014), Gronewold et al. (2013) and van Dyck (2005). We manipulate EMC (between-subject) using descriptions of two fictitious audit firms with different EMC. Thus, the participants receive either a description of a firm with low EMC in which errors are not tolerated or a description of a firm with high EMC, which tolerates errors and treats errors as an opportunity for development. We take the description of the two audit firms from the study by Gronewold et al. (2013). Table 1 contains the wording as it was used in our experiment.

Table 1: Manipulation of the EMC (Gronewold et al. 2013)

Low (error-averse) EMC	Open (error-tolerant) EMC
<p>The overall climate of your firm is noted for a “getting it right the first time” mentality that reflects the office managing partner’s own beliefs and actions.</p> <p>Errors in carrying out audit procedures are seen as signs of incompetence.</p> <p>You have seen top seniors coming from review meetings with managers and partners - after discussions about errors in files - almost in tears.</p> <p>Performance evaluations document such problems complicating possibilities for future promotion within the firm.</p>	<p>The overall climate of your firm is noted for an “open for improvement” mentality that reflects the office managing partner’s own beliefs and actions.</p> <p>Errors in carrying out audit procedures are seen as a natural part of learning.</p> <p>You have seen top seniors coming from review meetings with managers and partners - after discussions about errors in files - with a renewed determination to work harder next time.</p> <p>Performance evaluations do not document such Problems if the person does not repeat them or is making progress in addressing them, allowing possibilities for future promotion within the firm.</p>

The table above includes a description of the two different EMCs. Whereas the lower or error averse EMC is characterized by a “getting it right the first time” mentality, the open or error-tolerant EMC sees errors as a potential for improvement and essential part of learning.

3.5.2 Task Complexity

We manipulate the task complexity within-subject using descriptions of two fictional tasks with different complexity levels.

A classification for complexity divides it into (1) a subjective experience, (2) an interchange from task- and person-specific aspects and (3) into an objective sphere wherein principle measurable criteria are crucial for the degree of complexity (Gill and Hicks, 2006; Campbell, 1988). The classification following the (1) subjective psychological experience treats complexity as a measure of the potential that the task is perceived as complex by the individual (Gill and Hicks, 2006; O’Donnel et al., 2005) or defines task complexity in terms of the task’s potential to induce a state of arousal or enrichment in the individual (Gill and Hicks, 2006; Nordquist et al., 2004). Besides this subjective view, the classification based on (3) objective characteristics aim at different task inherent (objective measurable) properties like the number of alternatives and attributes (Gill and Hicks, 2006; Fisher et al., 2003) or the complexity of the underlying systems or environment (Gill and Hicks, 2006; Funke, 1991). Another objective criterion is the degree of uncertainty, whereas the complexity is classified by the unpredictability of the outset of the task (Kishore et al., 2004).

For manipulation of the task complexity, we make use of the objective task characteristics (1) task size, (2) amount of information to be processed and (3) number of solution paths (Gill and Hicks, 2006; Fisher et al., 2003; Campbell, 1988). We vary these attributes in the fictitious tasks. Table 2 contains the manipulation of task complexity.

Table 2: Manipulation of the task complexity

Low Complexity	High complexity
<p>For the audit of the <u>medium-sized company</u> "Maier GmbH" with <u>one headquarters and two production halls</u>, you have to audit the conformity of the sums in the balance sheet to check the conformity whether values have been transferred correctly.</p>	<p>For the audit of the <u>big company</u> "Big Business AG" the completeness and the correct valuation of the provisions and liabilities have to be checked. The company has <u>14 subsidiaries</u>, 9 of them are <u>abroad</u>. Besides its <u>headquarters</u>, there are <u>seven branch offices for the management</u> of the company as well as <u>11 factory halls and seven stores</u></p>

For our experiment, we used the above-mentioned descriptions. Thereby we manipulate (highlighted: underlined) the company size, the legal form of the entity, the number of factories and branches, the number of subsidiaries and internationality. Additionally, the tasks to be carried out is described shortly (highlighted: bold).

3.5.3 Personnel Composition

The third independent variable is the personnel composition. We examine the impact of self-made errors, joint errors in a small team and joint errors in a large team. The variable is manipulated within-subject inspired by Gronewold et al. (2013) through information about the personnel composition. The wording used is included in Table 3.

Table 3: Manipulation of the personnel composition (inspired by Gold et al., 2014)

Self-made	Joint (small team)	Joint (large team)
<p>You do a part of the task alone. A bit of time after the completion, you notice an error.</p>	<p>You do a part of the task with a colleague. A bit of time after the completion, you notice an error. Both of you are equally responsible</p>	<p>You do a part of the task within a group of 6 people. A bit of time after the completion, you notice an error. Everybody in the team is</p>

	for it.	equally responsible for it.
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Regarding the personnel composition, the participants were either working (1) alone, in (2) small teams or in (3) large teams. Errors that occurred were thereby either caused by (1) themselves (self-made error), (2) jointly by a team of two or (3) jointly by six people. This manipulation represents different personnel compositions that usually occur in auditing and may affect individual's WTR.

3.5.4 WTR

WTR is the dependent variable of interest. In line with former studies (e.g. Gold et al., 2014; Gronewold et al., 2013), we used the question, "Do you want to report the error to your supervisor?" to measure WTR. The variable WTR is measured using an 11-point Likert scale, which reached from "want to report the error" (1) to "do not want to report the error" (11).

4. Results

The characteristics of the collected data require nonparametric test procedures to investigate significant differences. Hence, we use the Mann-Whitney U test, the Wilcoxon rank-sum test, the non-parametric Friedman test (Janssen and Laatz, 2010). These tests compare data from different groups with each other and therefore show if the distribution is the same among the groups. The alpha value is 0.05 for all statistical tests. Regarding the dependent variable WTR, a lower number means a higher WTR.

4.1 Descriptive Statistics and Correlations

Table 4 shows the results of the descriptive statistics of the dependent variable WTR.

Table 4: Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
WTR	318	1.00	11.00	1.8239	1.47763

The average WTR across all 318 scenarios (6 scenarios x 53 participants) is relatively high at 1.824.

Table 5 summarizes the correlations between the dependent variable WTR and the independent variables EMC, task complexity, and personnel composition.

Table 5: Correlations (Spearman's Rho)

		EMC (1-OpenEMC; 2-lowEMC)	Task Complexity (1-lowTC; 2-highTC)	Personnel Composition (1-selfmade; 2- smallTeam; 3-largeTeam)
	Correlation Coefficient	0.321**	-0.029	0.036
WTR	Sig. (2-tailed)	0.000	0.604	0.519
	N	318	318	318

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

There is a significant positive correlation between the WTR and the EMC.

4.2 EMC

Despite the generally high WTR across all 318 scenarios (Mean = 1.824), the WTR in the high EMC scenario (mean rank = 135.52) is significantly higher than the WTR in the low EMC scenario (mean rank = 188.48), $U = 8355.50$, $p = 0.00$, $d = 0.32$. Table 6 summarizes the results.

Table 6: Mann-Whitney U test (WTR all scenarios)

		Ranks		
	EMC	N	Mean Rank	Sum of Ranks
WTR	open EMC	174	135.52	23580.50
	low EMC	144	188.48	27140.50
	Total	318		
Test Statistics ^a				
	Mann-Whitney U		WTR	8355.500
	Wilcoxon W			23580.500
	Z			-5.722
	Asymp. Sig. (2-tailed)			0.000

a. Grouping Variable: EMC

In an open EMC, the overall WTR of the participants is significantly higher than in a low EMC. Hence, we support hypothesis H1. In the following sections, we examine whether the impact of EMC on the WTR will persist even with different levels of task complexity and different personnel composition.

4.3 Task Complexity

We use the responses to the WTR of “self-made” errors¹ to analyze the impact of task complexity. For the examination of significant differences between low and high complexity, we analyze both the group with the high EMC and the group with the low EMC. Table 7 contains the results:

Table 7: Wilcoxon signed ranks test (high complexity vs. low complexity)

		Ranks		
		N	Mean Rank	Sum of Ranks
highEMChighTC ^d – highEMClowTC	Negative Ranks	2	1.50	3.00
	Positive Ranks	1	3.00	3.00
	Ties	26		
	Total	29		
lowEMChighTC – lowEMClowTC	Negative Ranks	4	2.50	10.00
	Positive Ranks	0	0.00	0.00
	Ties	20		
	Total	24		
Test Statistics ^a				
		highEMChighTC – highEMClowTC	lowEMChighTC - lowEMClowTC	
Z		0.000 ^b	-1.841 ^c	
Asymp. Sig. (2-tailed)		1.000	0.066	

a. Wilcoxon Signed Ranks Test

b. The sum of negative ranks equals the sum of positive ranks.

c. Based on positive ranks.

d. TC = task complexity

No significant difference between low and high complexity could be found for the group with the high EMC ($Z = 0.000$, $p = 1.00$) and for the group with low EMC ($Z = -1.841$, $p = 0.066$). According to the results, task complexity has no significant impact on the WTR. Hence, we reject hypothesis H2a.

We further investigate whether the EMC has an influence on the WTR at different levels of task complexity. Data analysis shows that both, at high task complexity and low task complexity, a high EMC leads to a significantly higher WTR than a low EMC. Table 8 summarizes the results:

Table 8: Mann-Whitney U test (EMC and task complexity)

		Ranks			
		EMC	N	Mean Rank	Sum of Ranks
low task complexity	high EMC		29	22.69	658.00
	low EMC		24	32.21	773.00
	Total		53		
high task complexity	high EMC		29	23.16	671.50
	low EMC		24	31.65	759.50
	Total		53		
Test Statistics ^a					
		low task complexity	high task complexity		
Mann-Whitney U		223.000	236.500		
Wilcoxon W		658.000	671.500		
Z		-2.544	-2.283		
Asymp. Sig. (2-tailed)		0.011	0.022		

a. Grouping Variable: 1=openEMC; 2=lowEMC

For low task complexity the results indicate a significantly higher WTR (mean rank = 22.69) for a high EMC than for a low EMC (mean rank = 32.21), $U = 223.00$, $p = 0.011$, $d = 0.35$. Also with high task complexity, the WTR of a high EMC (mean rank = 23.16) is significantly higher than the WTR of a low EMC (mean rank = 31.65), $U =$

¹ The data analysis was also carried out with the responses to the WTR of errors made in small and large teams for control purposes. The analysis came to the same conclusion as the analysis of the WTR of self-made errors. Therefore, the influence of task complexity on WTR remains constant across different personnel compositions.

236.5, $p = 0.022$, $d = 0.31$. Thus, the effect of EMC remains with different task complexity. According to the results, we support hypothesis H2b.

4.4 Personnel Composition

To examine the impact of the personnel composition on the WTR we use the responses to the low task complexity scenarios². We investigate the relationship in both the high EMC and the low EMC scenario.

The data analysis for the high EMC shows a slightly higher WTR for self-made errors (mean rank = 1.91) than for joint small-team errors (mean rank = 2.02) and for joint large-team errors (mean rank = 2.07). However, according to the non-parametric Friedman test of differences among repeated measures, these differences are not significant, Chi-square = 4.667, $p = 0.097$. Table 9 summarizes the results:

Table 9: Non-parametric Friedman test (Personnel Composition (high EMC))

Mean Rank	
Self-made error	1.91
Small-team error	2.02
Large-team error	2.07
Test Statistics	
N	29
Chi-Square	4.667
Df	2
Asymp. Sig.	0.097

Table 10 contains the results of the low EMC scenario. Also, in the low EMC scenario, the WTR of self-made errors is the highest (mean rank = 1.98). As in the high EMC scenario, the differences are not significant after the non-parametric Friedman test, Chi-square = 0.118, $p = 0.943$.

Table 10: Non-parametric Friedman test (Personnel Composition (low EMC))

Mean Rank	
Self-made error	1.98
Small-team error	2.02
Large-team error	2.00
Test Statistics	
N	24
Chi-Square	0.118
df	2
Asymp. Sig.	0.943

As predicted, data analysis shows no significant impact of the personnel composition on the WTR. Thus, we support hypothesis H3a.

We further analyze the impact of the EMC on the WTR in different personnel compositions. The results are shown in Table 11:

Table 11: Mann-Whitney U test: EMC and different personnel compositions

	Ranks			
	EMC	N	Mean Rank	Sum of Ranks
Self-made error	high EMC	29	22.69	658.00
	low EMC	24	32.21	773.00
	Total	53		
Small-team error	high EMC	29	22.53	653.50
	low EMC	24	32.40	777.50
	Total	53		
Large-team error	high EMC	29	22.90	664.00
	low EMC	24	31.96	767.00
	Total	53		
Test Statistics ^a				
	Self-made error	Small-team error	Large-team error	
Mann-Whitney U	223.000	218.500	229.000	
Wilcoxon W	658.000	653.500	664.000	

² The data analysis was also carried out with the answers of the high complexity scenario for control purposes. The analysis came to the same conclusion as the analysis of the low complexity scenario. Therefore, the influence of the personnel composition on WTR remains constant across different levels of task complexity.

Z	-2.544	-2.555	-2.348
Asymp. Sig. (2-tailed)	0.011	0.011	0.019

a. Grouping Variable: Personnel composition

Regardless of the personnel composition, a high EMC leads to significantly higher WTR. The Mann-Whitney U test shows significantly higher WTR values for self-made errors ($U = 223.00$, $p = 0.011$, $d = 0.35$), small-team errors ($U = 218.50$, $p = 0.011$, $d = 0.35$) and large-team errors ($U = 229.00$, $p = 0.019$, $d = 0.32$) in the high EMC group. Taken these insights together, we support hypothesis H3b.

5. Conclusion

The study examines the impact of the error management climate (EMC), task complexity, and the personnel composition on the auditors' willingness to report errors (WTR). In accordance with previous studies (Gold et al., 2014; Gronewold et al., 2013; Kaptein, 2011), we find that an open EMC leads to a significantly higher WTR than a low EMC. In addition, we show that this effect remains constant even with different task complexity or personnel compositions. Furthermore, the results provide evidence that task complexity does not affect the WTR. Contrary to our predictions, there is no difference between the WTR of errors occurring in high complex or low complex tasks. Thus, the error type (Gold et al., 2014; Gronewold et al., 2013) and not the complexity of the task in which the error occurred is decisive for the WTR.

Although the data analysis shows that the WTR is highest for self-made errors, the differences to the WTR of joint-errors are not significant. Hence, the personnel composition has no significant impact on the WTR in so far as responsibility is shared.

The results lead to the conclusion that the EMC is substantially more important for the WTR than other influencing factors such as task complexity or personnel conditions. The implementation of an error-tolerant and effective EMC can counteract negative impacts on the audit process (e.g. task complexity) because errors are detected more quickly and potential losses and damages can be avoided. The positive effects (e.g. learning effect) of an error-tolerant EMC can lead to an increase in the overall quality of the audit process. This is in line with the broader scope of the newly drafted ED ISQM 1 (will replace ISQC 1) and the draft of ISA 220 (Revised).

It is plausible that some limitations might have influenced the results obtained. First, the manipulation of EMC was very obvious which, as discussed in previous studies (e.g. Gold et al., 2014), might lead to potential demand effects. Second, we used objective task characteristics for the manipulation of task complexity. Using different characteristics or different approaches regarding the operationalization may lead to different results. Finally, as in all experimental research papers, we are confronted with the usual caveats. Hence, in addition to a standardized introduction into the investigation, we included control variables (namely: age, sex, experience, education, Big4/non Big4, various control questions, duration) to control for potential threats to external and internal validity of the experiment (e.g. Smith, 2011).

The study has pointed out questions in need of further investigation. We suggest that future research should concentrate on individual characteristics and their influence on the WTR. In particular, risk preference, self-efficacy or experience should be mentioned here. Further research is also required to examine the impact of regulatory frameworks on the WTR. Besides in terms of personnel composition also the effects of different roles (juniors vs. seniors) could be of relevance to be further elaborated on. As Emby et al. (2019) show, also the in-team relationships between the acting people as well as the communication culture in these teams may affect their error reporting behavior. Hence, the personnel composition might be of interest to be analyzed in more depth. Further, also the liability situation would be particularly interesting in this context. Besides, the impact of incentives and remuneration on the WTR might provide an important area for future research.

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Rural Subsidizes and Revealing Moral Hazards

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ARTICLE INFO	ABSTRACT
Article History	Purpose: At the end of the year 2013, the Greek Government to encourage the establishment of new enterprises in the agrifood sector announced the application of the program “New Farmers Installation within the financial framework of CAP”. As a consequence, almost 8.000 young people benefited from this program as they received subsidizes up to 20.000€ to establish a new agro enterprise. This work focuses on the examination of the results concerning those new entrants’ enhancing of production of agro-products. Moral hazards have been created as some of them take advantage of the inefficacy of the program’s control procedures and they contribute almost nothing to the final agro product.
Received	Design/methodology/approach: The paper is divided into 2 parts. The literature of the theoretical perspective of the Greek economy is extensive. Taking under mind that Greece is a part of the European Union on the theoretical part are examined CAP’s subsidizes consequences on Greek Agriculture. Then the “New farmers’ installation” program is briefly presented. The theoretical part ends with references to moral hazards creation and corruption in Greece. In the second part, the empirical results presented. The research took place during September 2016 using a formalized questionnaire. The statistical analysis included the estimation of frequencies, percentages, and means, as well as coefficient correlations.
Accepted	Finding: According to the findings, it has been supported that financial programs directed to agriculture should be monitored for disbursement. Otherwise, these programs cannot achieve their targets such as the increase of in productivity in the agricultural sector. Moreover, the results of the study are similar to previous researches as Moral Hazards have been created.
JEL Classifications	Research limitations/implications: Taking for granted that the lack of strict controls over the disbursement contributed to the increase in moral hazards, it is proposed that providing subsidies should be accompanied with disbursements only after strict controls. It is also suggested a combination as providing subsidies should only take place on the grants that the amount spent exclusively for rural enterprise liabilities
Q14	Originality/value: This paper provides the impetus for the study of moral hazard on rural subsidizes and constitutes primary research

Keywords:
Financial Marketing,
CAP,
New farmers,
Serres,
Greece

1. Introduction

After four decades, the implementation of the Common Agricultural Policy in Greece has not achieved its main goals. The production of agricultural products despite the huge amounts of subsidizes has been steadily decreased since 2007.

Moreover, at the same time, subsidizes on set-aside land have been increased. New CAP, with some improvements, aims to alter them to “farmers of the armchair”. It is an under examination issue whether Greek agriculture failures. So, the implementation of a structural program in agriculture aims to increase productivity and the total production of agricultural products.

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This paper is divided into two parts, the first theoretical and second the empirical one and attempts to examine moral hazards creation on new farmers on R.U. Serres.

Serres, located in Central Macedonia-Greece close to the Bulgarian and F.Y.R.O.M. borders, can be characterized as a typical rural area. Serres is considered to be the poorest Greek Prefecture, so therefore, the consequences on Gross Domestic Product from the implementation of CAP in this area is are considered necessarily negligible. Also, it is worth noted that there are no sufficient controls and "farmers" take advantage of it.

The research examined the subsidies that "new entry" farmers received to establish an agriculture Enterprise.

Nobel laureate authors as Stiglitz and Krugman have referred to CAP and its impact of on South European countries. Thus, there are many relevant references for European policies on agriculture. Additionally, data from the Hellenic Statistical Authority and other institutions have been analysed to depict crisis' reverberations on the one hand and CAP's consequences on the other, on agricultural production in Greece and particular on the local economy.

Furthermore, the above - mentioned authors analyzed moral hazards creation in other scientific fields, as the labor market and the banking system. Generally, moral hazards are more likely to occur where there are not sufficient controls. In a more general way and according to the recommendations of the reviewers in terms of the creation of Moral Hazards due to the lack of sufficient controls after the funding, we can enrich the current point, basing on the relevant literature, as follows, Edward T. Merkel (2009), Balomenou (2019):

- The Moral Hazard is revealing in Asymmetric Information and Financial Contracting. They result from the Adverse Selection, which is caused by asymmetric information before a transaction is consummated. More specifically, the Bank loan officer cannot easily distinguish the difference between high and low-quality borrowers. Part of the loan officer's job is to use credit analysis to uncover relevant information. Thus, Asymmetry of information is particularly acute for small firms since there is little publicly available information. As a result, loans are often structured so that borrowers can signal their true quality based on the types of loans they will accept. The arising question is whether the owner is willing to pledge personal outside assets as collateral or offer a personal guarantee? And if the owner is unwilling, this would signal that they are uncertain of the future.
- Under these conditions, the Moral Hazard occurs after the loan is made. Loan contract may give the firm the incentive to pursue actions that take advantage of the lender, subject of the bellow:
 - If the firm does very well, the owner does not pay more to the issuer of the bank loan
 - If the firm does poorly, the owner's liability is limited to the terms of the loan

Therefore, owners disproportionately share in the upside of increased risk, while lenders disproportionately share in the downside.

Finally, in many cases, there are common causes of revealing moral hazards creation.

Problems new entry farmers face as their rural enterprises are typical start-ups are also examined in this research. Porter (1998), and Pissaridis (cited on Piperopoulos 2007), have studied new and small enterprises problems.

Furthermore, in this research, it is examined innovating and traditional farms and their different trends on moral hazards creation.

In the second empirical part, empirical research was conducted by the means of a structured questionnaire. The questionnaire comprised of 156 items measured in 7 point Likert scale. Data selection was realized using a convenience and snowball sampling method during September 2016.

To participate in the research some criteria were used: the participant had to be a new entry farmer and received a subsidy for establishing their agricultural enterprise. In total, 156 valid questionnaires were gathered, a satisfactory sample size for the purposes of the research as well as the main statistical analysis utilized (Hair et al., 2010). Data analysis included descriptive statistics standard deviation, the coefficient of variation, coefficient of correlation and profile analysis. Data analysis included standard deviation of descriptive statistics, coefficient of variation, correlation coefficient, and profile analysis.

2. Literature Review SUBSIDIZES IN GREEK AGRICULTURE

2.1 "Common" Agricultural Policy

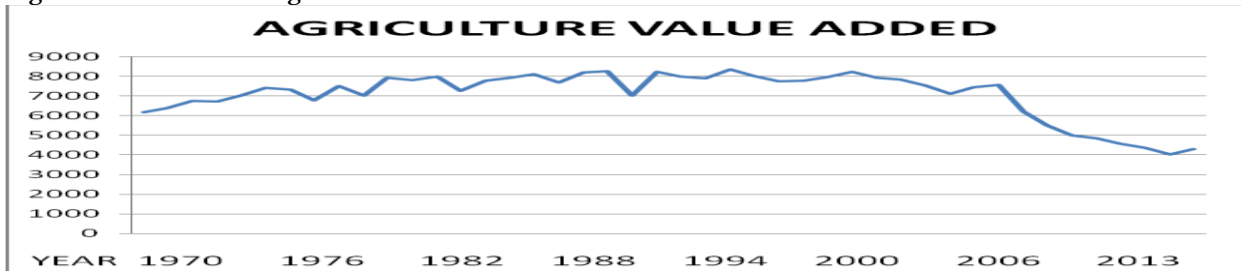
"The EU's controversial Common Agricultural Policy accounts for 40 percent of the budget" (Stiglitz, 2016, pp372), and CAP is the only "common" remaining characteristic of the European Union. The fact that the recession in Greece returned to depression is –partly- a result of Greek agriculture's failure (Kirkyliis & Semasis, 2015). Increasing deficits in Greece on one hand –versus surplus in Germany, on the other hand, are part of European Trade Imbalances. Nobel nominated P. Krugman refers: "After the creation of the euro, the GIPSI economies (Greece, Ireland, Portugal, Spain, Italy) moved into huge deficits in their current accounts, a broad measure of the trade balance. Meanwhile, Germany moved into a huge matching surplus... That widening spread is at the heart of Europe's problems." (Krugman, 2012, pp91

As Greek agriculture is characterized by deficit, the volume of production has a strong impact on the Greek economy. Nobel awarded J. Stiglitz refers: "The way Europe chosen to get rid of trade deficits is to put the economy into depression"(Stiglitz, 2016, pp118). He also makes a comparison on of real cumulative CDP Growth in several European countries. He refers: "But looking within the eurozone, we see the pattern of divergence. While eurozone countries have not done well, some have grown modestly, while others like Greece have had calamitous declines".

Analyzing exports “the 2010-2015 average growth rate for the volume of exports of goods and services: Cyprus, 1.75 percent; Greece, 1.18 percent; Ireland, 6.40 percent; Portugal, 4.68 percent; and Spain, 5.42 percent;” (Stiglitz, 2016, pp.381). Even in comparison to the south-Europe countries, Greece has the worst performance. Thus, disparities in the EU have increased since the onset of the crisis. According to Stiglitz: “...enhanced divergence within Europe. The periphery countries became debtors with Germany as the great creditor”(Stiglitz, 2016, pp.119). European countries have not achieved economic or social convergence.

Additionally, according to Kyrkilis & Semasis (2015), the decline of the Greek agriculture is not another outcome of the recent financial crisis but rather the continuation of a long trend starting right after Greece set the priority of industrialization in development strategy. Figure 1 depicts the Evolution of Agriculture Value Added (AVA) from 1970.

Figure 1. Evolution of Agriculture Value Added from 1970 to 2013 in Greece

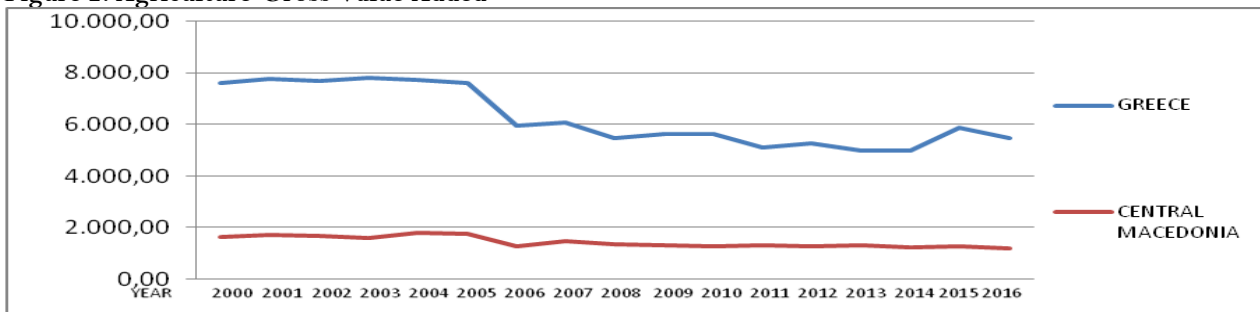


Source: Kyrkilis & Semasis (2015)

Agriculture -GVA in Greece -and in region of Central Macedonia- had a sharp decline since 2006. Furthermore, according to the International Monetary Fund, Greece is the European Country with the largest output gap.

Apart from the crisis consequences, the reduction in agricultural production -due to CAP- is great since 2006. “It is worth referring to the fact that Gross Value Added at Agriculture has dramatically decreased since 2006. Until 2006, subsidies had been connected with agricultural production. Since 2006 each farmer has received a decoupled payment according to the production in previous years. From 2006 to 2013, Greek farmers received subsidizes due to their past production. As a consequence of the payment decoupling of Greek farmers reduced production volumes. Besides that, cultivated land has been reduced by the installation of photovoltaic systems on fields. (Balomenou & Maliari & Lagos, 2012, pp8)”. Figure 2 below present’s data provided by the Hellenic Statistical Authority:

Figure 2: Agriculture-Gross Value Added



Source: Hellenic Statistical Authority

2.2 New farmers’ installation

“In a purely agrarian economy, as more people leave, there is more land per worker, so incomes rise. This limits the extent of migration” (Stinglitz, 2016, pp.380). To reduce youth migration in Greece, and improve competitiveness the Ministry of Agriculture and Food under the framework of the Rural Development Program 2007-2013 “Alexandros Baltatzis”, taking into account the specific needs of Greek farmers, announced on December 2013 the program “Measure 112-New Farmers Installation” (Governmental Papers 3254/B’/20.12.2013 & 3255/B’/ 20.12.2013). The main targets were the following: a) to boost Greek agriculture competitiveness, b) to improve the environment c) to develop the country’s rural areas. Up to 8000 new farmers benefited through financing support supplied by the European Agricultural Fund for Rural Development (EARFD). Table 1 presents the distribution of the budget per Greek region.

Table 1: New farmers’ installation -Announcement December 2013- Distribution per Region

GREEK REGIONS	Amount of Subsidizes (in Euros)
EAST MACEDONIA & THRACE	12.600.000
CENTRAL MACEDONIA	32.400.000
WEST MACEDONIA	6.300.000
EPIRUS	5.100.000
STEREA GREECE	5.900.000
THESSALY	13.600.000
IONIAN ISLANDS	1.400.000
PELOPONNESE	14.700.000
WEST GREECE	15.500.000
NORTH AEGEAN	7.400.000
SOUTH AEGEAN	1.600.000
CRETE	22.800.000
ATTICA	700.000
TOTAL	140.000.000

Source: Ministry of Agriculture and Food

Each new farmer has received a minimum of 10.000 up to a maximum of 20.000€. The amount of credit was estimated as it is depicted in table 2.

Table 2: New farmers' installation -Criteria

Criterion		Amount of subsidizes
Permanent residence	Mountainous	7.500
	Semi-mountainous	5.000
	Lowland areas	2.500
Kind of production	Livestock	7.500
	Plant production	7.500
	Livestock & plant production	5.000
Future income	> 120% standard income	5.000
	80%-120% standard income	2.500

Source: Ministry of Agriculture and Food

Mind that 70% of the above mentioned amount was distributed on in December 2014, it is figured that there were distributed about 12000 Euros per new farmer. The rest amount has not been distributed to all new farmers until now (January 2019).

New farmers' enterprises are start-ups. Thus, they face all problems start-ups face. Porter refers: "As a result of newness, the high level of uncertainty, customer confusion, and erratic quality, the emerging industry's image and credibility with the financial community may be poor" (Porter (1998) pp. 223).

Stiglitz adds that especially in Greece and other crisis countries new entrepreneurs face even more obstacles. As new farmers are micro enterprises (Nobel nominated) Pissaridis (cited in Piperopoulos (2007) noticed "in every type of economy, smaller enterprises are punished by facing higher interest rates than bigger enterprises", Stiglitz recently added: "Important credit channels, especially to small and medium-size business were clogged" (Stiglitz 2016, pp. 170) and "Decreased availability of loans to small and medium size enterprises further diminishes opportunity on the crisis and near-crisis countries, encouraging even more migration" (Stiglitz (2016, pp135).

It is worth noting that the first disbursement of this particular program - 60% of the total budget - have been received by the farmers without any control.

The rest 40% is given gradually after strict controls. It should be noted that 60% of the above-mentioned amount has been distributed in December 2014-, a few days before Greek national elections, whereas the allocation of the balance (et. 40%) is pending till now. The under examination issue refers only to the first disbursement (December 2014).

2.3 Moral Hazards revealing and corruption

Moral hazards arising in other scientific fields have been thoroughly studying since the early nineteen's. Patrick Rey and Joseph E. Stiglitz, "Moral Hazard and Unemployment in Competitive Equilibrium," 1993 working paper was the basis of Nobel Prize that was awarded to J. Stiglitz (Stiglitz, 2016, pp.382).

From its nature, the Greek macro and microeconomic environment are affected by the political clout. In such an environment corruption rises. Indicatively we are presenting a relevant part of Stiglitz's recent work as Stiglitz (2016) refers "obviously, corruption can make matters worse, with a corrupt financial sector paying kickbacks in one form or another to corrupt politicians or their political parties". (Stiglitz, 2016, pp.112).

Since the main characteristic of “New farmers installation Program” is the lack of controls on the first disbursement, the current research examined whether “new farmers” produced or not agricultural products or they have just received subsidizes taking advantage of the fact that no strict controls are foreseen under this framework.

It should be noted that in similar programs implementing in other European countries legally are not imposed controls before the first disbursement. However, due to specific structural malfunctions of the Greek economy, specific controls regarding all the phases of the assessment (ex-ante, ongoing and ex-post) should be foreseen. Coming to an end, the efficient ethical performance of the “New farmers installation Program” is questioning.

3. Data, Methodology and Empirical Results- RESEARCH ON LOCAL NEW FARMERS

3.1 Data

We addressed only to those farmers who received the new farmers’ installation subsidize. The participants in the research were 156 new farmers from 702 who benefited from this program in the Regional Unity of Serres. The question-based research was conducted in September 2016, almost two years after new farmers’ entrance. All participants were between 18 to 40 years old. The population of the research was the beneficiaries of the Measure 112- New Farmers Installation. The sampling method followed in this research was convenient sampling

3.2 Methodology implementation- Descriptive statistics and correlations

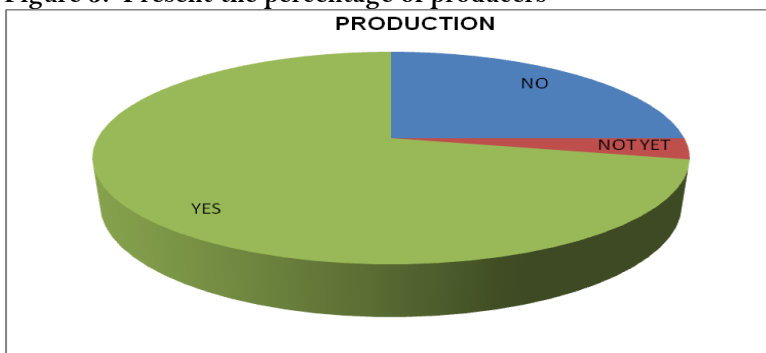
The results of the research have been analysed using the SPSS statistical program. Descriptive statistics have been employed to calculate the main statistical measures, average, standard deviation, coefficient of variation and coefficient of correlation. It is worth noting that our empirical research was conducted three years after the announcement of the program.

3.3 Empirical Results

The main question in this research is whether or not new farmers produce agricultural products, cultivate their land and sell their products or not. This question separates producers from those who just receive subsidizes

In figure 3 below, we present the percentage of new farmers that proves they have cultivated and sold their products.

Figure 3: Present the percentage of producers



The majority (75%) of participants have decided to work in fields. Five new farmers have not yet sold their products as they have planted Cherrie trees and vineyards. These participants have been included in the research results, as producers.

Nowadays “Competition based on innovation is characterized as strong competition. On the other hand, Competition based on low cost policy is characterized as weak competition” (Observatory of European SMS’s, 2007).

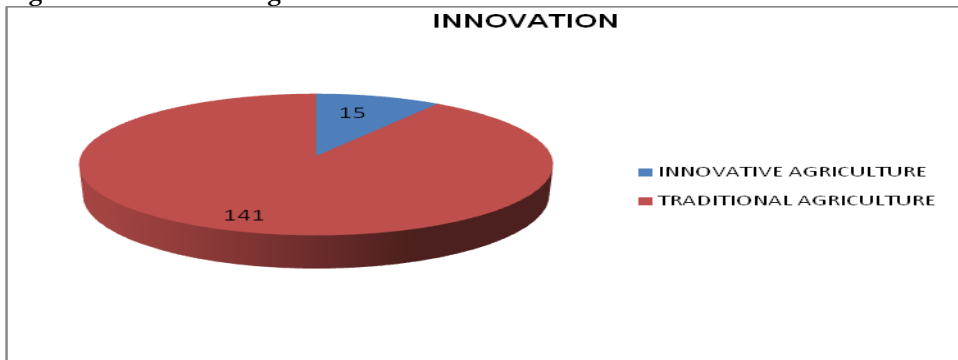
In table 8 below is presented the percentage of innovative crops compared to traditional. The greatest biggest problem in Greece, during this depression, is the lack of innovation plans. The great importance of innovating projects and plans in Greece has almost completely been neglected even in recent years. According to Piperopoulos (2007) “Greek’s financial strategic appears to have no connection to innovating plans.” Statistical data for the years 2000-2005 presented that Greece failed from the 14th position in competitiveness in Europe (15 countries) to the 23rd position (25 countries). It has been predicted that Greece would probably be at the same level of innovation with other European countries in 40 years.

In addition, Mr. Christos Meglas, president of Serres Chamber of Commerce said that “Nowadays our products due to the elimination of distances may possibly approach to markets that are situated far away even to the remotest areas at a low cost. This is globalization in real terms and that we need to do is to fight for and innovate so as to survive in the future.”

In the present research, innovating crops have been defined crops such as aroni, mushrooms truffle, oregano, walnuts, lentils, sesame, peanuts, organic trefoil and organic vegetables. Since it has been recognized that organic farming in

Greece is still, unfortunately, in the embryonic stage of development, Greek organic farm enterprises can be considered as innovative ones as they produce differentiated products.

Figure 4: Innovative agriculture



On the following tables 5 & 6 it is presented the differentiated approach towards production between innovative and traditional farmers.

Figure 5: Production of innovative and traditional farmers

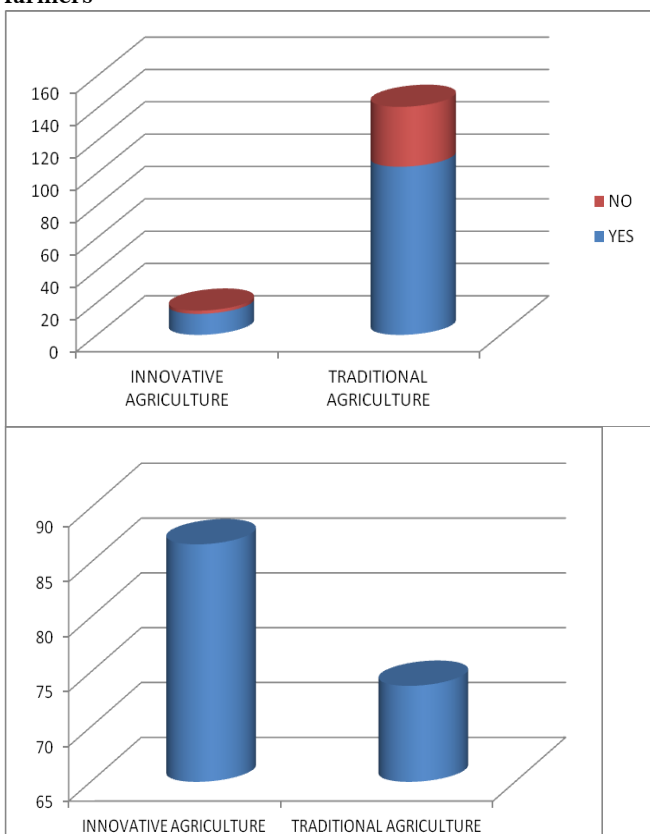
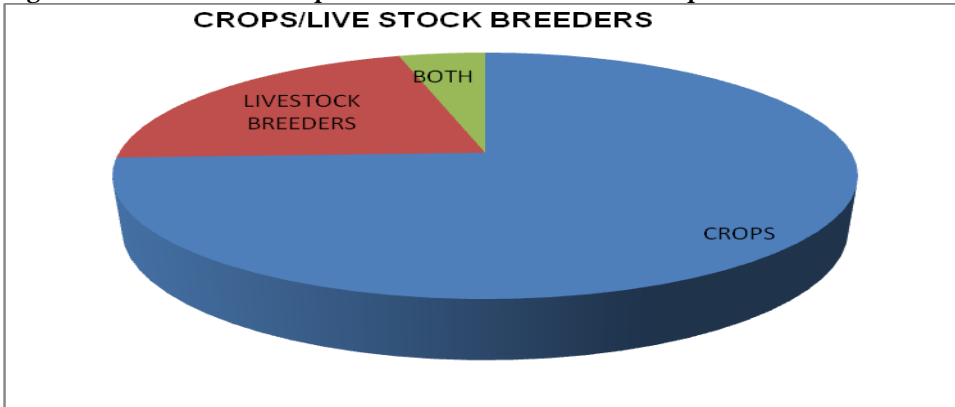


Figure 6: Percentage of Production of innovative and traditional farmers

According to the results – above graphs - innovative farms produce more (85%) whereas traditional agricultural farms production is 71%; the vast majority of farmers that have been defined as innovative are producers. In contrast, almost a quarter of the farmers that have been defined as traditional do not produce at all. Table 7 presents the production sectors of the New Farmers participants. Results showed that only a small proportion of them are stockbreeders while the vast majority cultivate plants and trees.

Figure 7: Farmers with crops/ livestock breeders/both crops and livestock



In the following tables 8 & 9, it is presented the differentiated approach towards production between farmers with crops, livestock breeders and farmers with both crops and livestock and their percentage. Livestock breeders have near zero possibilities to create moral hazards as they all produce milk or meat.

Figure 8: Production of farmers with crops/ livestock breeders/both crops and livestock

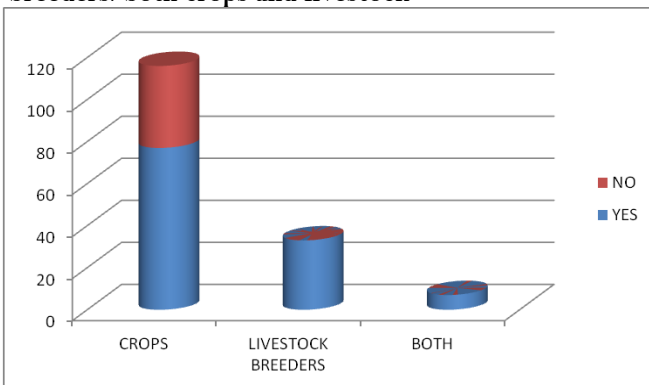
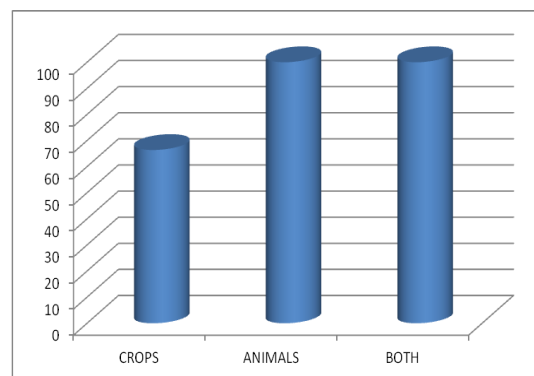
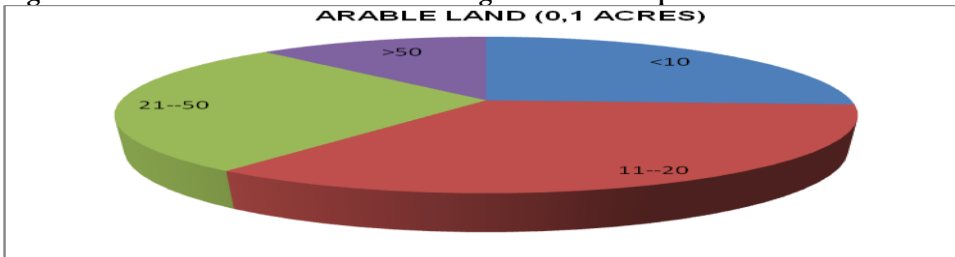


Figure 9: Percentage of farmers with crops/ livestock breeders/both crops and livestock



Taking as a granted that livestock breeders have near zero possibilities to create moral hazards, on in the table 10 below it is presented farmers' distribution according to their size. The majority of new farmers' arable land is just 1-5 acres.

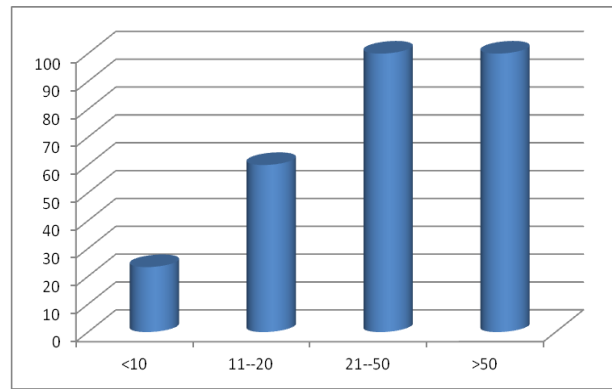
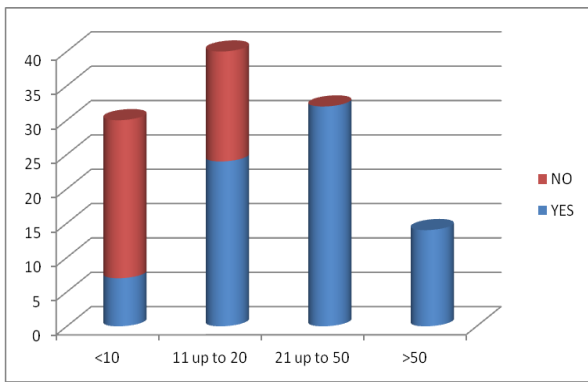
Figure 10: Farmers distribution according to rural enterprise's size



In the following tables 11 & 12, it is presented the multiple approaches approach towards production according to rural enterprise's size.

Figure 11: Production of farmers according to rural enterprise's size (in 0,1 acres)

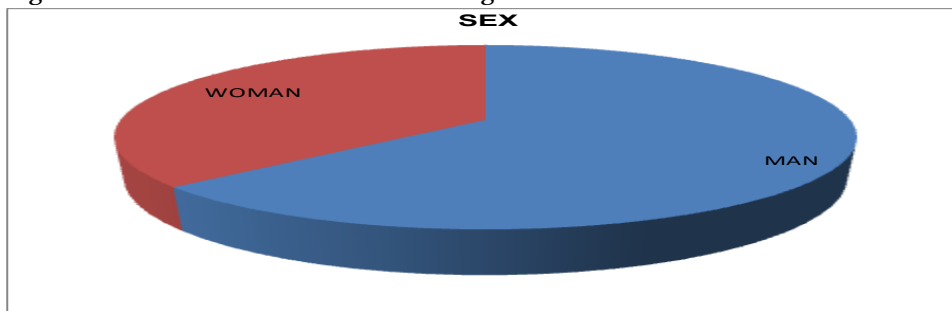
Figure 12: Percentage of farmers according to rural enterprise's size (in 0,1 acres)



Moral hazards' creation depends on the enterprise's size. Large farms appear fewer possibilities to create moral hazards. According to previous researches on enterprises activated on the industry, commerce, and services (Balomenou, Maliari, Semasis 2017) "firms at the average size lurks the greater moral hazards". Consequently, moral hazards are unlikely to be created in large farms. On the contrary, less than 30% of small farmers who cultivate less than 1 hectare can prove that they produce and sell agricultural products. These young people decided to receive subsidies up to 20.000€. They did not invest on equipment and the majority "cultivate" vegetables such as green beans or spinach, because the main condition to receive subsidies is to "cultivate" 0,7acres of vegetables. In general, after interviewing them, they declare that they will abandon agriculture five years later when the program New farmers Installation will be completed. Thus they have the greatest possibilities to create moral hazards.

Table 13 below presents new farmers' sex. The vast majority (67,98%) of the new farmers are men.

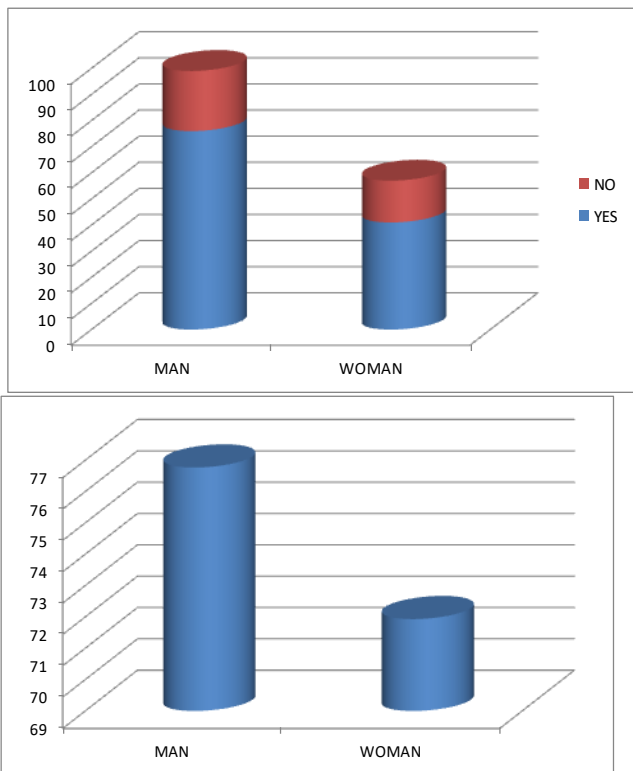
Figure 13: Farmers distribution according to new farmers' sex



In the following tables 14 & 15, it is presented the differentiated approach towards production according to new farmers' sex.

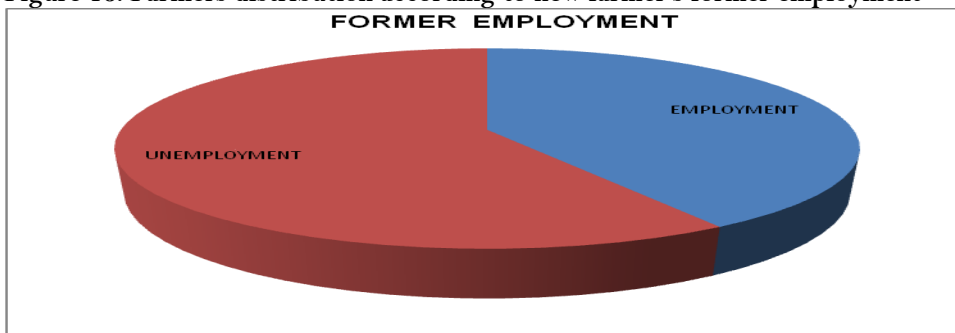
Figure 14: Production of farmers according to new farmers' sex

Figure 15: Percentage of farmers according to new farmers' sex



Moral hazards' creation is differentiated in two sexes. Men have greater possibilities to produce and sell agricultural products than women, so it is more likely moral hazards to be created by women. In table 16 below, it is presented the farmers' distribution according to new farmers' former employment status.

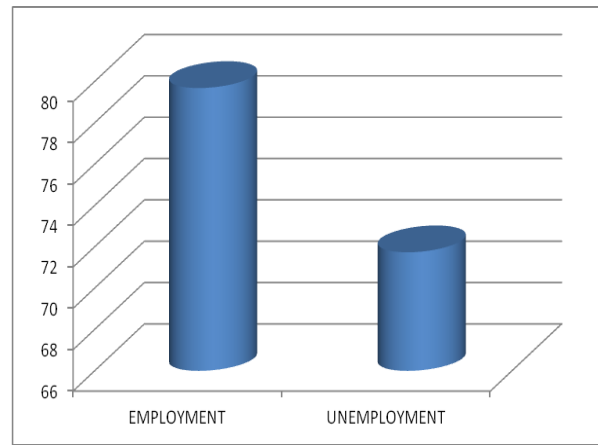
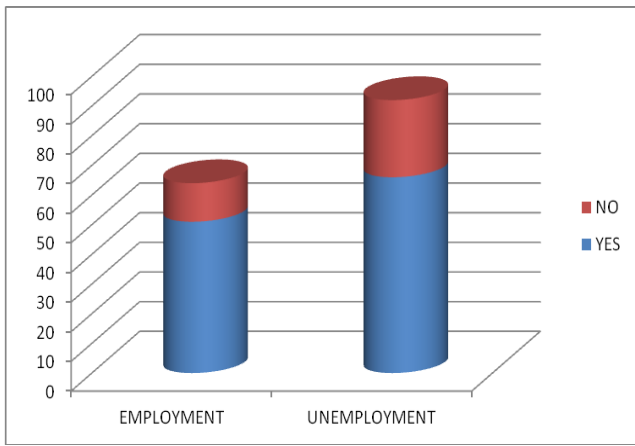
Figure 16: Farmers distribution according to new farmer's former employment



The following tables 17 & 18 present the former employment status of new entrants in agriculture. The majority of new farmers were previously unemployed. So the EU programme was a great opportunity for them to start up a new enterprise in the agricultural sector.

Figure 17: Production of farmers according to new former farmer's employment

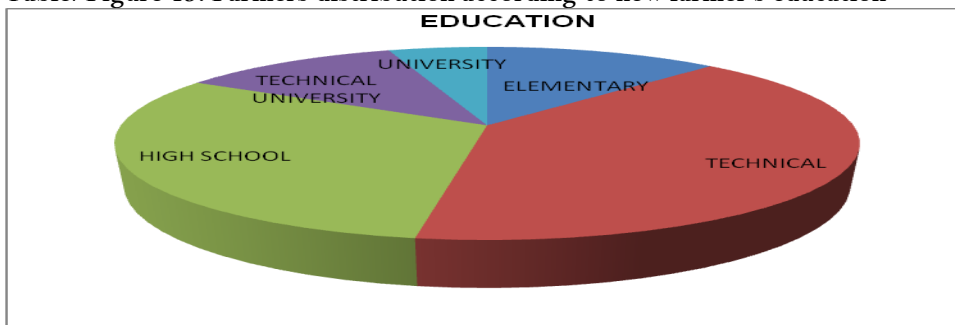
Figure 18: Percentage of farmers according to new farmers' former employment



The percentage of those who will be just subsidiary seekers in the future is lower in this category compared to those who were occupied in different a sector in the Economy.

Table 19 presents the level of education; the majority of the new farmers have accomplished high school or technical school (13 years in education)

Table/Figure 19: Farmers distribution according to new farmer's education



In the following tables 20 & 21, it is presented the differentiated approach towards production according to the new farmers' education.

Figure 20: Production of farmers according to new farmers' education

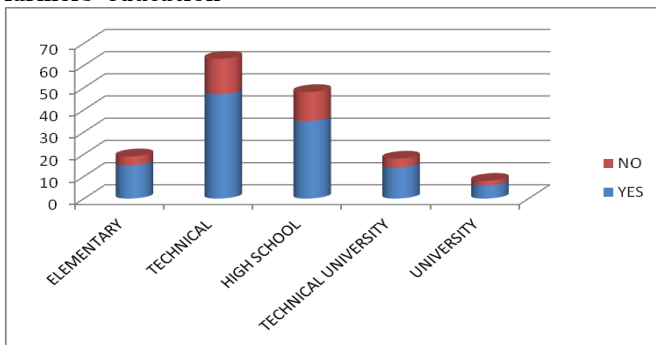
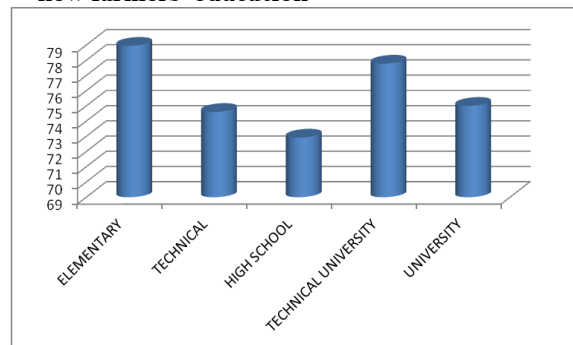


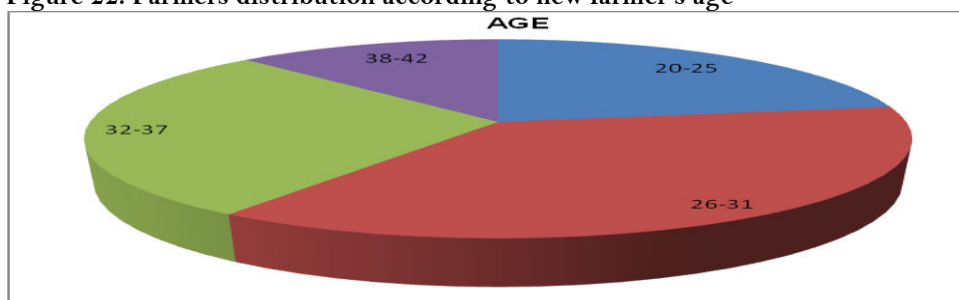
Figure 21: Percentage of farmers according to new farmers' education



It is obvious that high school graduates produce less, while those who did not finish high school in their vast majority are employed in the primary sector (79% of them produce). Taking under consideration that there are no substantial differences between graduates, moral hazards are more likely to be created by high school graduates (73% of them produce). In parallel, research had examined whether there are any differences regarding the performance of bachelor degree holders. The results have shown that university graduates especially from other scientific fields than the primary sector have more possibilities to create moral hazards.

One of the main prerequisites of this program was the new farmers' age to be from 18 up to 40 years old. So it should be noted here that our empirical research was conducted three years after the announcement of the program. In table 22 below, it is presented farmers' distribution according to new farmers' age.

Figure 22: Farmers distribution according to new farmer's age



In the following tables 23 & 24, it is presented the differentiated approach towards production according to new farmers' age during the application period.

Figure 23: Production of farmers according to new farmers' age

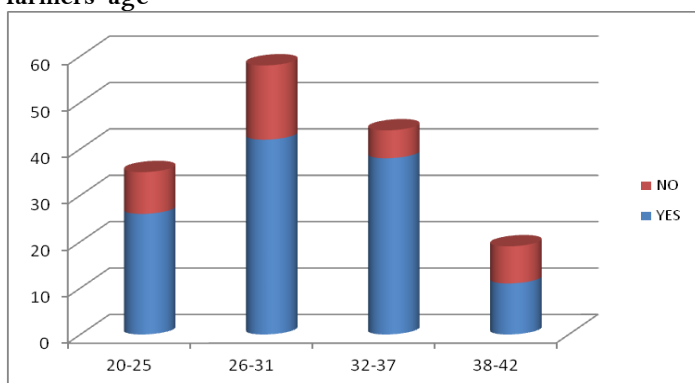
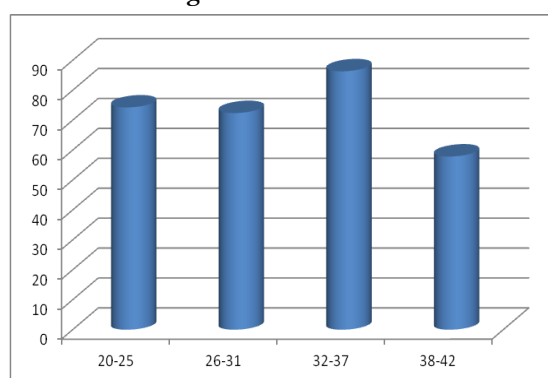


Figure 24: Percentage of farmers according to new farmers' age



Those who approach 40 years old have the most possibilities to create moral hazards as, according to our findings, they produce less.

4. Conclusion

Almost four decades after Greece become a member of European Communities, Greek agriculture faces many challenges. The main one for the agricultural sector is to use subsidies in order to increase the competitiveness of the agricultural sector. Therefore, financial support from the CAP should be achieve its optimum goals. Policy makers should take into consideration in the planning of this support the possible moral hazards that can be created due to mistakes in policy planning. The present research revealed such moral hazards in development programs.

In recent years the resources of the CAP have not been used properly. Total productivity has been decreased since 1981 despite the development programs and the subsidies that the Greek farmers have received.

Especially for Serres a typical rural area and simultaneously the poorest Greek Regional Unity, the decrease in Gross Value Added raises questions about the of role of CAP.

The main result of the current research is that the provision of subsidies without strict controls (ex-ante, ongoing and ex-post) on disbursements enhances the revealing moral hazards. Apart from their differences many new farmers choose to benefit from subsidies and do not produce at all.

However it should be noticed that the probability of potential moral hazards is not referred to livestock breeders. On the other hand, those who cultivate a few acres of arable land it is very likely to perform potential moral hazards while rural enterprise's size affects farmers' behavior.

Finally, it still remains as the main goal a comparison analysis between CAP –Measure 112/2013-2014 and CAP Measure 6.1 /2016-2017

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Factors on the Accrual Accounting Adoption: Empirical Evidence from Indonesia

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ARTICLE INFO	ABSTRACT
Article History Received 11 November 2019; Accepted 2 February 2020 <i>JEL Classifications</i> I28, M15, M48, M53	Purpose: This study aims to examine the relationship between top management support, implementation costs, and effective project leader and the level of accrual accounting adoption in Indonesia's municipalities. Design/methodology/approach: The hypotheses of the study were tested using the survey data from 220 municipalities in Indonesia. The instrument for content and construct validity and reliability was tested. Then, the hypotheses were tested using Structure Equation Modelling (SEM) by SmartPLS. Finding: This study found that, top management support and implementation cost have significant relationship with the level of accrual accounting adoption. Meanwhile, effective project leader has no significant relationship with the level of accrual accounting adoption. Research limitations/implications: This study contributions to provide input into the adoption of Government Regulation No. 71 of 2010 in order to apply the rule of accrual accounting to the fullest, and to minimize errors in financial reporting with the identification of possible obstacles faced in implementing accrual accounting. This study recommended that, more factors such as human resources, external audit are needed to complement and improve financial reporting with accrual accounting adoption. Originality/value: To the best of the researcher's knowledge, no study of Indonesian municipalities has tested the impact of factor such as top management support, implementation cost, and effective project leader on the level of accrual accounting adoption.

Keywords:

Accrual Accounting
Adoption, Government
Regulation, Factors,
Indonesia

1. Introduction

Since the 1980, the phenomenon has been occurred a change in public sector management style which is characterized by the presence of new public management by adopting the management of the private sector in the public sector (Christensen & Parker, 2010; Christiaens & Rommel, 2008; Jagalla, Becker, & Weber, 2011; Lapsley, Mussari, & Paulsson, 2009). Changes of management style in the public sector as a result of economic stagnation hit some countries such as New Zealand, Australia and the United Kingdom (Lapsley & Pallot, 2000; Ball & Craig, 2010). Based on the new public management (NPM), it is believed to improve performance, financial accountability, asset management, planning, programming and budgeting in the public sector.

The importance of NPM reform can be found in its origins and use of accrual accounting. The adoption of accrual accounting in some countries has been based on the affirmative rationale derived from institutional theory (Christensen, 2005). According to institutional theory, the adoption of new waves of change in an organization is made in response to pressures and external changes. DiMaggio and Powell (1983) identified three mechanisms

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through which institutional isomorphic changes occur: (1) coercive isomorphism stemming from political influence and the problem of legitimacy, (2) mimetic isomorphism as the standard response to uncertainty, and (3) normative isomorphism regarding professionalization. The three mechanisms tend to arise from different circumstances, so that they produce different results (DiMaggio & Powell, 1983).

Financial management reform in Indonesia had been running more than a decade since the enactment Law No. 17 of 2003 on State Finance and Law No. 1 of 2004 on State Treasury. In implementing this reform, the financial management of state government should be able to execute in an orderly, efficient, economical, effective, transparent and accountable manner, which is abided by laws and regulations, as stated in Article 3 Para (1), Law No. 17 of 2003. According to Law No. 17 of 2003 on State Finance, it is stipulated that the state financial management should be carried out with the application of good accounting system foundation on robust internal control system. The Law also mentioned that the implementation of an accrual accounting system should cover a period of 5 years starting from 2003 until 2008.

Furthermore, the Indonesian government has issued the Indonesian Government Regulation No. 24 of 2005 concerning Government Accounting Standards as the basis for the implementation of the government accounting system with a cash basis towards accrual basis. This regulation is to enhance public sector organization which has not yet implemented accrual basis accounting due to lack of human resources. This regulation provided a transition period, so that the reporting entity may apply the cash to accrual basis based on the SAP, whereby the transition period is not more than 4 years before the budgeting in 2010. This means that transition period is from 2005 until 2009.

In 2010, the government has published regulation No. 71 of 2010 concerning the SAP as the accrual basis to improve the quality of government performance accountability to replace the regulation No. 24 of 2005. The provisions of transition period in regulation No. 71 of 2010 is published, in part to the effective date imposition Statement of Government Accounting Standards or "Pernyataan Standar Akuntansi Pemerintah" (PSAP) which stated that the PSAP accrual basis is effective for the budget implementation of the Fiscal Year 2010. However, those reporting entities, that has not been able to apply the accrual-based PSAP, this can apply the cash towards accrual-based PSAP at least 4 years after the Fiscal Year 2010. Under these conditions, 2015 was a year where the government accounting system must fully adopt the accrual accounting basis.

There is a sceptical view on the implementation of accrual accounting standards which is based on the mandate of the Government Regulation No. 71 of 2010, which is at least implemented in 2014 by all reporting entities. It is about how the local government responds and prepare to implement the government accounting standard. The implementation of previous government accounting standard No. 24 of 2005 for the period of 2005-2009, there are still many obstacles faced by central and local government. There is only a small number of the financial statements of central government and regions that received an Unqualified Opinion from the State Audit Board or "Badan Pemeriksa Keuangan" (BPK). In the second half of 2010, BPK has audited 499 Local Governments Financial Report or "Laporan Keuangan Pemerintah Daerah" (LKPD) for the year ending in 2009 and provided over 15 unqualified opinion, 330 Qualified Opinion, 48 Adverse Opinion and 106 Disclaimer Opinions (www.ksap.org/berita).

In Indonesia, there are a few empirical studies on the adoption of accrual accounting. For example, McLeod & Harun, (2014) described the challenges which Indonesia faced which tried to reform the public sector accounting to understand the background and the nature of public sector accounting reforms. The findings of the observation that the accrual accounting reform was stymied by a lack of management to support accrual accounting. Harun (2008) provided an overview of public sector reform in Indonesia. He focused on the barriers, improvement, and actions taken by Indonesia to move to accrual accounting. Harun and Kamase (2012) described the institutional capacity of provincial governments and the adoption problems in accrual accounting. Harun, VanPaurse and Eggleton (2012) evaluated the institutionalization of the accrual accounting system in Indonesian local governments using case studies to gain insights in relation to the process of institutionalization in the public sector. McLoad and Harun (2014) described and analyzed the challenges faced in trying to reform public sector accounting in Indonesia. Additionally, previous research has been done in the public sector to look at the process of adopting accrual accounting. Simanjuntak (2010) and Bastian (2006) suggested that the adoption of accrual accounting in Indonesia government requires, top management support, implementation cost, and project leader.

In particular, this paper focuses on the influencing factors which will lead to study in exploring the level of accrual accounting adoption with a focus on the Indonesia Municipalities. Furthermore, the objectives for this study is to examine the relationship between factors such as top management support, implementation costs, and effective project leader and the level of accrual accounting adoption in Indonesia's municipalities.

2. Literature Review

Accrual-based accounting is a cornerstone of public sector accounting reforms under the umbrella of NPM (Pessina, Nasi, & Steccolini 2008) whose main goal is to improve efficiency in public sector decision-making process (Mzenzi, 2013). Accrual accounting is often recognized better than cash accounting mainly because it provides quality information relevant to internal and external users. Accrual accounting can improve transparency, the assets and liabilities of the organization. It also facilitates accounting information comparable between years and also improve the efficiency of decision making in the organization (Lapsley, Mussari, & Paulsson, 2009).

Accounting changes and public sector reforms resulted in the implementation and adoption of accrual based accounting. This needs to be standardization through accrual accounting in these countries has been spearheaded and influenced by pressure groups, including human factors and political orientation (Pessina, Nasi, & Steccolini 2008) and

the United Nations (Lapsley, Mussari, & Paulsson, 2009; Mzenzi, 2013; Pina, 2007). Change and public sector reform with accrual accounting, including regulatory accounting processes changes such as the introduction of the International Public Sector Accounting Standards (IPSASs) and legislation are more innovative (Lapsley et al, 2009; Mzenzi, 2013; Pina, 2007).

Other changes include participatory budgeting where accountability and transparency are core values, the system changes the accounting and budgetary information, the introduction of performance audits, the introduction of management accounting techniques such as new ABC as well as changes in the skills and competencies needed in the public sector, including local government staff to operate the organization (Lapsley, Missouri, & Paulsson, 2009; Mzenzi, 2013; Pina, 2007). The implementation and adoption of accrual accounting in the public sector changing nature, required human capabilities and competencies necessary to understand and interpret the accounting information for the decision making process.

Rational technical role of accrual accounting has a significant impact on the utilization of the budget process in decision-making compared with the role of the institutional and political role (Koyabashi, Yamamoto & Fujii, 2011). It means that the accrual accounting is the process of a public sector budget is used for interaction between the actors through professional skills, knowledge and experience along with the political leadership in decision-making (Koyabashi et al, 2011). Implementation and adoption of accrual-based accounting with a focus on results and outcomes of service provision as well as the delegation of authority to departmental management over their budget allocations and formulation, mode of operation, and compliance with a set of fiscal management has enabled significant improvements in term efficient use of resources and positions government finances (Barton, 2009).

Hypothesis development will be based on the factors that allegedly possess an influence on the level of accrual accounting adoption in Indonesia municipalities, which is formulated as follows:

Top management support is the most studied factors in a successful information system adoption (Dong, 2001) and is also the source of the most difficult in the information system adoption. The common interests of management with previous experience, the reform initiative with accounting practices and the active involvement of managers will be a positive influence on the rate of reform adoption (Ridder & Bruns, 2006). Similarly, research conducted by Cavalluzzo and Itner (2004) shows that, top management support has a relationship with the adoption of the measurement system. Research by Jackson and Lapley (2003), showed that managers sometimes resist and impede the practice of accounting. This argument leads to the proposal of the following hypotheses:

H₁: There is a relationship between top management support and the level of accrual accounting adoption.

In a broader narrower context, the local budget is a source of funding of all activities organized by a local government for the benefit or society and the development of government (Kelly and Rivenberk, 2010). Research shows that the potential benefits of accrual accounting may be difficult to achieve, the cost of adoption of accrual accounting is also difficult to estimate although generally accepted substantially. However, some organizations have adopted accrual accounting developed specially for this accounting reform a very good example is the UK case, (Hyndman & Connolly, 2005). Previous studies on public sector reform has made it clear that the high adoption costs of the new accounting system (e.g., system information changes, staff training, consultants' fees, etc.), will be able to prevent or delay the adoption process as a whole and consequently anticipated (Canby, 1995; Lawson, 2005; Udpa 1996; Ouda, 2008). The adoption of the new accounting system may be refused if the cost is too expensive, although it will be enforced. Thus, the following hypothesis is stated:

H₂: There is a relationship between implementation cost and the level of accrual accounting adoption.

The successful adoption of the new system lies in effective project leader, which is appropriate and effective (Nah, Zuckweiler & Lau, 2003). Numerous studies in the literature new public management and other reforms suggest the importance of effective project leadership in bringing a successful change (Aggestam, 2010; Newman, Raine & Skelcher, 2001; Stewart & Kringas, 2003; Van Wart, 2003), despite considerable agreement that the success or failure of the reforms depends on the leadership role. There is a wide diversity of definitions and interpretations of the concept of effective project leadership. Furthermore, Hartley and Allison (2000) in a paper titled "effective project leadership" viewed it as a combination of assigned project leaders in executive positions (secretary or treasurer), which provides visible leadership, communicative, and accountable. As discussed above, the project leader is critical to the successful adoption of accrual accounting. Thus, the following hypothesis is stated:

H₃: There is a relationship between effective project leader and the level of accrual accounting adoption.

3. Research Methodology

The data from the questionnaire survey sent to respondents by e-mail, or personally delivered to 273 head accountant section of municipalities. Indonesia would be divided into 7 (seven) island geographical zones namely: Java and Bali, Sumatera, Kalimantan, Sulawesi, Papua, Nusa Tenggara, Maluku. Each geo political zone represents a cluster. First of all, 1 zones (clusters) would be selected from the 7 geographical zones. After selecting the two zones, the next step is to randomly select 119 for Java island, 154 for Sumatera island, making a total 273 municipalities. Finally, a simple random sampling would be used to select 1 respondent from each of the selected municipalities which will finally give the sample size of 273 respondents.

Personal presence and monitoring by the researcher and follow-up by accountant sections heads resulted in the return of two hundred twelve (212) questionnaires, representing a gross response rate of 77%. Follow-up continued

for the remaining questionnaires of sixty-one (61); however, none of them were returned. Ten (10) questionnaires were checked and found to be incomplete, therefore eliminated. Finally, the net responses used in this study were two hundred and two (202), representing a net response rate of 74% of the gross responses.

3.1 Measurement of Variables

The questionnaire elicited responses on the level of accrual accounting adoption, top management support, implementation cost, and effective project leader. This variable under review was measured using multiple items. Existing well established measures were used with modifications to the current research context.

3.1.1 The level of accrual accounting adoption

In the context of this study, the level of accrual accounting adoption has been operationalized as the perceptions of the heads of accountant sections based on the compliance index. This variable is adopted from Aswar & Saidin, (2018) based in Indonesia context. PP No. 71 2010 in accordance with the GAS categorize items of accounting accrual to achieve level of accrual accounting adoption. The items category includes information about completeness, valuation, classification, mechanical accuracy, disclosure, formalistic requirements, and adequacy and usefulness. The characteristics specified by PP 71 of 2010 on GAS for the level of accrual accounting adoption consists 43 elements that were used as a construct of the compliance index.

3.1.2 Top Management Support

Top management support was measured by the degree of management to encourage and facilitate the adoption of accrual accounting through leadership, working environment and provision of critical resources (Finney & Corbett, 2007; Nah & Delgado, 2006). This variable is adapted from the work of Taylor and Wright (2004), Lin (2014) with some modifications. The instrument contains 7 items. The original items and the modified ones are presented in Appendix D. This measurement would be expressed on a 5-point rating scale, ranging from 5-strongly agree to 1-strongly disagree.

3.1.3 Implementation Cost

Implementation costs is the cost in determining the volume of financial resources necessary for the overall transition process and can help to overcome the financial problems in the future by having a gradual transition to full accrual accounting and budgets (Ouda, 2008). The adoption of accrual accounting requires funding in enforcing accounting regulations of certain legal entities. These costs include training, research, technology, and consulting cost (Deloitte & touch, 2011). The instrument contains 8 items. This variable is self-developed by researcher from the work of Connolly & Hyndman (2006). This measurement would be expressed on a 5-point rating scale, ranging from 5-strongly agree to 1-strongly disagree.

3.1.4 Effective Project Leader

Effective project leader was measured using an instrument developed by Nah et al. (2009), Sofwan Winarno & Najib (2014) with some modifications. The instrument contains 5 items. Effective project leader is supporting from upper management plan is developed and managed new accounting and the new accounting policy is written at the right time (Aggestam, 2010). This project should be well documented, have a formal adoption plan, the allocation of responsibility for various tasks assigned and monitor their performance (IFAC, 2011). This variable is adapted from the work of. This measurement would be expressed on a 5-point rating scale, ranging from 5-strongly agree to 1-strongly disagree.

4 Results and Discussions

4.1 Descriptive Analysis

Descriptive analysis of the study reveals that, 55.4% of the total respondents are male, while the remaining 44.6% of the respondents are female. This is clearly revealed the dominance of male personal head of accounting sections in Indonesian municipalities. By looking at the age of respondents was grouped into four different categories. The group aged 25-45 years was found to be the largest group representing 51.5% of the total sample population followed by age category 46-55 years representing 40.1%. These two category groups cover 91.6% of the total respondents. Regarding the educational level of the respondents. Table 6.7 clearly shows bachelor degrees –university graduates – represented the largest group with 57.9% followed by those who hold a master degree with 39.6%. The last category had a doctorate totalling 2.5%. These two categories (bachelor and master) totalling 97.5% represented the majority of the population. This categorization indicates a high level of education level and professionalism.

4.2 Results

This part of the study utilizes the Statistical Package for Social Science (SPSS) release 23 for Windows to analyse the data. However, further data exploration reveals that, no identified case of univariate outliers was established. This implies that, the calculated Z-scores of all the variables under review falls within the acceptable threshold (Tabachnick & Fidell, 2007).

Reliability of the instruments were also computed, thus all the variables in the study reveals acceptable Cronbach alpha reliability co-efficient. Thus, the Cronbach alpha co-efficient of the level of accrual accounting adoption, top management support, implementation cost, and effective project leader are 0.781, 0.932, 0.967 and 0.827 respectively. These have exceeded the recommended minimum (Nunnally and Bernstein, 1994).

Moreover, normality assumption is the most vital assumption in the bivariate and multivariate statistical analysis (Hair et al., 2010). Therefore, this study utilized histogram method of achieving normal distribution which easily and graphically presents histogram and the normal distribution curve. This is more visibly straightforward than using numeric method (Kolmogorov–Smirnov test).

In order to satisfy the assumption of linearity and homoscedasticity, the scatterplots were plotted to ascertain the direction of the relationship between the variables. The scatterplots indicate that, the scores of the plots cluster uniformly around the regression line, hence, linearity and homoscedasticity are assumed. The regression line that passes through the data points represent the “line of best fit.”

4.3 Test of Hypothesis

4.3.1 Top management support and the level of accrual accounting adoption

Top management support is one of the most studied factors in accrual accounting adoption (Cohen et al, 2007; Cohen et al, 2012). Top management support has a very important role in achieving the goals and objectives of implementation as well as the organization's (Harun, 2008; Simanjuntak, 2010). The results of this study indicate that top management support has a significant effect on the level of accrual accounting adoption ($T=2.314$, $\text{sig}=0.02$), which means H1 can be accepted. These findings are in line with other accounting implementation studies which explain top management support as the key to the successful implementation of accrual accounting (Ridder & Bruns, 2006; Cavalluzzo & Ittner, 2004; Dong, 2001; Jackson & Lapley, 2003). In the context of the accrual accounting adoption rate in municipalities, the presence of peak management support is very vital because the accrual accounting adoption is large and complex process and requires a lot of resources. With the commitment and support of top management for the necessity of adopting accrual accounting, vital resources will likely be made available to facilitate the adoption process.

4.3.2 Implementation cost and the the level of accrual accounting adoption

The implementation cost within the organization shows a significant positive effect on the level of accrual accounting adoption ($T=2.035$, $\text{Sig}=0.045$). The results of this study therefore accepted H2. This phenomenon can occur if the implementation cost is not well defined and ineffective, thereby reducing the intention of using accrual accounting adoption. These results are not in line with public sector reform studies (Canby, 1995; Lawson, 2005; Udpa 1996; Ouda, 2008). However, the results found are consistent with Eriotis et al. (2011) which showed a small rate of adoption in cost of accounting systems in hospitals. It is suggested that traditionally hospital had small incentive amount or demand for cost accounting systems as its management control rule. Hospitals primary report written to the external funding authorities (government), hence they only focused on external reporting factors.

4.3.3 Effective project leader and the level of accrual accounting adoption

The effective project leader was also discovered to have no significant impact on the level of accrual accounting adoption ($T=1.315$, $\text{Sig}=0.092$), which means H6 is rejected. This result also contradicts the research of new public management reforms (Aggestam, 2010, Stewart & Kringas, 2003; Newman et al., 2001; Van Wart, 2003) as well as other enterprise systems (Nah et al. 2003; Somers & Nelson, 2001). The reason is likely because the adoption of accrual accounting considered as a project of the central government while the municipalities is the basis for its implementation. Project management, business alignment - technology and overall work process changes are developed and designed by the central government. Thus, project management undertaken by project managers in the centre has no effect on the level of accrual accounting adoption in the municipalities. Basically, the project management program is important (Harun, 2008; Jiang et al., 1996). However, in the context of adoption of accrual accounting, an effective project leader may have a significant effect on accrual accounting adoption success rate if implemented on central government level.

5 Conclusions, Limitations and Recommendations

This purpose of this study was demonstrating the need and relevance the level of accrual accounting adoption in Indonesian's municipalities by using a compliance index. This is important because Indonesia has recently undergone major government financial reform and is seeking to greatly enforce its financial accounting transparency (Rosser, 2009). The level of compliance index in this thesis is measured using a 43-item index derived from the key Indonesian Government Accounting Standards (PP No.71 of 2010) to explore in greater depth the relationship between the level of accrual accounting (as measured by the compliance index) and key predictor variables in the government institutions. This study findings are expected to make significant contribution to improve transparency and accountability of the government by factors on the level of accrual accounting adoption, particularly for the Indonesian municipalities. Top management support, implementation cost, and effective project leader also influence the level of success in the accrual accounting adoption process.

The empirical findings of this thesis are potentially important for regulatory bodies, municipalities, the central government, and users of municipalities financial reports. These findings can be applied to developing and improving public sector governance applications. In particular, these findings may serve as input for public policy making in the implementation of PP. 71 of 2010 in order to ensure its full implementation in all Indonesian government institutions. Therefore, it can be concluded that there is a relationship between top management support, and implementation cost on the level of accrual accounting adoption. Meanwhile, the hypotheses H3 not supported, it can be concluded that

there is no relationship between effective project leader on the level of accrual accounting adoption in Indonesian municipalities.

This study uses only three independent variables which are factors of internal municipalities and does not consider other institutional factors or other wider social factors which may have a significant effect on the level of accrual accounting adoption. Furthermore, the findings of this study and the limitations inherent in it can lead to some further research opportunities. Further research can examine the relationship between the level of accrual accounting adoption and the broader social and institutional forces that surround it and consider including other important contextual variables that have been omitted from other studies and are likely to influence compliance levels. The most neglected variables are size of organization, geographic location, and social capital. In addition, the importance of organizational variables such as support from external audits and central and local political support should not be underestimated.

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The Nexus Between Population and Economic Growth In Ethiopia: An Empirical Inquiry

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ABSTRACT

Purpose:

The link between population growth and economic growth has been becoming of most significant interest for researchers. However, there is no consensus among economists and researchers about the interaction between population and economic growth. Using time-series data spanning from the period 1981 to 2018, this study examined the population-economic growth nexus in the second most populous African nation—Ethiopia.

Design/methodology/approach:

The study used yearly time series data spanning from 1981 to 2018, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests, Autoregressive Distributed Lag (ARDL) co-integration approach and Toda-Yamamoto Causality tests.

Finding:

Population and economic growth (Proxied by GDP) have a long-run association, as confirmed by the bound test co-integration approach. From ARDL model estimates, population growth is found to have a negative and significant effect on economic growth, both in the short-run and in the long-run. Likewise, growth in GDP affects population growth positively and significantly—both in the short-run and long-run. The Toda-Yamamoto Granger-Causality test revealed that, there is a unidirectional causality running from population to economic growth.

Research implications:

The current (as of 2019) number of the total population of Ethiopia exceeds 110 million—making the country the second-most populous nation in Africa. With the prevalence of high fertility rate and mortality rate, unemployment, and poverty, the population is not expected to bring economic development in general and economic growth in particular. Hence, it is advised to the concerned body that anti-natal policies that discourage the fertility rate, need to be re-considered to supplement with economic growth policies.

Originality/value:

This paper provides an empirical study of population-economic growth nexus in Ethiopia—a low-income country with a rapidly growing economy but also a rapidly increasing population and labor force. An understanding of such an issue would provide a reliable input for formulating development policies. However, up to the best of my knowledge, there is limited empirical research about population-growth nexus growth for the case of Ethiopia.

Keywords:

Growth
Population
ARDL,
Toda-Yamamoto Causality,
Ethiopia

1. Introduction

Population growth of a country increase whenever the total birth rate of the country exceeds the total death rate of the nation or, when the total emigration of the country is higher than the total immigration (Dullah et al., 2011). There is a multi-directional relationship between population and economic growth. However, it has been accepted that economic growth is mainly affected by the population—since more human activities drive the economy that, in turn, accelerates economic growth (Adediran, 2012).

Population dynamics and its effects on economic outcomes have been an age-long debate (Dauda & Aziakpono, 2015). And it has been a subject of major debates in the economic and social science literature. In general, there are three strands about the consequence of population growth on the overall economic development of a nation.

Some scholars argue that rapid population growth (high fertility and emigration rate) hinders economic development—leading to lower economic growth and poverty (Gorge et al., 2016). Robert Malthus (1798), in his theory of population, contended that population growth inescapably led to poverty—fundamentally, for it would always surpass food supplies (Dennis & Robert, 2008). Other researchers (they are also known as the Revisionist)

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have argued that rapid population growth promotes economic growth—by increasing the stock of human capital, and even by prompting technological and institutional changes (Admassie et al., 2015).

According to (Furuoka, 2010), in most developing countries, the demographic dynamics found to be encouraging for economic development—rises living standards. This is because in developing countries, population growth enlarges market size and increases competition in marketing activities. Even some other researchers have established that population growth has an indefinite effect on economic growth (Bloom et al., 2003; Admassie et al., 2015). However, there is no over-all agreement among researchers about the proper role of the population in the economic growth path (Furuoka, 2016). Population expansion affects many phenomena, such as; the age structure of a country's population, migration, economic inequality, and the amount of labor force; these factors, in turn, affect the overall economic growth (Wesley, 2017).

In developing countries, however, it has been accepted that rapid population growth and high fertility rate could have negative consequences in economic and social development (Dennis & Robert, 2008). Population growth, although it is not the fundamental cause of low levels of living, serves to worsen the problems of underdevelopment and makes development possibilities unattainable in developing countries (Assefa, 1994).

In general, population dynamics have a significant impact on any country's economic performance depending on the economic position of countries. On the one hand, the declining birth rate in the developed countries leads to shortages of labor supply and put pressure on their pension systems. On the other hand, increasing fertility in developing nations has been viewed as a potential obstacle to their economic and social development (Furuoka, 2010). Today developing countries share the most significant portion of the world's population. According to Worldometers (2019), the total Population of the world is estimated to be 7.71 billion (as of 2019) of which, African, Asian, and Latin American countries (mostly poor countries) cover more than 85% (6,557,556,350 people). From the Africa region, Nigeria and Ethiopia are the first and the second most populous nations, respectively.

In 1980 the total population of Ethiopia was 35,141,712 people with a 1.53 % annual growth rate. This figure has been changing to 47,887,865 in 1990, 66,224,804 in 2000, 76,346,311 in 2005, 87,639,964 in 2010 and 100,835,458 in 2015. According to the CIA (2019), the current population of Ethiopia is estimated approximately 113,171,288 people, of which 52.82 million are labor force. However, this high population growth phenomenon has not been optimally connected to economic growth. Though Ethiopia having registered a 10.9% annual growth in GDP (CIA, 2019), the unemployment rate exceeds 17.5%, and 29.6% of the total Population live below the poverty line.

Hence, this rising population of Ethiopia needs to be studied; since it impacts the economic growth of the country. However, there is limited empirical research about population-growth nexus growth for the case of Ethiopia. Therefore, this paper provides an empirical study of the effect of population on the economic growth of Ethiopia—a low-income country with a rapidly growing economy but also a rapidly increasing population and labor force. An understanding of such an issue would provide a reliable input for formulating development policies. Accordingly, this paper investigates the interaction between population dynamics and economic growth in Ethiopia. More specifically, this study tries to answer the following question: Does population growth leads to economic growth in Ethiopia? What is the relationship between population and economic growth in Ethiopia? Is there any causality between population growth and population growth in Ethiopia?

The rest of this paper is organized as follows: a review of literature, methodology, results and discussion, Summary and Conclusion, and reference.

2. Literature Review

There is an on-going debate concerning the population–growth nexus (Furuoka, 2016). The argument started when Malthus (1798) published his book entitled “An Essay on the Principle of Population.” According to Malthus, the causation between population increase and economic growth is bi-directional. Higher economic growth increased the population by exciting early—marriage and higher fertility rates, and by improve health standard—reducing mortality, while a rapid population growth depressed economic growth through diminishing returns (Dullah, 2011). For about two centuries, since the formation of the Malthus theory of population, researchers have been debating about the role of population growth in the path of economic development.

The arguments, in general, can be classified into two schools of thought—pessimistic and optimistic views (Furuoka, 2016). The first view, popularly referred to as population pessimism, follows the line of Malthusian and neo-Malthusian arguments of adverse influence of population variables on economic prosperity (Dauda & Aziakpono, 2015). Malthus supposed that population to grow geometrically, while food production to grow arithmetically, and this population—economic growth interaction is the main crux of the Malthusian model (Temitope et al., 2013). Others (such as Linden, 2017) argued that higher population growth has been and will continue to be challenging for economic growth. Since more and more people use more of the limited scare resources, it will ultimately reduce the long-term potentials of growth. The second view—optimistic view, justifies that population growth leads to economic growth. A large population increases market size and competition; it also increases the labor supply.

In other literature, there appears to be some consensus that population and economic growth are inter-dependent. However, their nature of the interaction between seems to depend on the particular circumstances—such as on the population age structure in the different countries and regions of the world (Wesley, 2017).

When Malthus (1798) discussed the theory population, he assumed that population growth increases at a geometric rate and food production (the level of subsistence) at an arithmetic rate. He presupposed that population growth has a depressing effect on per capita output growth; this is because production growth cannot keep up at the same pace as population growth. The main factor for this contention is that land (hence agriculture) exhibits

diminishing returns to scale—as more and more inputs employed. Thus, Malthus asserted that if “preventive check” (such as late marriage, never marry, education) failed to curb fertility, what he termed “Positive checks” (Famine, war, plague, starvation) will work then.

A neoclassical growth model such as Solow (1956), considers the population as exogenous (independent on economic dynamics) following arithmetic pattern expansion. Solow (1956) assumes a constant population growth and shows how economic growth is affected by population growth. Population growth, he thought, increases labor force supply and thus increases output per-worker growth rate in one hand, population growth reduces physical capital per worker; that eventually reduces productivity and output per-worker growth. In this case, changes in population growth rates affect the economic growth of the country, and it would be detrimental for economic development.

In recent years, different economists and researchers are involved by the population—growth nexus of developing countries. However, empirical studies have found a mixture of negative and positive effects as well as of no effects evidence. Jorge et al. (2016) analyzed the dynamic interaction between population growth and economic growth in Mexico. By using a structural break co-integration and time series data for the period 1960-2014, their study revealed the presence of a long-run relationship between population and economic growth in Mexico. Moreover, their study confirmed that, there is bi-directional causality between population and economic growth in Mexico. Temitope et al. (2013) examined the effect of population dynamics such as mortality and fertility, on the economic growth of 35 sub-Saharan African countries. Using the five-year average data from 1970 to 2005, pooled OLS and the dynamic panel data analysis, their study results showed that, total fertility rate and life expectancy at birth had a negative and a positive influence on economic growth, respectively.

Dauda and Aziakpono (2015), examined the effect of population dynamics on the economic growth of West African countries over the period 1970 to 2011. By using fixed effects and random effects estimation methods, their findings revealed that increase in Population, labor force, and fertility improved economic growth. In contrast increase in infant mortality lowered the level of growth in the West African countries. Akinbode et al. (2017), using yearly data obtained from 1970 to 2014, co-integration and causality test, examined the dynamic relationship between population and economic growth in the Nigerian economy. Accordingly, the study revealed that both variables had a long-run relationship; moreover, uni-directional causality between population and economic growth running from former to the later was found. Ademola (2019) investigated the nexus between demographic dividend and economic growth in the Nigerian economy. By using time series data spanning from the year 1970 to 2017, and multivariate VAR model, their study showed that, the innovation in gross enrolment contributed to economic growth relative to innovation in economic support ratio. By using historical data over the past 200 years, Wesley (2017) studied the links between population growth, per capita output growth, and overall economic growth of the world. His result revealed that, low population growth in rich countries is likely to create social and economic problems whereas; high population growth in developing countries may slow their economic development. He also proposes that international migration could be used to adjust such imbalances.

Using time-series data spanning from 1980 to 2010 and descriptive statistics as well as regression analysis, Eli and Amade (2015) investigated the impact of population growth on the economic growth of the Nigerian economy. The study showed the existence of a positive relationship between economic growth and export growth, population, and fertility, while negative links were found between economic growth and, life expectancy and crude death rate. Emmanuel (2015), empirically examined the relationship between population growth and economic growth in Ghana. By using time series data spanning from the period 1980-2013, Bounds test approach co-integration and Granger – causality test, the study reveals a negative relationship between population and economic growth in the short-run and, unidirectional causality in the long-run between them. Besides, it revealed that population density and labor force impact positively, whereas the unemployment rate negatively impacts economic growth in the long run. By using the Vector Autoregression Estimation technique for an annual time series data ranging from the period 1963 to 2009, Thuku et al., (2013) investigated the relationship between population growth and economic growth in Kenya. Accordingly, their study revealed that the population has a positive influence on economic growth, and subsequently promotes the development of the country. Dao (2012), by using Least Square Estimation on linearly multivariate regression and using data on 43 countries, analysed population and economic growth in developing countries. The result revealed that GDP per-capita, linearly, and negatively depends on population growth, but fertility rate and urban growth were found to be statistically insignificant interaction with planned family planning and significant socio-economic structural changes.

However, there a scanty empirical study conducted on a similar issue for the case of Ethiopia. Terefe (2018) investigated the relationships between economic development and population indicators in Ethiopia. By using time-series techniques and descriptive analysis, the study showed that the growth of GDP negatively interacts with population growth, total fertility rate, child mortality rate, infant mortality rate and unemployment. Besides, economic growth positively interacts with primary and secondary school enrolments, technical and vocational education and training, undergraduate studies, and health. Nonetheless, his analysis lacks econometric models—making inference between population and development impossible. Generally, from the above studies, it is concluded that population-growth nexus lead to a mixed result.

3. Methodology

3.1 Data

This study uses a time series secondary obtained from the World Bank (WB). The annual time series data used in this study are; gross domestic product based on 2010 constant price (as a proxy of economic growth), and population growth of Ethiopia. The data used in the study range from the period 1981 to 2018; the sample used is relatively

small. The econometric analysis of the data was executed in three-stage procedures: (1) Stationary/unit root tests, (2) Bounds test for co-integration and estimation of the long-run and Short-run coefficient from the ARDL method, and (3) the Toda–Yamamoto (TY) causality test.

3.2 Autoregressive Distributed Lag (ARDL) approach to Co-integration

Co-integration can be defined as the existence of long-term and equilibrium relationships between different series (Matchaya, et al., 2013). This makes the co-integration method an ideal technique to determine whether the long-term relationships between variables exist or not. However, before proceeding to the co-integration testing, the levels of integration of variables need to be tested by using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root test. Both Augmented Dickey-Fuller (ADF) (1981) and Phillips-Perron (PP) (1988) unit root tests are used mainly in the literature (Umit and Alkan, 2016).

This study relied on using the ARDL model. Autoregressive Distributed Lag models are suitable for small sample sizes, unlike other VAR methods like the Johansen co-integration technique, which in the same situation are vulnerable for substantial loss of degrees of freedom (Emmanuel, 2015). Autoregressive Distributed Lag models generate consistent estimates of long-run coefficients that are asymptotically normal, whenever the variables are fully integrated of order zero, I(0), purely integrated of order one I(1) or a mixture of I(0) and I(1) (Pesaran et al., 2001). It also provides unbiased and efficient estimates of the long-run model and valid t-statistics even if the variables under consideration are endogenous. This is possible because it avoids the problems of serial correlation and endogeneity (Afzal et al., 2010). Consider the following equations for which the ARDL model constructed when economic growth is the dependent variable.

$$\Delta(\ln GDP)_t = \beta_0 + \sum_{i=1}^p \alpha_{1i} \Delta(\ln GDP_{t-1}) + \sum_{i=1}^p \alpha_{2i} \Delta(\ln POP_{t-1}) + \beta_1(\ln GDP_{t-1}) + \beta_2(\ln POP_{t-1}) + \mu_t \dots \dots \dots (1)$$

Where, lnGDP and lnPOP represents the natural logarithm of gross domestic product (based on 2010 constant price) and the natural logarithm of population, respectively. α_i and β_i are the short-run and long-run coefficients of explanatory variables, respectively. The second ARDL model with the population as the dependent variable is expressed as follows.

$$\Delta(\ln POP)_t = \beta_0 + \sum_{i=1}^p \alpha_{1i} \Delta(\ln POP_{t-1}) + \sum_{i=1}^p \alpha_{2i} \Delta(\ln GDP_{t-1}) + \beta_1(\ln POP_{t-1}) + \beta_2(\ln GDP_{t-1}) + \mu_t \dots \dots \dots (2)$$

In the equations above (1 and 2), all the variables are previously defined, \ln denotes logarithmic operator, Δ is the differenced of a variable, μ_t are error terms, and i is the maximum lag number.

The F-statistic is carried out on the joint null hypothesis that the coefficients of the lagged variables are equal to zero ($\beta_1 = \beta_2 = 0$) and alternative hypothesis $\beta_1 \neq \beta_2 \neq 0$, to test the long-run relationship of the model. Since the ARDL procedure is sensitive for a given lag length, the number of appropriate lags in the dependent variable chosen using Akaike Information Criteria (AIC) and Schwartz Information Criteria (SIC) to ensure that the errors are white noise.

Pesaran, et al. (2001) suggested a bounds test for co-integration with two sets of asymptotic critical values to test the null hypothesis of no co-integration. The first set of critical values estimated given all variables in a study are I(0), while the second set of critical values estimated given all variables are I(1). If the F-statistics exceeds the upper bounds of critical values, the null hypothesis of no co-integration cannot be accepted. Likewise, if the F-statistics is lower than the lower bounds of critical values, the null hypothesis of no co-integration is accepted. However, if the F-statistics lied in between the upper and the lower bound of the critical values, an inconclusive inference can be made.

After the existence of co-integration is confirmed, a dynamic error correction model (ECM) can be derived from the ARDL model. If the error correction term is negative and statistically significant, it will establish the long-run linkage between population and economic growth in Ethiopia.

$$\Delta(\ln GDP)_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta(\ln GDP_{t-1}) + \sum_{i=1}^p \beta_{2i} \Delta(\ln POP_{t-1}) + YECT_{t-1} + \mu_t \dots \dots \dots (3)$$

Equation (3) and (4), respectively, represents the short-run dynamics for the lnGDP and lnPOP models.

$$\Delta(\ln POP)_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta(\ln POP_{t-1}) + \sum_{i=1}^p \beta_{2i} \Delta(\ln GDP_{t-1}) + YECT_{t-1} + \mu_t \dots \dots \dots (4)$$

Where β 's are the coefficients associated with short-run dynamics of the model coverage to equilibrium, ECT_{t-1} is the error correction term, and μ_t is a stochastic error term.

3.3 Toda -Yamamoto approach for Causality analysis

According to Ademola (2019), econometric literature proposes, contingent on time-series features of variables, three distinct methodological alternates to empirically analyze the dynamic interactions between time series variables. These are, a VAR Model with the level, I(0) data, a VAR model with first-differenced, I(1) data, and a vector error correction model (Hundie, 2014). However, VAR estimation, as argued by Toda and Philips (1994), often comprehends nuisance parameters.

According to Santos and Chris (2013), a two-variable Granger-Causality test, unless it considers the effect of other variables, is subject to specification bias. Even if researchers can still test the significance of individual coefficients with t-statistic, one may not be able to use F-statistic to test the Granger-Causality jointly. Toda and Yamamoto (1995) propose an exciting and straightforward procedure requiring the estimation of an augmented VAR which guarantees the asymptotic distribution of the Wald statistic, since the testing procedure is robust to the integration and co-integration properties of the process. This study employs the Toda and Yamamoto (1995) causality test based on the augmented VAR ($p+dmatrix$) model. The model produces better results if there is no specification bias (Mohammed & Jauhari, 2016), when appropriate lag lengths and sample sizes are used (Zapata & Rambald, 1997).

This technique has many advantages over other techniques. The approach is applicable regardless of the co-integration and integration features of the model. Second, it better controls the types I error probability (Hundie, 2014). Besides, when compared to VECM and VAR, it is the most stable method. Applying the Toda-Yamamoto causality approach, the following equations are estimated to examine the direction of causality between population growth and economic growth in Ethiopia.

$$\Delta(\ln GDP)_t = \delta_{10} + \delta_{11t} + \sum_{i=1}^p \beta_{11i}(\ln GDP_{t-1}) + \sum_{i=1}^p \beta_{12i}(\ln POP_{t-1}) + \mu_{1t} \dots \dots \dots (5)$$

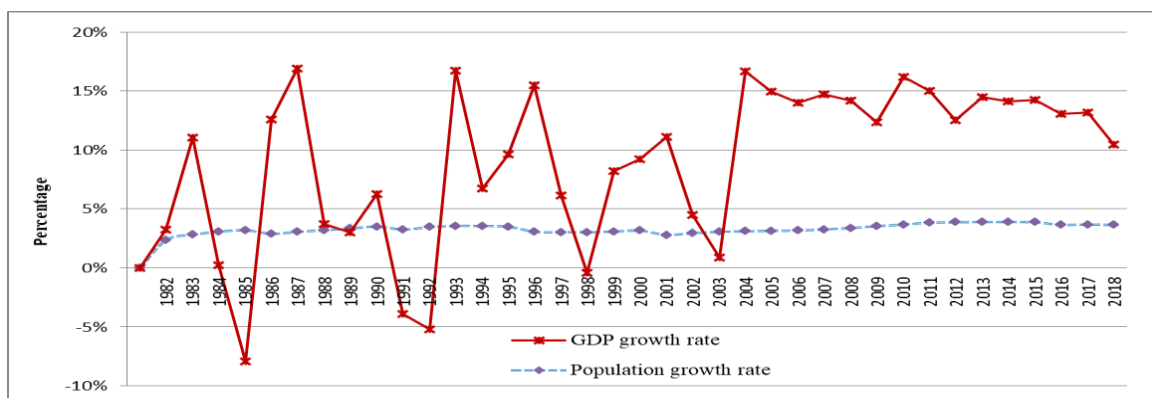
Where, lnGDP and lnPOP are previously defined, p is the maximum lag order (chosen by AIC and SIC). In the Toda Yamamoto test, the lag length is equal to the optimal lag length (i.e., p) plus the maximum order of integration (i.e., $dmatrix$). This means that the lag order is intentionally over-fitted with an additional lag (Furuoka, 2016), and the total lag length included in the model is set to be $p+dmatrix$.

$$\Delta(\ln POP)_t = \delta_{20} + \delta_{22t} + \sum_{i=1}^p \beta_{21i}(\ln POP_{t-1}) + \sum_{i=1}^p \beta_{22i}(\ln GDP_{t-1}) + \mu_{2t} \dots \dots \dots (6)$$

To test the null hypothesis that the population does not Granger causes economic (GDP) growth, the following restriction is specified $H_{01}: \beta_{111} = \beta_{112} \dots = \beta_{11L} = 0$, where β_{11i} is the coefficient of the restricted lag value of the population in the model. Similarly, to test the second null hypothesis of economic growth does not Granger causes population growth, the restriction is set as $H_{02}: \beta_{211} = \beta_{212} \dots = \beta_{21L} = 0$, where β_{21i} is the coefficient of the lag value of economic growth. However, two steps are involved to implementing the procedure. The first step is to select the maximum order of integration ($dmatrix$) for the variables in the system and then, the determination of the lag length (p) (Santos & Chris, 2013).

4. Results and Discussion

Figure 1 below shows the growth rate of the population and gross domestic product over the study year. The growth rate of GDP, as indicated by the figure, has been fluctuating over the study period. In some particular periods (such as in 1985, 1991-92 and 1998), the GDP has showed a negative growth rate—this indicates how the economy is volatile. Since the Ethiopian economy is agricultural and traditional, that relies on rainfall, its performance alters. Whereas, the growth rate of population has remained positive throughout the study period. Current estimates show the total population of Ethiopia is 113.17 million people with an annual growth rate of about 3.02 percent per year—increasing of about 3.4 million people per year. Even though the growth rate of GDP is significantly higher than population growth rate (that is reasonably enough to bring per-capita income growth positive), with the prevailing more significant amount of unemployment rate, poverty, and income inequality, the country’s impending overall economic development becomes unreliable.



Source: Authors construction from WB data

Figure 1. The growth rate of GDP and population

Unit root tests

To employ the Granger causality test, performing the unit root and lag length selection criteria tests are necessary. Tests of unit root/Stationarity for the variables of this study are carried out using the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) stationary tests. The results are presented in Table 1 below. Both tests

demonstrate that all series are stationary at first difference, I(1). Hence, the form of the data series allowed us to estimate the ARDL model and the Toda–Yamamoto causality examination.

Table 1. Unit root test results

Augmented dickey fuller(ADF)								
Variables	Level I(0)				Differenced I(1)			
	Statistics test	Critical values		P-value	Statistics test	Critical values		P-value
		1%	5%			1%	5%	
lnGDP	-0.895067	-4.226815	-3.536601	0.9459	-5.326694	-4.234972	-3.540328	0.0006*
lnPOP	0.889818	-4.323979	-3.580623	0.9997	-6.833106	-4.323979	-3.580623	0.0000*
Phillips-Perron (PP)								
Variables	Level I(0)				Differenced I(1)			
	Statistics test	Critical values		P-value	Statistics test	Critical values		P-value
		1%	5%			1%	5%	
lnGDP	-0.928514	-4.226815	-3.536601	0.9417	-5.326694	-4.234972	-3.540328	0.0006*
lnPOP	-0.148702	-4.226815	-3.536601	0.9919	-3.225715	-4.234972	-3.540328	0.0956***

Source: EViews (9) result (2019)

Since the ARDL model is lag sensitive, and the order of the VAR model plays a vital role in empirical analysis, optimal lag length selection should be given distinctive attention. To this end, the optimal lag is determined by Akaike Information Criteria (AIC) and Schwartz Information Criterion (SIC).

Co-integration

Table 2 below shows the findings from the bounds test for both population and economic growth models. In the first part, economic growth ($\Delta \ln \text{GDP}_t$) is modeled as the dependent variable for four different lag lengths. Accordingly, the computed F-statistics fell outside the upper bound of critical values in the estimation models with all four lag orders—implying the existence of a long-run relationship between economic growth and population in Ethiopia. Likewise, following the second part of Table 2, population growth ($\Delta \ln \text{POP}_t$) modeled as a dependent variable. As can be seen from the table, the computed F-statistics fell outside the upper bound of critical values in the model with all lag order, except the third one. Therefore, the null hypothesis of no co-integration is rejected for both models, and these results confirmed the existence of a long-run stable relationship between economic growth and population growth in Ethiopia.

Table 2. Bound Co-integration test

Dependent variable: $\Delta \ln \text{GDP}$					
Lag length		1	2	3	4
F-statistic		15.50161	15.50161	9.601701	7.424288
Significance level	I(0)	Co-Integration		Co-Integration	Co-Integration
5%	3.62	Co-Integration		Co-Integration	Co-Integration
1%	4.94	Co-Integration		Co-Integration	Co-Integration
Dependent variable: $\Delta \ln \text{POP}$					
Lag length		1	2	3	4
F-statistic		2886.086	11.70988	1.487904	37.65061
Significance level	I(0)	Co-Integration		No co-integration	Co-Integration
5%	3.62	Co-Integration		No co-integration	Co-Integration
1%	4.94	Co-Integration		No co-integration	Co-Integration

Source: EViews (9) result (2019)

ARDL Long-run and short-run Coefficients

Table 3 below indicates the long-run and short-run dynamics. These results are computed by incorporating 2 Optimal lags selected based on AIC and SIC.

Table 3. ARDL Long-run and short run-coefficients

Dependent variable: $\Delta \ln \text{GDP}$					
Lag length(2)		Coefficients	St. Error	t-Statistic	Prob.
Short-run Coefficients	Constant	79.573631	31.934358	2.491787	0.0179
	$\Delta \ln \text{POP}_t$	-4.151450	1.684894	-2.463923	0.0191
	ECT	-0.323777	0.122458	-2.643972	0.0124
Long-run Coefficients	$\ln \text{POP}_t$	-12.821956	1.831627	-7.000309	0.0000
	@Trend	0.449661	0.055362	8.122153	0.0000
Cointeq = $\text{LNGDP} - (-12.8220 * \text{LNPOP} + 0.4497 * \text{@TREND})$					
Dependent variable: $\Delta \ln \text{POP}$ (c no trend lag (2))					
Lag length (2)		Coefficients	St. Error	t-Statistic	Prob.
Short-run Coefficients	Constant	1.047527	0.320543	3.267981	0.0027
	$\Delta \ln \text{POP}_{t-1}$	0.828543	0.047116	17.585179	0.0000
	$\Delta \ln \text{GDP}_t$	-0.002503	0.001249	-2.003449	0.0539
	ECT	-0.056664	0.016931	-3.346709	0.0022
Long-run Coefficients	@Trend	0.031769	0.000884	35.951435	0.0000

	lnGDPt	-0.044168	0.011013	-4.010401	0.0004
Cointeq = LNPOP - (-0.0442*LNGDP + 0.0318*@TREND)					

Source: EViews (9) result (2019)

The table shows the result of the two models. In the first model in which $\Delta \ln \text{GDPt}$ is considered as a dependent variable, population growth affects GDP growth negatively and significantly, both in the short-run and in the long-run. In the second model, $\Delta \ln \text{POPt}$ is considered as a dependent variable. In the short-run and long-run, growth in GDP affects population growth positively and significantly. Moreover, in the short-run, population growth is found to be affected positively and significantly by its own lag.

As can be seen from the table 3 in the above, the coefficient of ECT in the estimation models with economic growth ($\Delta \ln \text{GDPt}$) as a dependent variable is negative and statistically significant at 1 percent level—as prior expected. The significance of the Error correction terms further confirmed the existence of a long-run relationship between population and economic growth in Ethiopia. Accordingly, the speed of adjustment to the equilibrium of growth is 32% per annum. The error correction term (ECT) of the second model is negative and statistically significant—confirming the presence of a long-run relationship between population and economic growth in Ethiopia. The coefficient of ETC of the second model is -0.056—implying about 5.6 percent of disequilibria in population growth is corrected in each year.

Toda-Yamamoto Granger-Causality Tests

Table 4 shows the main results of the Toda-Yamamoto causality tests. As indicated in the table, based on the Modified Wald Tests, a unidirectional causality running from population growth (Population) to economic growth (GDP) is found. This paper finds that the null hypothesis of population growth in Ethiopia does not Granger causes economic growth cannot be rejected at a 1 percent significance level. Hence in the last 38 years and so population growth has been affecting the economic growth (GDP growth) of Ethiopia.

Table 4. Toda-Yamamoto Granger-Causality Tests

VAR Granger Causality/Block Exogeneity Wald Tests				
Dependent variable: LNGDP				
Excluded	Chi-sq	Df	Prob.	Conclusion
LNPOP	11.03576	2	0.0040*	Population granger causes GDP
Dependent variable: LNPOP				
Excluded	Chi-sq	Df	Prob.	
LNGDP	0.692952	2	0.7072	GDP does not granger causes Population

Source: EViews (9) result (2019)

Conversely, this paper fails to reject the null hypothesis that economic growth does not cause population growth in Ethiopia. Thus, this study proposes that economic growth is not the cause of population growth in Ethiopia.

5. Summary and Conclusion

The link between population growth and economic growth has been becoming of most significant interest researchers. However, there is an agreement between researchers and scholars about whether population growth—economic growth nexus. Hence, using a time series data spanning from the period 1981 to 2018, the present study aimed to look at the relationship between population and economic growth in Ethiopia. To this end, the study used; augmented dickey-fuller and Phillip-Perron stationary tests, ARDL co-integration tests, and Toda-Yamamoto Granger-Causality Tests. Accordingly, population growth and economic (Proxied by GDP) have a meaningful long-run relationship, as confirmed by the bound test co-integration approach. From the ARDL model estimate, population growth is found to having a negative and significant effect on economic growth (GDP growth), both in the short-run and in the long-run. Likewise, growth in GDP affects population growth positively and significantly in the short-run and long-run. Moreover, in the short-run, population growth is found to be affected positively and significantly by its own lag. The coefficients of the error correction term (ECT) of the model are negative and statistically significant—confirming the presence of long-run association-ship between population and economic growth in Ethiopia.

The Toda-Yamamoto Granger-Causality Tests revealed that, there is a unidirectional causality between population growth and economic growth—running from population growth (Population) to economic growth (GDP). Hence in the last 38 years and so population growth has been affecting the economic growth (GDP growth) of Ethiopia. Thus, this study recommends that economic growth in Ethiopia is not the primary cause of population growth. The current (as of 2019) number of the total population of Ethiopia exceeds 110 million—making the country the second-most populous nation in Africa. With the prevalence of high fertility rate and mortality rate, unemployment, and poverty, the population is not expected to bring economic development in general and economic growth in particular. Hence, it is advised to the concerned body that anti-natal policies that discourage the fertility rate, need to be re-considered to supplement with economic growth policies.

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Effect of Risk Management, Intellectual Capital on Performance of State Corporations in Kenya: Moderating Approach

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ARTICLE INFO	ABSTRACT
<p>Article History</p> <p>Received 26 November 2019; Accepted 16 March 2020</p> <hr/> <p><i>JEL Classifications</i> G32, L25, L30, O34</p>	<p>Purpose: The main aim of the study was to determine the moderating effect of intellectual capital on the relationship between ERM risk structure practices and organizational performance of state corporations in Kenya. This study was guided by dynamic capabilities theory which attempts to explain the perspective of how intellectual capital and ERM practices affect organizational performance.</p> <p>Design/methodology/approach: The study used explanatory cross sectional survey design. Primary data on ERM risk structure practices, intellectual capital and organizational performance was collected from structured questionnaires. A survey was carried out on 218 state corporations in Kenya. The research hypothesis was tested using hierarchical regression analysis.</p> <p>Finding: The study found that intellectual capital had an enhancing and significant moderation effect on the relationship between ERM structure practice and organizational performance ($\beta = .314, p < .05$).</p> <p>Originality/value: This study contributes to theory by centering intellectual capital on the empirical testing of theory as well as the influence of intellectual assets on the relationship between enterprise risk management practices and organizational performance. In addition, the study supports the theory of Enterprise Risk Management (ERM) that emphasizes on holistic and company-wide approach of managing risks. The study further suggests that future research could build on this study by examining enterprise risk management practices in different sectors and industries using both financial and non-financial measures of performance.</p>

Keywords:
Intellectual Capital, ERM
Structure Practices,
Organizational Performance

1. Introduction

Firm performance indicators vary and largely depend on the core business of the organization and rationale for its existence. Thus organizations measure performance dissimilarly depending on the different sectors of the economy thus resulting to variations in performance. According to Hofer (2003) performance is a contextual concept linked to the occurrence being studied. Organizational performance has diverse definitions (Barney, 2002). Organizational performance encompasses actual production or results of an entity measured against its intended output for predetermined objectives and targets (Ongeti, 2014). Thus, determining the predictors of firm performance is paramount. Therefore, this study argues that enterprise risk management (ERM) is important in explaining performance of state corporations (SCs).

Bozkus (2014) opines that, while various companies have been engaging in some phases of ERM, studies show that only a few have a well-developed ERM infrastructure. Further, the study gave recommendations on the best practices to be applied when implementing a successful ERM framework based on practical issues and technical approaches

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within the business environment. An effectual ERM model should have a structure that enables management to comprehend and communicate the organization's risk factors. A good risk management program in an organization is essential in handling operational challenges (Beasley *et al.*, 2005). ERM structure practices within organizations' facilitate identification of uncertainties through a structure that aggregates the risk management events in a holistic framework (Hoyt and Liebenberg, 2011). ERM structure establishes the policies, processes, competencies, reporting, technology, and a set of standards for risk management. Pagach and Warr (2010) opine that the assessment of ERM structures enables firms to address all their risks, set common terminologies and expectations. That is, which risks the entity can take and which ones to avoid.

Thus, based on the above discussion the study presumed that firm performance is influenced by a host of ERM structure practices. However, the influence could be affected by intellectual capital. Therefore, survival of organizations in a dynamic environment can be ascribed to their use of intellectual assets. Intellectual capital (IC) is a group of knowledge assets that are ascribed to an organization and expressively contribute to improved competitive position by adding value to the defined key stakeholders (Marr *et al.*, 2004). Organizations with higher intellectual capital are likely to withstand the effects of unanticipated changes in markets. Also, Sofian *et al.*, (2014) opine that such organizations can effectively anticipate their risk exposure and handle them in a better way. Therefore, this study investigated the moderating role of intellectual capital on the relationship between ERM and organizational performance.

State corporations in Kenya are crucial for promoting and accelerating national growth and development through creation of employment opportunities as well as social economic transformation (Kenya National Bureau of Statistics (KNBS), 2015). However, the performance of SCs has been worrying over decades. KNBS, (2015) economic survey report indicated that firms in the private sector were reporting successes while SCs were reporting failures, missed opportunities and a few successes in the history of Kenya. As such, the Government through Treasury Circular number 3/2009 directed all chief executives of SCs to develop and implement institutional risk management framework as a strategic measure for managing risk. The directive was issued to ensure that organizations remain competitive and enhance their performance within the changing external environment. The adoption of risk management strategies in state-owned corporations in Kenya, aimed at incorporating and aligning SCs performance to Vision 2030. However, this has not achieved the projected traction (Republic of Kenya, 2013). This implies that SCs adopted ERM practices either as proactive (strategic) or reactive (compliance with regulations) measures. This study assessed the influence of ERM practices employed by SCs on organizational performance because SCs are of great interest to the government, general public and other stakeholders.

2. Review of Literature

2.1 Theoretical Review

This study was anchored on Dynamic Capabilities Theory which advances that organizational capabilities are the primary source of a firm's competitive advantage (Grant, 1991). Capability is the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, to achieve a particular goal (Helfat and Peteraf, 2003). Thus, application of dynamic capability perspective supports ERM in moving beyond an *ex ante* prediction of risky events, by providing managers with tools to recover from risky events that may occur. Therefore, dynamic capabilities thrusts beyond forecasting of risks to making organizations resilient to risks (Wohlgemuth and Bogodistov, 2017). Organizations develop risk-management capabilities for top tier management in order to sustain a competitive position in dynamic environment. Resilience in strategic risk management can be enriched by deliberately making investments in fundamental routines and processes which would result in dynamic managerial capabilities. For instance, Adner and Helfat (2003) suggest that managerial human capital can be construed to be part of dynamic managerial capabilities. Stewart (1997) posits that there are assets referred to as "invisible assets" which in real sense are intellectual capital. Therefore, intellectual capital encompasses resources and capabilities that are valuable, uncommon, poorly imitable and non-substitutable, which present a lasting competitive advantage and superior performance to the firm. Proponents of resource-based view and dynamic capabilities theory consider both ERM and intellectual capital as the prestigious resources of an organization. This research agrees with this view by proposing that the combined effect of ERM and intellectual capital can improve organizational performance.

2.2 Previous studies

Wood and Lewis (2018) evaluated the impact of risk culture development on Caribbean Development Bank. The study opines that risk culture is a balance between qualitative behavioral traits and quantitative control structures. Implying that, risk culture is an aggregate of the organization's strategy, processes, systems and people; articulated by how people think and behave in view of risk and its management. The study collected primary data through structured interview of Chief Risk Officer during the month of August 2015. Risk culture as part of ERM structure components was assessed using five attributes namely; policies and limits, strategies and goals, risk management structure, risk control processes, people and competence. It was observed that communication, awareness and accountability are strong indicators of Caribbean Development Bank's risk culture which contributed to improved uniformity of risk management knowledge, coordinated collation of risk data and better appreciation of risk management issues. Consequently, risk management practices were enhanced within Caribbean Development Bank.

Further, Olayinka *et al.*, (2017) investigated the impact of ERM on financial performance of Nigerian financial sector. The study collected panel data from the annual reports obtained from individual company's website and

Africanfinancials.com website. Data was obtained from 40 companies for the period between 2012 and 2016. The study used Return on Assets (ROA) to measure financial performance while Value at Risk (VaR) was used as a proxy measure of ERM structure practices. VaR measures the organization's total risk component as a composite value; where a lower VaR implies that the organization is able to control its risk appetite thus a positive effect on financial performance while a higher VaR suggests negative influence on financial performance. Data was analyzed by use of fixed effect panel regression model while controlling for leverage, board size, firm size, institutional ownership and size of risk management committee. The study found that ERM structure practices had a positive a significant effect on financial performance on firms listed in the Nigerian financial sector.

Studies by Florio and Giulia (2016) investigated the relationship between the extent of implementation of ERM systems and performance of Italian listed companies. ERM systems were measured using proxies; appointment of a Chief Risk Officer, presence and reporting frequency of internal controls, and existence of risk committee. Further, ERM operating mechanism was assessed based on frequency, depth and methodology of risk assessment. Conversely, performance was measured using ROA and Tobin's Q . Secondary data was collected from non-financial companies listed on Milan Stock Exchange for the period 2011 to 2013 and analyzed using multivariate Ordinary Least Square regression models. The study found that firms with advanced levels of ERM implementation had higher performance, in respect to financial performance and market valuation. In addition, the study validated that effective ERM systems result to greater performance by way of reduced risk exposure.

ERM practices within the risk structure combine risk management events in a holistic framework to facilitate identification of uncertainties (Hoyt, & Liebenberg, 2011). ERM structure establishes the policies, processes, competencies, reporting, technology, and a set of standards for risk management. Shad and Lai (2015) developed a conceptual framework for ERM performance measure through Economic Value Added. The framework hypothesizes that ERM structure practices have a significant impact on performance. Further, ERM structure practices need to be assessed using four indicators: (i) provision of a common understanding of the objectives of each ERM initiative (ii) provision of common terminology and set of standards of risk management (iii) identifying key risk indicators (KRIs) and (iv) integration of risk with key performance indicators (KPIs). The study was based on review of literature and recommends that empirical studies should be done to test the hypothesis. This study sought to test the hypothesis using similar risk structure practices measures developed by Shad and Lai (2015).

Bontis *et al.* (2000) investigated the elements of intellectual capital (human, structural and customer capital) and their inter-relationships within two industry sectors (service and non-service industries) in Malaysia. Primary data was collected using a psychometrically validated questionnaire developed by Bontis (1998). Data was analyzed using partial least squares because it was suitable for handling small data samples. The results of the study indicate that all the elements of intellectual capital (IC) have a positive and significant influence on business performance irrespective of the industry.

Bontis and Mention (2013) investigated the effects of IC on business performance in banks within Luxembourg and Belgium in May 2010. Primary data was collected using survey questionnaires developed by Bontis (1998) and modified by Cabrita and Bontis (2008). Intellectual capital was assessed in terms of human, structural and relational capital using the scorecard method. Data was analyzed by use of structural equation modeling. The study found that human capital contributes to business performance both directly and indirectly in the banking sector. In addition, structural and relational capital were positively associated to business performance. However, the effect was not statistically significant. The data collection instrument used was similar to that of Bontis *et al.*, (2000). However, variations in the results could be attributed to differences in the business environment.

Ting and Lean (2009), obtained data from the annual reports of 20 financial institutions listed in the finance sector of Bursa Malaysia for the period 1999 to 2007 to examine the association between IC and financial performance. Financial performance was measured using ROA while IC was measured using Value added intellectual coefficient (VAIC). Data was analyzed using linear multiple regression analysis. The results of this study indicated that there is a significant positive relationship between VAIC and ROA.

On the contrary, Mondal and Ghosh (2012) investigated the relationship between IC and financial performance of 65 Indian banks during the period 1999 to 2008. The study applied similar methodology like Ting and Lean (2009) to an Indian context by measuring IC using VAIC and analyzing data using multiple regression models. In addition, the study expanded performance measures to include Return on Equity (ROE). The study controlled for firm characteristics such as leverage, firm size and assets turnover ratio. The study found that the relationships between bank's IC and financial performance indicators to be varied. The human capital efficiency and banks profitability (ROA) was positively significant except for the years 2000, 2003 and 2008. During the remaining period, it was positive but not significant. In respect to ROE, the effect human capital efficiency on bank performance was not significant in 1999 and 2006. Further, structural capital efficiency was not significantly associated to ROA and ROE in almost all of the entire period of study.

Hamdan (2018) conducted a study on 198 firms from two Gulf Cooperation Council countries: Kingdom of Saudi Arabia and Kingdom of Bahrain for the period 2014–2016 on the relationship between IC and firm performance. The study explored the use of traditional measures of performance ROA and Tobin's Q and IC was measured using VAIC model. The data was analyzed using random effects regression. The study found that IC has a significant positive impact on ROA on firms in Saudi Arabia. However, the same was not evident for firms in Bahrain. In respect to Tobin's Q , all the VAIC constituents were not statistically significant.

The ability of using IC to gain competitive advantage and eliminate risk allows the entity to be more efficient in the market. Also, it has an impact on the relationship between business partners and their involvement during the development process. Although intangible assets characterize value in an organization, managers do not have

complete and clear information on the role that IC plays and its potential; that is, what and how many risks it generates. The competitive advantage obtained from IC cannot be easily ascertained since one requires information on IC structure and potential risks which are unique for each entity.

Studies carried out on ERM have focused on different study variables. There are studies that have looked at the determinants for ERM on performance (Pagach and Warr, 2010; Gordon *et al.*, 2009), while others have studied characteristics of firms which adopted ERM (Hoyt and Liebenberg, 2008; Pagach and Warr, 2010). Moreover, studies have been done on the influence of ERM on firm's performance and the other aspects of the business (Hoyt and Liebenberg, 2011; McShane *et al.*, 2011). Further, studies have been done on the roles of the key function on ERM (Beasley *et al.*, 2005; Muralidhar, 2010) and lastly, ERM practices within ERM organizations (Ching and Colombo, 2014; Shad and Lai, 2015). This study examined the link between ERM structure practices on performance of SC in Kenya. Additionally, findings of studies on ERM structure practices and performance have inconclusive results.

Lastly, according to Togok and Suria (2014), most studies done on the effect of ERM on performance or value creation are based on experiences from developed countries like USA, United Kingdom, Germany, Canada representing 75%. On the contrary, Asian and Middle East countries represent 18% and 5% respectively, while other developing countries represent 2% of the studies. Despite ERM being a concept accepted worldwide, it is always implemented and interpreted in local ways (Tekathen and Dechow, 2013). It was therefore important to join the discussion on the relationship between ERM structure practices on performance of SCs in Kenya, while moderating for intellectual capital. Hence, the study hypothesized that: -

H₀: There is no significant moderating effect of intellectual capital on the relationship between risk structure practices and organizational performance of state corporations in Kenya.

3. Methodology

This study adopted positivist philosophy which usually involves collecting and converting data into numerical form so that statistical calculations can be made and conclusions drawn. The study took a quantitative approach because all the variables being considered in this research were measured, typically on instruments, so that quantitative data was analyzed using statistical procedures. This study adopted explanatory cross-sectional survey research design. The study surveyed (218) State Corporations. The study used primary data successfully collected from 197 SCs which was quantitative in nature. Primary data was obtained through structured questionnaires. The questionnaire was designed on a five point Likert -type scale ranging from (1) - strongly disagree to (5) – strongly agree. The unit of analysis was SCs, thus top-level managers were the most appropriate respondents. The target respondents were Finance Managers in SCs because they are best placed to answer the research questions.

3.1 Measurement of Study Variables

3.1.1 Dependent Variable

Organizational Performance; This study used modified and validated questions on organizational performance developed by (Ping & Muthuveloo, 2017; Calandro & Lane, 2006) as well as balanced score card measure of performance as presented in Table 1. Each indicator was scored and a raw score derived. The raw scores were combined to generate a composite score for organizational performance for each SC in Kenyan. The composite score of each organization was measured on a 5 point Likert scale. The composite score generated is what was used to measure organizational performance in this study.

3.1.2 Independent Variables

ERM structure was measured using four items; outlined objectives, culture, key risk indicators (KRIs) and key performance indicators (KPIs) as developed by Shad & Lai (2015). The same measures were used by Laisaikorn (2014). The constructs for ERM structure were measured using a 5 point Likert scale. Joshi *et al.* (2015) posit that when using a Likert scale, respondents are asked to respond to each of the statement in terms of several degrees, usually five degrees of agreement or disagreement in each statement of the data collection instrument. The technique assigns a scale value to each of the five responses indicating its favorableness or unfavorableness. The scores are totaled to measure the respondent's attitude (Joshi *et al.*, 2015).

3.1.3 Moderating Variables

This study measured intellectual capital using three elements: human capital, structural capital and relational capital. The dimensions were assessed using 22 items that measure the respondent's perception of IC. This was carried out using 5 point likert scale questionnaire. This study used a slightly amended version of the original survey questions developed by Bontis (1998) and modified by Cabrita and Bontis (2008). Each indicator was scored and a raw score derived. The raw scores were combined to generate a composite score for IC for each SC. This measures used are similar to those used by Cabrita and Bontis (2008); Bontis *et al.* (2000).

3.1.4 Control Variables

The study controlled for growth rate, industry differences and firm size. This study measured growth rate by using the percentage increase in the organization's revenue. This measure was also used by Beasley *et al.* (2005) and Waweru and Kisaka, (2013). Data on the growth rate was collected from the questionnaire. Industry differences was

measured using dummy codes to represent each industry (Beasley *et al.*, 2005; Waweru and Kisaka, 2013). This study measured industry differences using the dummy codes representing each industry of operation. SCs are divided into eight (8) sectors which were given dummy codes as follows; 1 - financial sector, 2 - commercial and manufacturing, 3 - public universities, 4 - training and research, 5 - service corporations, 6 - tertiary education and training, 7 - regional development, and 8 - lastly, regulatory sector. Lastly, firm size has been measured using different indicators. Yegon *et al.*, (2014) posit that firm size can be measured in terms of capital structure and asset value. Studies by Hoyt and Liebenberg (2011); Waweru and Kisaka (2013) have calculated firm size as the natural logarithm of total assets. This study adopted the same measurement of firm size. The natural logarithm of total assets was done to correct for the effect of different sizes and reduces the effect of skewness in the distribution.

Table 1: Operationalization and measurements of variables

Variables	Operational Indicators	Measure	Supporting Literature
Organizational Performance	Composite index of organizational performance (Financials, customers perspective, internal business process, learning and growth)	5- point likert scale type questions	Ping & Muthuveloo (2017) Calandro & Lane (2006)
ERM Structure Practices	Outlined objectives, culture, key risk indicators (KRIs) and key performance indicators (KPIs)	5- point likert scale type questions	Shad & Lai (2015) Laisaikorn (2014)
Intellectual Capital	Human capital, structural capital, relational capital	5- point likert scale type questions	Cabrita & Bontis (2008) Bontis <i>et al.</i> , (2000)
Firm Size	Measured as natural logarithm of total assets	Ordinal scale	Hoyt & Leibenberg, (2011) Waweru and Kisaka, (2013)
Growth rate	Percentage increase in revenue of the organization	Ratio scale	Beasley <i>et al.</i> (2005)
Industry differences	1=financial sector, 2= commercial and manufacturing, 3= public universities, 4=training and research,5= service corporations, 6=tertiary education and training, 7=regional development, and 8=regulatory sector	Nominal scale	Waweru & Kisaka, (2013)

Source: (Researcher, 2019)

3.2 Analytical models

Hierarchical regression was used to determine how much the extra variable adds to the prediction of the dependent variable over and above the contribution of previously included independent variables. Baron and Kenny (1986) model was employed in the testing of the moderating role of intellectual capital. The conditional effect of X and M on Y is represented by (b_1+b_3M) . It provides for the effect of X on Y when dependent on M. X is representing X_1 (ERM structure) and M is the moderating effect of IC. This model was appropriate to test for the overall objective of the study.

Model 1 was used to test the effect of control variables on the dependent variable.

$$Y = \beta_0 + \beta_1C_1 + \beta_2C_2 + \beta_3C_3 + \xi_1 \dots \dots \dots (1)$$

Model 2 was used to test the direct effect of X_i on the dependent variable.

$$Y = \beta_0 + \beta_1C_1 + \beta_2C_2 + \beta_3C_3 + \beta_4X_1 + \xi_1 \dots \dots \dots (2)$$

Model 3 was used to examine the unconditional effect of M on the dependent variable.

$$Y = \beta_0 + \beta_1C_1 + \beta_2C_2 + \beta_3C_3 + \beta_4X_1 + \beta_5M + \xi_1 \dots \dots \dots (3)$$

To test the moderating effect of intellectual capital on the relationship between structure practices and organizational performance, the following models will be used

$$Y = \beta_0 + \beta_1C_1 + \beta_2C_2 + \beta_3C_3 + \beta_4X_1 + \beta_5M + \beta_6M.X_1 + \xi_1 \dots \dots \dots (4)$$

where

C_i = Firm Characteristics (Control variables); where C_1 (Firm size), C_2 (Growth rate) and C_3 (Industry differences).

X_i = ERM Structure Practices (independent variables)

M_i = Intellectual Capital (moderating variable)

Y_i = Organizational Performance (dependent variable)

4. Results

This section presents the empirical findings and interpretations of the research.

4.1 Descriptive Statistics

In order to establish responses made to the research items, the mean, standard deviation, skewness and kurtosis of the study variables were determined. The mean gave indications on the average direction of the variables for each construct, while the standard deviation provided information on the level of dispersion from the mean. A low standard deviation meant that most of the responses group around the mean. In addition, kurtosis and skewness was used to establish the measures of the shape of the distribution. Kurtosis measured the "peakedness" or "flatness" of a sample distribution, while skewness measured the extent to which a distribution of values deviates from symmetry around the mean.

4.1.1 Risk Structure Practices

Table 2 provides the findings on risk structure practices. Risk culture was high in SCs (Mean =3.62, SD=.80), followed by the outlined objectives of (mean = 3.45, SD = 0.89). In terms of culture, there is an approach to determine the root cause of risk. Further, the study assessed construct validity using factor analysis. Principal components analysis (PCA) was used to assess the underlying factor structure of the given variables and also to reduce items in the model in the case of complex variables as recommended by Tabachnick and Fidell (2013). ERM structure practices were sorted and clustered into two factors which explained 65.846% of the total variance. All the items under ERM structure practices met the criteria of having a factor loading value of greater than 0.4. They distinctively load to one of the two components extracted indicating that they significantly contributed to the construct. The Kaiser-Meyer-Olkin (KMO) had a measure of 0.932, which was above the threshold of 0.5 (Field, 2005). The Bartlett's test was significant for ERM structure practices with Chi-Square= 2443.816, (p-value< 0.05). This implied that the sample size was adequate for the variables entered into analysis; factor analysis was appropriate for the study and there was a relationship among the variables.

The reliability of the questionnaire was therefore tested using Cronbach's alpha to assess internal consistency or homogeneity among the variables. The reliability coefficients of all the variables were above 0.70, which concurred with the suggestion made by Nunnally (1978).

Table 2: Risk Structure Practices

n=197	Mean	Std. Dev	Skewness	loadings
Outlined Objectives	3.45	0.89	-0.49	0.701
Culture	3.62	0.80	-0.55	0.829
Key Risk Indicators	3.41	1.03	-0.36	0.773
Key Performance Indicators	3.36	0.88	-0.54	0.903
ES	3.48	0.78	-0.44	0.911
<i>Cronbach's Alpha = .910</i>				
<i>Notes: Eigen values</i>	9.1	1.436		
<i>Percentage of Variance</i>	46.874	18.972		
<i>KMO Measure of Sampling adequacy</i>	0.932			
<i>Approx. Chi-Square</i>	2443.816	(p<.05)		

Source: Research Data (2019)

4.1.2 Intellectual capital

The study assessed intellectual capital in terms of human, structural and relational capital. The results are as presented in Table 3. Based on the findings, relational capital was high in SCs (mean = 3.78, SD = 0.70) followed by human capital (mean = 3.64, SD = 0.61). Principal component analysis with varimax rotation of factor analysis was applied because it is a reliable method (Tabachnick & Fidell, 2013). Intellectual Capital was sorted and clustered into four factors which explained 65.826% of the total variance. The Kaiser-Meyer-Olkin (KMO) had a measure of 0.921, which was above the threshold of 0.5 (Field, 2005). The Bartlett's test was significant for intellectual capital with Chi-Square= 2566.28, (p-value< 0.05). Therefore, the KMO value of 0.921 and significance of Bartlett's statistic confirmed the appropriateness of the factor analysis for intellectual capital.

Table 3: Intellectual Capital

n=197	Mean	Std. Dev	Skewness	Kurtosis	Loadings
Human capital	3.64	0.61	-0.45	0.81	0.84
Structural Capital	3.57	0.66	-0.16	0.04	0.8
Relational Capital	3.78	0.70	-0.68	0.35	0.73
IC	3.62	0.61	-0.41	0.16	0.92
<i>Cronbach's Alpha</i>	0.883				
<i>Notes: Eigen values</i>	9.909	1.508	1.306	1.101	
<i>Percentage of Variance</i>	47.185	7.18	6.218	5.243	
<i>KMO Measure of Sampling adequacy</i>			.921		

Source: Research Data (2019)

4.1.3 Organizational Performance

Table 4 illustrates the results on organizational performance. As evidenced in the table 4, internal business measure of performance was high in state corporation (Mean = 3.69, SD = 0.76) closely followed by learning growth (mean = 3.66, SD = 0.80) while financial perspective was least (mean = 3.35, SD = 0.94). All the items under organizational performance met the criteria of having a factor loading value of greater than 0.4. They distinctively loaded to one of the three components extracted indicating that that they significantly contributed to the construct. The three extracted factors explained 70.00% of the total variance. The Kaiser-Meyer-Olkin (KMO) had a measure of 0.910, which was above the threshold of 0.5 (Field, 2005). The Bartlett's test was significant for organizational performance with Chi-Square= 2320.6, (p -value< 0.05). Therefore, the KMO value of 0.910 and significance of Bartlett's statistic confirmed the appropriateness of the factor analysis for organizational performance.

Table 4: Organizational performance

n=197	Mean	Std. Dev	Skewness	Loadings
Financial Perspective	3.35	0.94	-0.4	0.77
Customer perspective	3.58	0.81	-0.46	0.859
Internal Business	3.69	0.76	-0.58	0.773
Learning Growth	3.66	0.80	-0.51	0.75
Performance	3.61	0.71	-0.34	0.638
<i>Cronbach's Alpha</i>	0.867			
<i>Notes: Eigen values</i>	8.466	1.562	1.171	
<i>Percentage of Variance</i>	52.915	9.775	7.319	
<i>KMO Measure of Sampling adequacy</i>		0.91		
<i>Bartlett's Test Approx. Chi-Square</i>		2320.6	Sig. .000	

Source: Research Data (2019)

4.2 Correlation Results

In this study, Pearson correlation analysis was conducted to examine the relationship between variables (Wong & Hiew, 2005). A significant and positive correlation exists between ERM structure and performance ($r = 0.744$, $p \leq 0.01$), as well as intellectual capital and performance ($r = 0.783$, $p \leq 0.01$). For the control variables, it is only growth rate that was positively correlated with SCs performance ($r = 0.142$, $p \leq 0.05$). Industry differences and firm size were not correlated with the organizational performance of state corporations in Kenya as shown in Table 5.

Table 5: Correlation Results

	PERF	ES	IC	IND	GWTH	SIZE
PERF	1					
ES	.744**	1				
IC	.783**	.671**	1			
IND	0.048	-0.026	0.08	1		
GWTH	.142*	0.012	0.091	-0.058	1	
SIZE	-0.075	-0.028	-0.076	0.041	-0.054	1

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

* Correlation is significant at the 0.05 level (2-tailed).

ES= ERM Structure, IC=Intellectual Capital, PERF= Organizational Performance, IND=Industry Difference, GWTH= Growth Rate, SIZE= Firm Size

4.3 Testing Hypotheses

The hierarchical regression results are presented in Model 1 to 4 in Table 6. H_0 specified that intellectual capital moderates the relationship between ERM structure practices and organizational performance ($\beta = .314$, $p < .05$). Thus, the null hypothesis was rejected. This was also confirmed by $R^2\Delta$ of .010 which indicate that intellectual capital moderates the relationship between ERM structure practices and organizational performance by 1%. This implies that intellectual capital enhances the relationship between ERM structure practices and organizational performance. The implication is that, the inclusion of employees who are adequately equipped with skills to manage risks enhances the organizational performance of state corporations.

Table 6: Moderating effect intellectual capital on risk structure practices and organizational performance

	Model 1	Model 2	Model 3	Model 4
	B(Se)	B(Se)	B(Se)	B(Se)
(Constant)	0.002(.071)	0.001(.042)	0.006(.038)	0.006(.155)
Zscore(IND)	0.057(.071)	0.064(.042)	0.024(.038)	0.027(.7240)
Zscore(GWTH)	0.14(.071)	0.093(.043)*	0.07(.039)	0.073(1.91)
Zscore(SIZE)	(-0.07)(.071)	(-0.043)(.042)	(-0.021)(.038)	(-0.023)(-.607)
Zscore(ES)		0.226(.057)**	0.151(.053)**	0.053(.838)
Zscore(EG)		0.352(.068)**	0.219(.065)**	0.181(2.764)**
Zscore(EP)		0.29(.067)**	0.197(.062)**	0.156(2.479)*
Zscore(IC)			0.38(.057)**	0.229(2.874)**
Zscore(ES_IC)				0.314(2.674)**
Model Summary				
R	0.166	0.817	0.855	0.861
R Square	0.028	0.667	0.731	0.741
Adjusted R ²	0.012	0.656	0.721	0.73
Std. Error	0.994	0.587	0.528	0.520
Change Statistics				
R ² Δ	0.028	0.639	0.064	0.010
F Δ	1.821	121.464	45.116	7.152
df1	3	3	1	1
df2	193.000	190.000	189.000	188.000
Sig. F Δ	0.145	0.000	0.000	0.008

ES= ERM Structure, IC=Intellectual Capital, PERF= Organizational Performance, IND=Industry Difference, GWTH= Growth Rate, SIZE= Firm Size, and ES-IC = (ERM Structure* Intellectual Capital)

Source: Research Data (2019)

Previous scholars reiterated that the most optimal way to know the nature of the interaction effect of the moderator is to plot them in a graph (Jose, 2008). Mod Graphs help to simplify the interpretation of the complex nature of interactions in the model. Thus, the results in Table 6 can be plotted on Mod Graphs to provide a logical interpretation of interaction effects of intellectual capital in the relationship between ERM structure practices and organizational performance of SCs. The Mod Graphs are presented in Figure 1. It has been demonstrated in Figure 1 that higher levels of intellectual capital within SCs result to a steeper slope between ERM structure practices and organizational performance, hence, the null hypothesis H₀ was not supported. This implied that intellectual capital positively and significantly moderates the relationship between ERM structure practices and organizational performance.

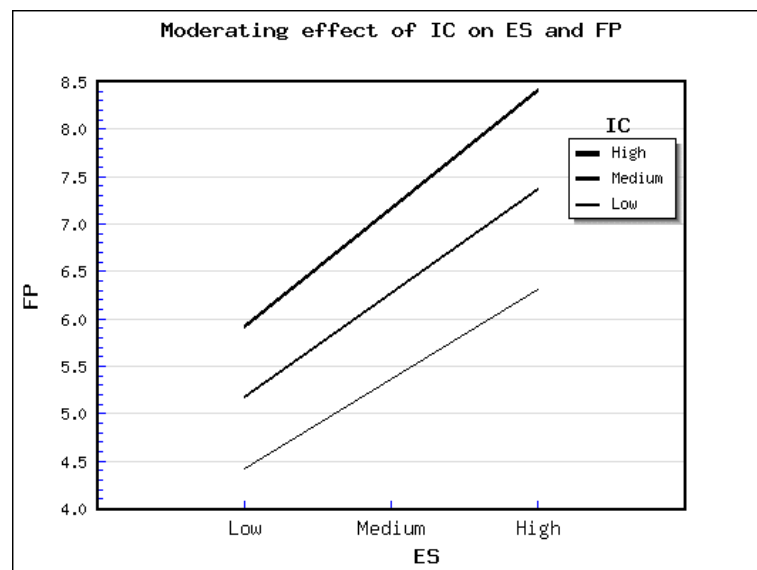


Figure 4.1 Moderated effect of intellectual capital on the relationship between ERM structure and organizational performance

The findings of this study are in agreement with those of Olayinka *et al.* (2017); Shad and Lai (2015) which indicate that ERM structure practices have positive and significant effect on financial performance. On the other hand, the findings of this study contradicts those of Laisasikorn (2014); Quon *et al.* (2012) which found no significant relationship between ERM structure practices and performance. Similarly, Acharyya, (2009) concluded that insurers' stock market performance is dependent on the characteristics of the industry rather ERM structure practices.

5. Conclusion and Recommendations

The results indicate that intellectual capital positively and significantly moderates the relationship between ERM structure practices and organizational performance. This may be attributed to employees' competences that match their job requirements. Besides, the systems within SCs are efficient and information in the organization's database can easily be accessed by the authorized persons. Further, procedures are in place that support innovation and that systems allow information sharing. Nonetheless, it is unclear if there is high level of bureaucracy in operations. Furthermore, customers are generally satisfied hence there are many loyal customers. Moreover, SCs have capitalized on customers' needs and understanding their target market. Besides, information about the organizations' products and services is usually disseminated to the customer. Also, the organization has scheduled activities for meeting with its customers. Finally, customers' feedback is highly valued. This is in agreement with Welbourne (2008) who states that relational capital as an intangible asset that is based on developing, maintaining and nurturing high- quality relationships with any organization, individuals or group that influences or impacts the business.

5.1 Managerial implication

Risk structure practices are essential for reduction of risk exposure and operational cost thus facilitating improvement in SCs overall performance. Also, it is important for SCs to define key areas of authority and the degree to which individuals and teams are authorized to act while addressing issues, solving problems and taking advantage of opportunities. Moreover, firms need to capitalize on personnel who act as risk identifying champions and ensure that employees are trained on ERM. Further, SCs need to adopt an approach that is effective in determining the root cause of risk so that each risk is identified right from the onset and the best course of action determined.

5.2 Theoretical implication

The study contributes to literature on organizational performance by providing empirical evidence on the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance. Also, the study contributes to dynamic capabilities theory by examining the implication of intellectual capital on ERM practices which is considered as a strategy adopted by organizations to enhance performance. In addition, the study supports the theory of Enterprise Risk Management (ERM) that emphasizes on holistic, company-wide approach in managing risks (Hoyt and Liebenberg, 2011).

This study expands knowledge on the moderating effect of intellectual capital on the relationship between enterprise risk management practices and organizational performance of Kenyan state corporations. Though this study has fulfilled its aim and objectives, there are limited studies that have focused on moderating variables for ERM and organizational performance. Therefore, exploratory and empirical studies should be conducted to determine moderating variables for ERM and organizational performance. In addition, the risk profile and dynamics of intellectual capital are unique to each organizations and may be affected by regulatory frameworks across different sectors, countries and regions. For this reason, further empirical investigations in different regions and countries are needed.

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Citizens' Intent and Behavior Towards Recycling in the Municipality of Kavala

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ABSTRACT

Purpose:

This study examines the factors that tend to affect citizens intent and behavior towards recycling. There are several key factors that can influence this behavior, such as Individual perception and behavior towards recycling as well as the spatial planning of recycling bins and the recycling culture.

Design/methodology/approach:

Taking these variables into account a quantitative survey was carried out on a sample of 307 people in the municipality of Kavala from June 2018 to June 2019. The data were gathered through the use of a structured questionnaire implemented with the SPSS 20.0 and the techniques applied were Correlation Analysis, Regression analysis and ANOVA analysis.

Finding:

The results of the survey showed that "Recycling Behavior" and "Recycling Culture" are the factors that affect the behavior towards recycling the most according to the citizens of Kavala. On the other hand "Spatial planning of recycling bins" seems to be indifferent to the participants while "Individual perception about recycling" is the least agreeable factor.

Research limitations/implications:

One of the most basic and uncontrolled constraints is the objectivity of the responses given by the individuals who completed the questionnaires. It is worth mentioning the negative reaction of many male respondents when they were informed about the subject of the survey. In a way, the researcher tried to obtain the most objective answers possible through clarifying questions. In addition, some of the difficulties faced by the researcher were the negative responses about answering the questionnaire using as an excuse the lack of time, while individual cases of respondents (10) refused to participate in the research because its issue was not of their concern or interest.

Originality/value:

This survey shows citizens' behavior towards recycling following the implementation of recycling measures by the Municipality of Kavala.

Keywords:

Recycling, behavior, attitude

1. Introduction

In recent decades, environmental protection worldwide has become a major issue. The main problem is urban waste management and an appropriate solution is recycling which also contributes to the development of local economies through job creation (Ezeah and Roberts, 2012). Recycling is also indicated as a solution to the problem of hazardous waste after disposal in special landfills (Connet and Sheeman, 2011).

At European Union level and after Directive 2008/98 composting, incineration and disposal co-form the solid waste hierarchy. Directive 2008/98 defines the hierarchy of prevention, reduction, re-use, recycling, recovery, treatment and disposal. At the same time, Directive 94/62 / EC on packaging waste was implemented, bearing in mind that it is legally required to increase recycling by 50% in plastic, paper and metal by 2020 and that in Greece the recycling rate is low (1.9%) and 80.6% of that is paper. Based on the above, waste management in Greece focuses on the creation and enhancement of environmental recycling programs (Abeliotis et al., 2010).

In Greece, environmental marketing surveys began in the mid-1990s (later than other Western countries). Following the recent economic crisis there is a strong research interest in understanding the impact of new conditions on environmentally friendly behaviors. Within this context, various theoretical approaches have been formulated and

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tested through empirical research. These surveys revealed a number of key factors that influence citizens' behavior towards recycling.

2. Literature review and Research Hypotheses

2.1 Concept of behavior towards recycling

Modeling, the reward system, punishment, and trust boosting can -at social level- encourage new behaviors (Bandura, 1977). Adolescents create social incentives in the school environment, especially in the places where they socialize and create patterns. The key to building strategic leadership is understanding how behaviors diffuse across. Is it possible to change one behavior by observing another? Does it need anything more radical? (Brechtwald and Prinstein, 2011)

Researchers targeting on the effects of the adolescent influence process is the reason we do not have enough evidence for creating social influence among adolescents (Brown et al., 2008).

Based on existing research, what others do and what is considered ethical is directly related to recycling behavior (Cialdini et al., 1990). For example managing the amount of garbage in an area increases the proportion of people who throw garbage in that area.

Essentially, social network analysis provides a social "map" that shows how attributes and behavior are distributed within a particular community in relation to the relationships between members. Recent studies reveal similarities or "clustering" in physical activity (Macdonald-Wallis et al., 2011), weight (de la Haye et al., 2010), drinking, and smoking behavior (Fujimoto and Valente, 2012). Demographics such as ethnicity, gender and age have also been shown to cluster socially (McPherson et al., 2001).

Analysis of social networks shows the characteristics and behavior of the community but also among its members. Studies show similarities in fitness (Macdonald-Wallis et al. 2011), alcohol consumption and smoking (Fujimoto and Valente, 2012). The demographics appear to be grouped in social terms (McPherson et al., 2001).

2.2 Motivation towards recycling

According to Thøgersen, two approaches to recycling incentives are identified at a global research level. Applied behavior analysis studies that consider man as selfish and exploiter and his attitude to be regulated by a system of rewards and punishment (Porter et al., 1995). On the other hand, attitude based on prior knowledge or behavioral predictions is considered to direct behaviors. The most prevalent of studies-based theories is the theory of planned behavior to deepen behavior towards recycling. In essence, it is a model that predicts behavior. (Barr, 2007).

The bibliographic gap of the consumer's perspective as a recycler is highlighted. As Tabanico and Schultz typically mentioned, "it's surprising that so little attention is being paid to the perspective of people who recycle" while in the US. social marketing is regularly used in environmental campaigns (Tabanico and Schultz, 2007)

In the EU Although Member States share common goals, recycling performance varies. Socioeconomic differences and even cultural differences contribute to this many landfills are typical and no attention is being paid to waste prevention or recycling policies.

Usually, the lack of adequate management resources is hidden behind the unyielding stance on ecology (O'Brien, 2013) which in turn creates urban and environmental problems (Antanasijevic et al., 2013).

In each case, the particularities of the place and the inhabitants must be taken into account (Ordoñez et al., 2015) while every participating household must work hard to embrace green tactics (KarimGhani et al., 2013). The basic measures for creating a recycling culture are:

- Administrative measures (Legislation)
- Financial measures (Tax incentives, rewards system)
- Natural measures (Recycling network installation and organized transport of MSW)
- Information (recycling events, information sessions)

Combining the above would help to involve citizens (Bernstad, 2014). While at other times instead of motivating a recycling program it can work as a barrier (KarimGhani et al., 2013).

2.3 Individual perception towards recycling

Many studies have dealt with the main features that influence the decision of the citizens to engage in recycling (Schultz et al., 1995). Recently Do Valle et al.,(2008) stated that "the theory of planned behavior is the basis on which we can model recycling decisions". As accepted by many studies (Boldero, 1995; Cheung et al., 1999; Mannetti, et al., 2004; Taylor and Todd, 1995; Terry, et al., 1999; White et al.,2009). The theory of planned behavior predicts recycling behavior and intention. While initially expected the theory of planned behavior to be indirectly influenced through rules of belief and control behaviors (Ajzen and Fishbein, 2005), there is increasing support for the effects of human personality on intention and behavior within the framework of theory of planned behavior (Norman and Conner, 2005) At the same time, it is established that in the context of the theory of premeditated behavior, human personality has a catalytic effect in many areas. (e.g., Fielding et al., 2008; Nigbur et al., 2010; Sparks and Shepherd, 1992; Theodorakis, 1994) and behavior (e.g., Bissonnette and Contento, 2001; Nigbur et al., 2010; Theodorakis , 1994).

2.4 Recycling Behavior

The field of psychology has at times formulated theories to interpret the change in ecological behavior. The model activation model (Schwartz, 1973), as well as the belief value theory (Stern, 2000), are seen as the catalyst for the behavior of personal beliefs. While according to Schwarz (1973), there is also a sense of moral compulsion to behave in a specific way. However, the most applicable theories are the theory of planned behavior and the pre-existing theory of reasoned action (Armitage and Conner, 2001). In the theory of planned behavior, intention controls the behavior and the degree of control that one considers to have over that behavior. The stronger this correlation, the more likely it is that the desired behavior will be triggered (Chen and Tung, 2010). Rules deeply influence behavior either by assuming that social and personal rules are independent or as studies have shown that they can be influenced by how social rules can influence recycling behaviors through personal rules (Bratt, 1999).

2.5 Spatial planning of recycle bins

From the beginning of human history, there was garbage produced mainly by human activities but also animals. Rapid growth especially after the industrial revolution increased the rate of waste production especially in urban areas (Gutberlet, 2003) while Parrot et al., (2009) found discrepancies regarding the layout of recycling bins and the needs of residents-recyclers. The greater the distance from a bin, the less they use it. The same was found in Zia and Devadas (2008) surveys. A new model based on urban waste forecasting was proposed by Karadimas and Loumos (2008) using Arcgis technology and the appropriate use of land data (Road, Residential, parking, factories) and spatial design of recycling bins through GIS achieved a 30% reduction in the number of recycling bins, from 162 to 112. While according to Erkut et al., (2008) and on the receipt and disposal of recyclables in central Macedonia, although national planning has shown more promising results, regional recycling planning is preferred.

2.6 Recycling Culture

The culture of our society is strongly consumerist (McCraken, 1986). The pleasure and purpose of society is consumption. This has caused significant ecological problems such as rising global temperatures, air and water pollution, and a decrease in available planet resources (United Nations Radio, 2011; United States Environmental Protection Agency, 2011). According to the United Nations Environment Program (2007), the resources available are no longer sufficient to sustain the earth's population. And it is necessary to transform society from consumer to conservation society where environmental policies would be the norm with the introduction of a reward for the ecological behavior of the citizen. The transition to such a society would certainly not have taken place without intense controversy (Nolan, 2013).

From all the above mentioned the hypotheses defined are:

H1: There is a positive relationship between Individual perception towards recycling and Motivation towards recycling.

H2: There is a positive relationship between Recycling Behavior and Motivation towards recycling.

H3: There is a positive relationship between Spatial Planning of recycling bins and Motivation towards recycling.

H4: There is a positive relationship between Recycling Culture and Motivation towards recycling.

3. Research Methodology

3.1 Sample and data Collection

In order to reach the objectives of this study, a research was conducted between the months of June 2018 and June 2019. A structured questionnaire was used as the research instrument. The study's target population were inhabitants of the Kavala Municipality. The total sample consists of 307 people. The researcher used the mall intercept method (Bernard, 2011) and found himself at central locations in the area where he distributed the questionnaires. A self-managed questionnaire was used. The researcher was present during the completion of the questionnaires and so the respondents were facilitated to clarify any questions. Analyzing the answers, 48.3% were men and 51.7% women, and in the age groups 18-25, 14.8% of 26-35 22,6% 36-45 in 33,5%, 46-55 in 20,0% 56-65 in 6,1% and 65-78 3.0%. From the sample, 40.4% were not married, 48.3% married, 9.6% divorced and 1.7% widowed. 86 of the respondents had minor children, 1 minor 23.0% , 2 minors 12.6% and 3 minors 1.7%. Of the sample, 21.3% were civil servants, 36.5% were private employees, 17.4% were freelancers, 9.6% were unemployed, 5.7% were retired, 1.7% were householders and 0.4% were unskilled or skilled worker, while the educational level range from elementary school certificate, 2.6% high school / high school certificate, 23.0% , technical school or IEK, 14.3% , in higher education, 46.1% and in postgraduate or doctorate, 13.9%.

3.2 Instrument Development

The aim of the questionnaire is to examine the variables of attitude in relation to the recycling of the inhabitants and the degree of satisfaction with the recycling applied in the respective municipality. The questionnaire was developed by Professor Mrs. Kamenidou Irene, (questions 1 to 8, 10, 14 to 23) and the research student (questions 9 to 9b, 11 to 13). Overall, the questionnaire consists of three (3) sections and contains twenty-three (23) questions. The first section (questions 1-8) focuses on citizens' attitude and behavior in relation to recycling. The second section (Questions 9-13) examines the citizen's view of Local Authorities and Recycling, while the third section refers to Demographics. The

answers that respondents are asked to give in terms of design vary. Questions Q1, Q2, Q3, Q4 and Q5 require the choice of a response from the ones offered. Instead, Q7 and Q8 are based on the Likert scale (5 = strongly agree, 4 = agree, 3 = Neutral, 2 = disagree and 1 = strongly disagree), Question Q9 relates to unanimity) or the respondent's refusal (No). If the respondent agrees with the content of the question, he / she is asked to answer question Q9a with the graduated five-level scale where 5 = Very good, 4 = Good, 3 = neither good nor bad, 2 = Bad, 1 = Very bad. If, however, Question Q9 gives the respondent a negative answer, it is referred to Question Q9b where one of the three (3) answers given is to be selected. Q10 requires at least one response from the ones offered. Questions Q11 and Q12 seek a positive or negative answer. The last question of examining the identifying variables, Q13 seeks to select the respondent between two (2) choices. Finally, the questions Q14- Q23 refer to the demographic data of the survey.

SECTION 1: RECYCLING AND WASTE MANAGEMENT

1. Household waste collection
2. Frequency of waste disposal
3. Disposal separation
4. Accomplishment of recycling
5. Information about Recycling
6. Active participation in recycling(it consists of 9 items)
7. Factors mobilizing society towards recycling (it consists of 7 items)
8. Recycling Behavior (it consists of 19 items)

SECTION 2: CITIZENS' VIEW OF LOCAL AUTHORITIES AND RECYCLING

9. Accomplishment of recycling by the municipality followed by 9a)City level recycling rating and 9b) Stagnation of recycling by the Municipality of Kavala
10. Reference to types of recycling bins
11. Co-citizen participation in recycling
12. Agreement to pay per garbage weight
13. Choice of Municipality or Private Company for Recycling

SECTION 3:DEMOGRAPHICS

14. Gender
15. Age
16. Marital Status
17. Family Members
18. Occupation
19. Educational level
20. Number of people working in the family
21. Number of family members who have been fired since 2010
22. Total net monthly family income
23. Place of residence

3.3 Validity and Reliability of Research Instrument

Tests were performed to establish Content Validity, Construct validity and reliability of the research instrument.

The process of operationalizing a theoretical construct to create a measure of this construct is important in determining the validity of the resultant measure. Validity is commonly assessed as content validity and constructs validity, reflecting internal and external validity (Lissitz and Samuelson, 2007). Content validity examines whether the measure reflects the construct in both content and scope. Construct validity examines whether the measure of a construct operates as predicted by theory and depends on content validity. Both of them are necessary to test theory and neither is sufficient on its own; for example, a measure may achieve the predicted relationships but differ in content from the theoretical construct. This is especially the case when alternative theoretical models are available that contain closely related constructs such as the over 100 different perceived control constructs (Skinner, 1996). Researchers used Exploratory Factor Analysis(EFA) to study the relationship between variables through factors. Principal Component Analysis was conducted while Varimax rotation of orthogonal rotation of the axis method was used. Varimax rotation seeks to increase the variances of the factor loadings, resulting in both large and small factor loadings (Kaiser, 1958).

The researcher used the two most popular data inspection techniques for EFA, Bartlett's test of sphericity (Bartlett, 1950) and the Kaiser-MeyerOlkin (KMO) Measure of Sampling Adequacy (Dziuban and Harris, 1973; Kaiser, 1970). Both of these methods test whether sufficiently large relationships exist within the dataset of interest to perform EFA. For the determination of the factors number the eigenvalue criterion was used and factor loadings were checked. After running a factor analysis with the 19 items used to determine attitude and behavior towards recycling, a factor model was created with 4 distinctive factors. Another factor analysis was performed for the 9 items about making people active participants in recycling that created a factor model with 2 distinctive factors. The third factor analysis about what people think would make them to support environmentally friendly solutions created a factor model with 2 distinctive factors. The subsequent results of factor analysis are presented in tables 1, 2 and 3 .

Table 1 : Factor analysis for 19 items of behavior towards recycling

Items	Loadings	Factors
I don't produce much trash to recycle	0.719	Individual perception towards recycling Eigenvalue :5.092
Recycling is very complex	0.662	
I'm tired of looking for recycling bins	0.596	
I do not have space in my home to recycle separately each recycled product.	0.579	
To be honest. to date I haven't thought about recycling seriously	0.670	
I haven't had the information needed for recycling to date	0.699	
Why does the state expect from me? What does the state do to gather the garbage?	0.683	
I like to look at my convenience and make my life easier	0.624	Recycling Behavior Eigenvalue :2.615
I would support a recycling effort from the community / municipality / village I live in	0.758	
I think that recycling is important for the resources of the state	0.618	
I think I have an ecological consciousness	0.672	
I get personal satisfaction when I recycle packaging or paper	0.749	
I believe that recycling is essential for future generations	0.565	
I buy products whose packaging is reusable	0.382	
I would like to recycle but unfortunately there are no special recycling bins close to me	0.670	Spatial Planning of recycling bins Eigenvalue :1.351
I think there are several recycling spots here where I leave	0.735	
Recycling must be learned from a young age as it is a matter of education	0.822	Recycling Culture Eigenvalue :1.108
Recycling is important because it reduces the amount of trash going to the ground	0.410	
If I had the information I needed, I would also recycle	0.705	
KMO and Bartlett's Test Kaiser-Meyer-Olkin Measure of Sampling Adequacy. :0.841 Bartlett's Test of Sphericity Approx. Chi-Square :1761.767 Df :171 Sig. :.000		

Table 2 : Factor analysis for 9 items of Motivation towards Recycling

Items	Loadings	Factors
If there were bins near my house and I wasn't looking to find them in the surrounding area	0.483	Citizens' view of the relationship of the authorities towards recycling Eigenvalue : 2.688
If there was organized transportation of the garbage from my house by my local government	0.567	
If there were some financial incentives	0.832	
If there were any other incentives	0.856	
If law required it	0.663	Motivation towards recycling Eigenvalue : 1.168
If I had more space at home	0.389	
If I had the corresponding ecological education from a young age	0.485	
If others did it also	0.576	
If the cleaning staff were not constantly on strike forcing me to stay with many bags of garbage instead of one	0.666	
KMO and Bartlett's Test Kaiser-Meyer-Olkin Measure of Sampling Adequacy. :0.733 Bartlett's Test of Sphericity Approx. Chi-Square :413.565 Df :36 Sig. :.000		

A reliability test which measures the internal consistency, was performed. The consistency is measured using Cronbach's alpha (often symbolized by the lower case Greek letter α) is commonly used to examine the internal consistency or reliability of summated rating scales (Cronbach, 1951).

The number of test items, item interrelatedness and dimensionality affect the value of alpha. There are different reports about the acceptable values of alpha, ranging from 0,70 to 0,95. (J. Vaskea et al., 2016)

Some researchers worry that the sample value of Cronbach's alpha for a response variable or a predictor variable in a statistical analysis might be unacceptably small (we have both heard of numerous reports where manuscripts were rejected simply because the sample value of Cronbach's alpha was below 0,7). However, there is no universal minimally acceptable reliability value. An acceptable reliability value depends on the type of application, and furthermore, the focus should be on the population reliability value and not on the sample reliability value (Bonnet and Wright, 2014).

Table 3 : Reliability Analysis of behavior towards recycling

Factors	Cronbach's Alpha
Individual perception towards recycling	0.843
Recycling Behavior	0.735
Spatial Planning of recycling bins	0.604
Recycling Culture	0.504

As shown on table 3 , two indices are greater than 0.7. Spatial planning of recycling bins and Recycling Culture are less than 0.7 and contain an excess of error.

Table 4 : Reliability Analysis of motivation towards recycling

Factors	Cronbach's Alpha
Citizens' view of the relationship of the authorities towards recycling	0.691
Motivation towards recycling	0.524

On table 4 one index is marginally accepted and Citizens perception towards recycling contains an excess of error. A test for discriminant validity: Discriminant validity means that a latent variable is able to account for more variance in the observed variables associated with it than a) measurement error or similar external, unmeasured influences; or b) other constructs within the conceptual framework. If this is not the case, then the validity of the individual indicators and of the construct is questionable (Farrell, 2010).

Table 5: Test for Discriminant Validity of behavior towards recycling

	1	2	3	4
Individual perception about recycling	0.843*			
Recycling Behavior	0.431	0.735*		
Spatial Planning of recycling bins	0.589	0.261	0.604*	
Recycling Culture	0.155	0.376	0.349	0.504*

Table 6: Test for Discriminant Validity of motivation towards recycling

	1	2
Citizens' view of the relationship of the authorities towards recycling	0.691*	
Motivation towards recycling	0.502	0.524*

*=Cronbach's Alpha Value

4. Data analysis - Results

The means and standard deviation for all the factors used in the analysis of behavior towards recycling are presented in table 5. According to the results, Recycling Behavior and Recycling Culture have the highest level of agreement among the citizens. Spatial Planning of recycling bins seems indifferent to most of the people while individual perception towards recycling seem to be the least agreeable factor.

Table 7 : Basic measures of behavior towards recycling

Factors	Mean	St.Deviation	Coefficient of variation
Individual perception towards recycling	2.33	1.188	50.98%
Recycling Behavior	4.05	0.897	22.14%
Spatial Planning of recycling bins	2.86	1.157	40.45%
Recycling Culture	4.03	0.952	23.62%

The means and standard deviation for all the factors used in the analysis of motivation towards recycling are presented in table 6. According to the results, "Citizens' view of the relationship of the authorities towards recycling and motives for recycling" have the highest level of agreement among the citizens. "Citizens perception towards recycling" seems almost indifferent.

Table 8: Basic measures of motivation towards recycling

Factors	Mean	St.Deviation	Coefficient of variation
Citizens' view of the relationship of the authorities towards recycling	3.66	0.935	25.54%
Motivation towards recycling	3.22	0.897	27.85%

The coefficient of variation shows that the extent of variability of the mean score is in satisfying levels. Thus ANOVA is used to determine whether statistically significant differences exist. As shown in the following tables for gender, age, income and education there are some differences between groups in some factors.

Table 9: ANOVA, Gender and behavior towards recycling

Factors	F	Sig.
Individual perception towards recycling	0.807	0.370
Recycling Behavior	0.500	0.480
Spatial Planning of recycling bins	0.200	0.655
Recycling Culture	1.197	0.112

No statistically significant differences exist between gender and behavior towards recycling.

Table 9 .1: ANOVA, Gender and motivation towards recycling

Factors	F	Sig.
Citizens' view of the relationship of the authorities towards recycling	5.610	0.018
Motivation towards recycling	0.073	0.787

Specifically more women over men are dissatisfied from "Motivation towards recycling"(F=5.610, sig=0.018<0.05)

Table10: ANOVA, Age and behavior towards recycling

Factors	F	Sig.
Individual perception towards recycling	0.986	0.426
Recycling Behavior	4.049	0.001
Spatial Planning of recycling bins	1.093	0.364
Recycling Culture	0.907	0.476

Specifically more citizens in the age range of 46-55 are satisfied from "Recycling Behavior", while less satisfied are those in the age range of 18-25.(F=4.049,sig=0.001<0.05)

Table 10.1: ANOVA, Age and motivation towards recycling

Factors	F	Sig.
Citizens' view of the relationship of the authorities towards recycling	2.298	0.045
Motivation towards recycling	1.033	0.398

More citizens in the age range of 36-45 are satisfied from" Citizens' view of the relationship of the authorities towards recycling", while less satisfied are those who are from 18 to 25 years old.(F=2.298,sig=0.045<0.05).

Table 11: ANOVA, Education and behavior towards recycling

Factors	F	Sig.
Individual perception towards recycling	3.488	0.008
Recycling Behavior	1.630	0.167
Spatial Planning of recycling bins	1.755	0.138
Recycling Culture	5.344	0.000

High school graduates are more satisfied with "Individual perception towards recycling" and "Recycling Culture" while less satisfied are Postgraduate students or doctorate owners.(F=3.488,sig=0.008<0.05), (F=5.344,sig=0.000<0.05)

Table 11.1: ANOVA, Education and motivation towards recycling

Factors	F	Sig.
Citizens' view of the relationship of the authorities towards recycling	3.528	0.008
Motivation towards recycling	1.359	0.248

High school graduates are more satisfied with "Citizens' view of the relationship of the authorities towards recycling" while less satisfied are technical school or IEK graduates.

The correlation between the factors identified by the research will be examined to determine the correlation intensity and if the correlation is considered statistically significant at the 5% level.

Table 12 :Correlation among Factors.

Factors	Citizens' view of the relationship of the authorities towards recycling	Motivation towards recycling
Individual perception towards recycling	Pearson Correlation =0.277	Pearson Correlation = 0.329
	Sig = 0.000	Sig = 0.000
Recycling Behavior	Pearson Correlation =0.082	Pearson Correlation =0.109
	Sig = 0.153	Sig = 0.056
Spatial Planning of recycling bins	Pearson Correlation =-0.383	Pearson Correlation =-0.172
	Sig = 0.000	Sig = 0.002
Recycling Culture	Pearson Correlation =0.269	Pearson Correlation =0.262
	Sig = 0.000	Sig = 0.000

Table 13 shows the correlation between the factors. Analytically by factor there is a small positive linear correlation between the factor "Citizens' view of the relationship between the authorities towards recycling" and "Individual perception towards recycling". A marginally moderately negative linear correlation between the factor "Citizens' view of the relationship between recycling authorities" and "Spatial Planning of recycling bins" and a small positive linear correlation between the factor "Citizens' view of the relationship between the authorities towards recycling" and "Recycling Culture". Correlation between "Citizens' view of the relationship between the authorities towards recycling" and "Recycling Behavior" is rejected due the significance level of 0.05.

Concerning the factor "Motivation towards recycling", there is a small positive linear correlation between the factor "Motivation towards recycling" and "Individual perception towards recycling". Also, there is a small negative linear correlation between the factors "Motivation towards recycling" and "Spatial Planning of recycling bins" as well as a small positive linear correlation between the factors "Motivation towards recycling" and "Recycling Culture". Correlation between "Motivation towards recycling" and "Recycling Behavior" is rejected due the significance level of 0.05.

A regression analysis was performed. "Motivation towards recycling" was used as the dependent variable, while "Individual perception about recycling", "Recycling Behavior" "Spatial Planning of recycling bins" and "Recycling Culture" were used as the independents. The results indicate that the data are appropriate for regression analysis since the F-statistics is significant ($F=18.685, Sig.F=0.000 < 0.01$). The regression model was also tested for the autocorrelation and Colinearity. The Durbin – Watson index of autocorrelation is 1.855 indicating that there is not serious problem of autocorrelation in the model. The V.I.F indexes of Colinearity are smaller than 5 and thus none of the variables has a problem of colinearity.

Table 13: Regression Coefficients

Independent Variables	Beta	t	Sig.
Individual perception towards recycling	0.352	6.462	0.000
Recycling Behavior	0.248	3.292	0.001
Spatial Planning of recycling bins	0.082	0.193	0.847
Recycling Culture	0.187	3.083	0.002

Table 12 presents the standardized coefficients Beta of the variables from which we can conclude that three independent variables positively affect the dependent variable. "Individual perception towards recycling" (beta=0.352) affects more the "Motivation towards recycling" followed by "Recycling Behavior(beta=0.248) and "Recycling Culture"(beta=0.187). "Spatial Planning of recycling bins" does not affect the dependent variable(beta=0.08 sig=0.847).

Table 14 : Hypotheses Testing Results

Hypotheses	Decision
H1: There is a positive relationship between Individual perception towards recycling and Motivation towards recycling	Accepted
H2: There is a positive relationship between Recycling Behavior and Motivation towards recycling	Accepted
H3: There is a positive relationship between Spatial Planning of recycling bins and Motivation towards recycling	Not Supported

Motivation towards recycling	
H4: There is a positive relationship between Recycling Culture and Motivation towards recycling	Accepted

5. Conclusions

The primary objective of this study was to investigate the factors that tend to affect citizens' intent and behavior towards recycling in the municipality of Kavala, Greece. As a result, "Individual perception towards recycling", "Recycling Behavior", "Spatial Planning of recycling bins" and "Recycling Culture" are the most important factors influencing citizens towards recycling. Motivation towards recycling indicated two factors the "Citizens' view of the relationship of the authorities towards recycling" and "Motivation factors towards recycling". This study focused on the citizens of the municipality of Kavala, which started the use of recycling in recent years while the country was undergoing a major economic crisis. Most of the respondents separate recyclables from garbage and only a minor percent of citizens is unaware of the Municipality's recycling program. Almost a third of the sample states that recycling in this municipality is at a good or very good level. This study proves the positive relationship of "Individual perception towards recycling", "Recycling Behavior" and "Recycling Culture" with "Motivation towards Recycling". The impact of "Spatial Planning of recycling bins" is not supported because of non-significance. All factors maintain a small Pearson correlation except "Citizens' view of the relationship of the authorities towards recycling" and "Motivation towards recycling" with "Recycling Behavior". The findings can help local authorities to establish policies to encourage recycling and the creation of a recycling culture through key administrative measures. This study is focused on the general population of Kavala, future researchers could investigate the intent and behavior towards recycling in other cities that have not implemented recycling means or have implemented them in the recent years.

6. References

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