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THE INFLUENCE OF LEADER MEMBER EXCHANGE (LMX) AND COMPENSATION ON EMPLOYEE PERFORMANCE WITH ORGANIZATIONAL CULTURE AS MODERATING VARIABLE

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Abstract

This study aims to examine the influence of leader-member exchange (LMX) and compensation on employee performance by moderating organizational culture. The population of this study were employees at the Regional Personnel Agency (BKD) and the Financial Management Agency and Regional assets (BPKAD) of Pemalang Regency, amounting to 116 employees while the sampling technique used was the census. Data were analyzed using SPSS version 22 by testing the instrument, testing the model and testing the hypothesis. The results of hypothesis testing shows that performance is affected positively by LMX as well as compensation meanwhile organizational culture also moderates the influence of both LMX and compensation on the performance.

Keywords: Leader member exchange (LMX), compensation, performance and organizational culture

Introduction

Organization is a social unit that is consciously coordinated with a boundary that is reactive and can be identified, works continuously to achieve goals. In an organization, Human Resources (HR) as a planner, mobilizer and thinker for the achievement of organizational goals (Robbins., 2009). HR is the key that determines the success of an organization, so there is a need for good HR management to achieve organizational goals.

Today's HR management is undergoing very rapid changes, in terms of economy, globalization, domestic diversity and technology that have created new demands for organizational needs (Stone & Deadrick, 2015). HR is one of the main roles in an organization, so HR management needs to get more serious attention. The problem concerning HR management is the decline in employee performance, as a result decreasing in the realization of organizational performance in general, because employee performance is the foundation of organizational performance (Gibson, et al 2014). Many factors can influence employee performance, including: employee characteristics, compensation or appreciation and motivation (Gibson et al, 2014). Employee Characteristics are related to psychology and social psychology, namely the relationship between attitudes, perceptions, personalities, norms and performance. A leader cannot ignore the characteristics of his employees as well as employees against their leaders. This is the first factor that is very dominant in influencing employee performance improvement, namely the Leader-Member Exchange (LMX). LMX has a positive influence on improving employee performance related to the relationship between superiors and subordinate.

From a leadership perspective, LMX is defined as the quality of relations between superiors and subordinates, how they can give and need each other, so that this can be an important source of motivation to improve performance (Martin et al, 2016). Employee commitment to leadership can have a more significant impact on employee performance, compared to employee commitment to the organization. Thus commitment to the organization will be created if employees have a commitment to their leaders. So that good communication between leaders and subordinates is very important to foster trust, responsibility and high loyalty to the organization, this can be a motivation to be able to further improve employee performance.

The second factor is compensation, as an important determinant in improving employee performance (Wade et al, 2006; Hartmann & Slapničar, 2012). Organizational culture is a management tool to

achieve goals (Sigit, 1993). Strong organizational culture will lead to loyalty to employees that have an impact on improving performance (Robbins, 2015).

Another factor that affects performance is organizational culture (Robbins, 1998). Organizational culture is a system of shared meaning that is embraced by members of an organization that differentiates organizations from one another. Organizational culture provides the right standards about what employees may and may not do. Through socialization by top management of organizational culture will affect performance (Robbins, 2013).

In Martin's research, et. al., (2016) shows that LMX has a positive and significant relationship in improving employee performance. The results of the different studies stated that LMX had a positive but not significant effect on employee performance (Hutama & Goenawan, 2016). Other studies also state that LMX results do not directly affect employee performance (Kartika & Suharnomo, 2016).

Compensation in the form of intrinsic reward has a positive and significant influence on employee performance (Shahzadi, et. al, 2014). The analysis was corroborated in another study which stated that motivation and compensation had a positive and significant effect on employee performance (Martinus & Budiyanto, 2016) (Nurcahyani & Adnyani, 2016). However, other studies have different results, namely that compensation does not have a significant effect on improving employee performance (Arifin, 2017). The study reinforces other previous studies, which stated that financial compensation did not have a significant effect on both work motivation and employee performance (Riyadi, 2011).

Research by Klaimer et al (2006) shows that organizational culture is a moderating variable between fairness to LMX. The same thing was stated in the study by Ree et al (2013) which stated that the culture of collectivism was a significant predictor of the four dimensions of LMX while individualism was not. On the other hand it is proven that organizational culture influences performance, Shabbir et al (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Parker (2002) states that the compensation system is influenced by two cultures, namely organizational culture and local culture. The results of the study by Zhan Su and Yeganeh (2011) show that organizational culture is an important factor in human resource management and has a partial and moderate influence in determining compensation. Based on the things mentioned above, it is necessary to do research again, to confirm how the influence of LMX variables and compensation in improving employee performance by moderating organizational culture.

Based on Government Regulation Number 46 of 2011 concerning Civil Servant Performance Evaluation and Regulation of Head of State Civil Service Agency number 1 of 2013 concerning Implementation Guidelines for Work Achievement Assessment, the employee performance used in this study uses indicators of work performance assessment that are included in employee work goals. (SKP).

The average work performance of employees at BKD has decreased significantly in all aspects. The most significant decrease is in the commitment factor with an average of 77.90 in 2017, whereas in 2018, on average there is an increase, although a little, the highest increase is in the discipline factor, with a value of 86.50, the difference is 8.58 higher than in 2017. BPKAD also showed a drop in 2017 and then began to improve at the end of 2018. The most significant decrease was in employee discipline, with an average value of 2017 at 79.89 lower than 5.11 the previous year. But it starts to look better at the end of the 2018 assessment, with the highest increase in the factor of cooperation with a value of 86.00 greater than 6.00 compared to 2017.

No different from SKP, employee work behavior has not shown a better change, although there is an increase at the end of 2018, but the increase is still very low. The inauguration of structural officials simultaneously with a considerable number occurred in the beginning of 2017, also led to a relationship between the leadership and subordinates that needed a fairly long adjustment, this has an impact on reducing employee work values in 2017.

In general, the results of an assessment of the performance of employees in BKD and BPKAD in Pematang Regency through a performance appraisal system and electronic presence that is monitored directly in BKD Regency of Pematang show the following:

- a. Communication between superiors and subordinates is still not well established, this is indicated through the appraisal process in the performance appraisal application that should be directly directed by all executors, but there are still many that have not been done;

b. There is no instrument for awarding compensation in accordance with the performance of each employee, compensation is given equally to all employees, resulting in no clear work motivation in achieving the objectives of the organization;

c. The process of changing leadership is not carried out with transparent periods and instruments, this results in the absence of clear motivation to improve performance. The rapid turnover process will also have an impact on job adjustments and communication among problem employees.

Based on the results of different studies between researchers with one another and based on the phenomenon of gaps in the research object, the research problems are as follows :

1. How does LMX affect on performance
2. How does compensation affect on performance
3. How is the role of organizational culture in moderating the influence of LMX on performance
4. How is the role of organizational culture in moderating the influence of LMX on performance

Literature Review

Performance

Performance is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him (Mangkunegara A. P., 2009). Civil Servants (PNS) use the Government Regulation of the Republic of Indonesia Number 46 of 2011 where quality and quantity are contained in the Employee Performance Target (SKP) and Work Behavior consisting of elements:

1. Employee Performance Target (SKP) which covers aspects: quantity, quality, time and cost.
2. Work behavior includes aspects: service orientation, integrity, commitment, discipline, cooperation, and leadership.

Leader Member Exchange (LMX)

Leader member exchange is defined as a multidimensional relationship between superiors and subordinates consisting of four dimensions, namely contribution, loyalty, affection and respect for the profession (Liden & Maslyn, 1998).

Compensation

Compensation is something that employees get as their service contribution to the company, there are 2 (two) dimensions proposed by (Rivai & Sagala, 2010), namely:

1. Direct compensation is compensation that is directly felt by the recipient, namely in the form of salaries, wages, incentives are employees' rights and the company's obligation to pay it.
2. Indirect compensation is additional compensation given based on company policy towards all employees in an effort to improve the welfare of employees. Examples include facilities, such as: insurance, allowances, pensions, etc.

Organizational Culture

Organizational culture is a system of shared meanings adopted by its members that differentiates organizations from one another (Robbins, 1998). Measurement of Organizational Culture uses 2 dimensions (Pearce & M Khalid (1993), namely:

1. Bureaucratic practice consists of obedience to rules and clarity of purpose
2. Traditional practices consisting of work are private property, evaluation criteria (assessment) are based on not achievement and nepotism

The relationship between variables and the development of hypotheses

The relationship between LMX and Performance

The relationship between leader member exchange with employee performance is very big, because the boss has the task to lead directly and must have a good interaction with his subordinates. This is supported by a theory that explains Leader member exchange which is a dynamic two-way relationship between leaders and subordinates where a leader treats his subordinates differently

according to the time and abilities possessed by superiors (Graen & Cashman, 1975). A good relationship between leaders and employees is expected to improve company performance. The results of the analysis of the relationship between variables have been presented in several research results where LMX has a positive and significant relationship as a work motivation factor to improve employee performance (Erdogan & Liden, 2006) (Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016). Other research that supports states that Leader Member Exchange has a significant influence on employee performance (Christian, 2012). From the above research, the following hypothesis is proposed:

Hypothesis 1: LMX has a positive effect on employee performance

The relationship between Compensation and Performance

Compensation is one way companies can provide in the form of rewards to employees. Compensation can increase or decrease employee performance. Compensation is all income in the form of money, direct or indirect goods received by employees in return for services provided to the company (Hasibuan, 2012). With another explanation, compensation is anything received by employees which is a form of appreciation and appreciation of the organization for the contribution of thought and energy in order to support employee performance. Analysis related to previous research states that compensation in the form of intrinsic reward has a positive and significant effect, both in relation to motivation and with employee performance (Shahzadi, Javed, Pirzada, Nasreen, & Khanam, 2014). This is reinforced in other studies which state that motivation and compensation have positive and significant effects on employee performance (Martinus & Budiyo, 2016) (Nurchayani & Adnyani, 2016).

Based on this the hypotheses proposed in this study are:

Hypothesis 2: Compensation has a positive effect on performance

The relation of LMX on Performance moderates by Organizational Culture

Organizational culture provides exact standards of what employees can and cannot do. Through socialization by top management, organizational culture will influence performance (Robbins, 2013).

Research by Klaimer et al (2006) shows that organizational culture is a moderating variable between fairness to LMX. The same thing was stated in a study by Ree et al (2013) which stated that collectivism culture was a significant predictor of the four dimensions of LMX while individualism was not. On the other hand it is evident that organizational culture influences performance, Shabbir et al (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Based on this, it is formulated:

Hypothesis 3: Organizational culture moderates the influence of LMX on performance

The relation of Compensation on Performance moderates by Organizational Culture

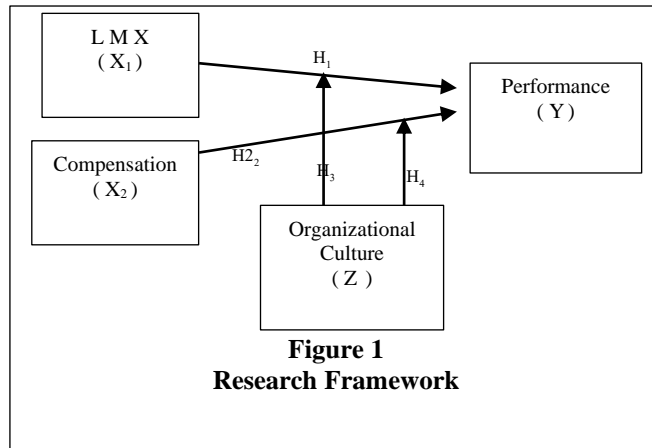
Parker (2002) states that the compensation system is influenced by two cultures namely organizational culture and local culture. The results of studies by Zhan Su and Yeganeh (2011) show that organizational culture is an important factor in human resource management and influences partially and moderately in the form of compensation. . On the other hand it is evident that organizational culture influences performance, Shabbir et al (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Based on this it is formulated:

Hypothesis 4: organizational culture moderates the effect of compensation on performance.

Research Framework

The relationship between variables and hypotheses is illustrated in the graphical model below:



Methods

Primary data collection using a questionnaire, which was distributed to employees on the BKD and BPKAD Pemalang Regency as many as 116 respondents. To measure these perceptions, a Likert scale 1-7 is used. The population of this study were all employees of BKD and BPKAD Pemalang Regency as many as 116 respondents. The sampling technique used is the census, that is, all members of the population are used as samples, which are 116 respondents.

Definition of operational variables :

Performance (Y) base on Civil Servants (PNS) use the Government Regulation of the Republic of Indonesia Number 46 of 2011 consist of Employee Performance Target (SKP) with indicators quantity (Y1.1) , quality (Y1.2), time (Y1.4) and Fees (Y1.5) and Work behavior with indicators Service Orientation Y1.6 Integrity Y1.7 Commitment Y1.8 Discipline Y1.9 Cooperation

LMX (X1) base on (Liden & Maslyn, 1998) consist of Affect, contribution and loyalty. Indicators of affect are : X1.1 Familiarity X1.2 Concern X1.3 Interpersonal relationships .Indicators of contribution are X1.4 Work beyond the duties and responsibilities X1.5 Trust X1.6 Will sacrifice Integrity and Loyalty with indicators are X1.7 .Loyalty to superiors X1.8 Support each other in all situations X1.9 . Stay in the organization X1.10 Respect for superiors X1.11 Amazed at the reputation of the boss X1.12 . Mutual attention.

Compensation (X2) base on (Rivai & Sagala, 2010) consist of direct compensation and indirect compensation with indicators for direct compensation are : X2.1Salary X2.2 Honor X2.3 Incentives and indicators of indirect compensation are X2.4 Insurance X2.5 Benefits X2.6 Pensions money

Organizational Culture (Z). Measurement of Organizational Culture uses 2 dimensions (Pearce & M Khalid (1993), namely: Bureaucratic practice and Traditional practices.

Indicators of Bureaucratic practice are :Z.1 promotion based on work performance, Z.2 employees are very difficult to get out of the organization, Z.3 Carrying out low quality work exacerbates the possibility of being promoted, Z.4 Very good at carrying out easy work will receive a higher reward, Z.5 Clearly defined goals, Z.6 It's easy to explain the goals the organization wants to achieve, X.7 Carrying out good quality work makes developing abilities, while the indicators of traditional practises are Z.8 Assume that the work is private property,Z.9Cross-cutting cooperation is lacking in this organization,Z.10 A lot of information that cannot or is very slowly disseminated between departments,Z.11 Easily obtain information from other fields,Z.12There are clear limits on employee actions,Z.13 Best employees who can occupy the top positions in the organization,Z.14 "Connection" or "know well" is more important than the achievement of good work in achieving progress in the organization,Z.15 "Good image",Z.16 Pay increases are based on work performance,Z.17 Promotion is only based on work performance,Z.18 Use work to help acquaintances or their families,Z.19 Using

one's position to help a colleague or family, Z.20 Do not feel proud to be a member of the organization, Z.21 Nepotism exacerbates the achievements of this organization

Results and Discussion

Results

Description of Respondents

There were 57.8% male and 42.2% female respondents. It shows that currently the number of respondents on the BKD and BPKAD in Pemalang Regency is dominated by male employees. The age profile shows that respondents are dominated by employees aged 41-50 years as many as 53 people or 45.7% of the total respondents. The group category reflect the highest number of respondents who belongs to the third group with 81 people or 69.8% of the total respondents, The largest working period is between 11-15 years with a total of 33 people or 28.4% of the total respondents. The last is education, most respondents are graduated from undergraduate (S1)/college (DIV) as many as 46 people or 39.7% of the total respondents.

Instrument Testing

Test Validity

Based on the results of the validity test it is known that all the variables studied, namely LMX, compensation, performance and organizational culture have the required sample adequacy value, namely KMO greater than 0.5, and the value of loading factors for all items studied greater than 0.4 so that it is declared valid except Z16 and Z21 which were not included in the subsequent analysis.

Reliability Test

The reliability test results showed that all the variables studied had Cronbach's alpha value of more than 0.7 so that they were all reliable.

Regression Analysis

The regression test results are shown in the table 1.

Based on the table, it can be seen that the LMX regression coefficient has a positive and significant effect on performance, meaning that the better the boss's relationship with subordinates (LMX), the performance will increase. Compensation has a positive and significant effect toward performance, it means that the higher compensation will improve the performance.

The results of the interaction of organizational culture variables with LMX, shows negative values means that organizational culture weaken the influence of LMX on performance (Table 1). Likewise the results of the interaction of organizational culture with compensation shows a negative value which means that organizational culture weaken the influence of compensation on performance.

Tabel 1
The Result of Regression

Model	Adjusted R Square	Uji F		Uji t		Keterangan
		F	Sig	B	Sig	
Equation	0,781	206,330	0,000			
- LMX on performance				0,610	0,000	First Hypothesis accepted
- Compensation on performance				0,323	0,000	Second Hypothesis accepted
Moderation						
- Interaction of organizational culture on LMX				-1,114	0,002	Third hypothesis accepted
- Interaction of organizational culture on compensation				-1,651	0,000	Fourth hypothesis accepted

Source: Primary data processed (2018)

Model Test

Determination Test

Based on the table above it is known that Adjusted R Square 0,781 means that the performance variable can be explained by LMX variables and compensation of 78.1% and the remainder is explained by other variables outside the model.

Test F

The results of the F test show that the calculated F value is 206.330 with a significant probability of 0.000 less than 0.05, which means that LMX and compensation variables simultaneously influence the performance of BKD employees and BPKAD in Pematang Rejang Regency.

Hypothesis testing

H1: LMX has a positive effect on performance

The regression results show that the LMX beta standardized coefficient on performance is 0.610 and the significance level of 0.000 is smaller than 0.05, it can be concluded that hypothesis 1 which states LMX has a positive effect on performance were accepted.

H2: Compensation has a positive effect on performance

The beta standard standardized coefficient on compensation for performance is 0.323 and the significance level of 0.000 is smaller than 0.05, it can be concluded that hypothesis 2 which states compensation has a positive effect on performance were accepted.

H3: Organizational Culture moderates the effect of LMX on Performance

The results of the interaction of organizational culture with LMX are indicated by the standard value of standardized beta coefficient of -1,114 and the significance level of 0.002 is smaller than 0.05, it can be concluded that hypothesis 3 states that organizational culture moderates the effect of LMX on a performance were accepted.

H4: Organizational Culture moderates the effect of Compensation on Performance

The results of the interaction of organizational culture with compensation are indicated by the standard value of the standardized beta coefficient of -1.651 and the level of significance of 0.000 is smaller than 0.05, it can be concluded that hypothesis 4 states that organizational culture moderates the effect of compensation on performance were accepted.

Discussion

Effect of LMX on Performance

The results of the LMX hypothesis test on performance indicate that LMX has a positive and significant effect on performance, with a standardized beta coefficient of 0.610 and sig. 0,000. To create good organizational conduciveness, LMX or the relationship between superiors and subordinates must be well established so as to improve employee performance. In accordance with the theory put forward by Erdogan & Liden (2006), which defines LMX as the quality of the relationship between superiors and subordinates, how they can give and need each other, so as to improve performance.

Growing a family atmosphere, mutual need, empathy while still respecting and obeying the rules that are set, so that it can create a good relationship between superiors and subordinates is a major need to improve performance. This is in line with the results of Berdicchia (2015), Martin et al (2016), and Yildiz & Duyan (2018).

Effect of Compensation on Employee Performance

Compensation is all income in the form of money, goods directly or indirectly received by employees in return for services provided to companies (Hasibuan, 2012). In this study, compensation has a positive and significant effect on employee performance, as evidenced by the value of beta standardized coefficient on compensation for performance of 0.323 and its significance level of 0.000 <0.05. Compensation greatly affects the increase or even decrease in employee performance if it is not in line with expectations.

With the compensation that is actualized in the form of salary, allowances, facilities or other things that can provide comfort and fulfill the needs of employees, the employee can focus more on improving his performance. It can also be a reference in improving employee performance so that the compensation obtained is not reduced, or can even be increased if the performance is increased. The

results of this study support previous findings by Arslan et al (2014), which states that compensation has a positive effect on employee performance. Similar results by Robert et al (2017) state that employee incentives have a positive impact on employee performance.

Organizational Culture moderates the LMX Effect on Performance

Organizational culture is a guide to organizational members in solving problems of internal integration and external adaptation (Schein, 1985). In the government institution the guide behaves can be in the form of bureaucratic and traditional practices (Pearce & M Khalid, 1993). One practice of bureaucracy is obedience to rules and clarity of purpose. This has been shown to moderate the influence of supervisor and subordinate relations on performance. the value of interaction between LMX and the performance of -1,114 with a significance of 0,002 <005. However, because the practice of nepotism is still thick at this institution, the organizational culture weakens the influence of LMX on performance, in accordance with the results of the research by Klaimer et al (2006) weaken the influence of interactional and distributive justice on LMX.

Organizational culture moderates the effect of compensation on performance

Compensation through increasing Income Improvement Allowances (TPP) in early 2018, has a positive impact on employees in improving their performance. The results of the moderation test indicate that compensation has a positive effect on performance moderated organizational culture. Organizational culture in the object of research, especially the provision of incentives and promotions that are not based on work performance, weakens the effect of compensation on performance. This is shown in the results of the interaction between organizational culture and compensation of -1.651 significance 0.000 <0.005. This result is in line with Parker (2002) 's writing which states that Japanese culture links between incentives and performance.

Conclusion

LMX has a positive and significant effect on performance, compensation has a positive and significant effect on performance, organizational culture moderates both the influence of LMX on performance and compensation for performance.

Implications

1) Implications of Theory

Based on the results of research conducted shows that:

- a. LMX has a positive and significant effect on performance
- b. Compensation has a positive and significant effect on performance
- c. Organizational culture moderates (weakens) the influence of LMX on performance
- d. Organizational culture moderates (weakens) the effect of compensation on performance

2) Managerial Implications

- a. It is proven that organizational culture moderates both the influence of LMX on performance and compensation on performance, but the role of organizational culture weakens the influence of LMX on performance and compensation on performance. This implies managerial implications in BKD and BPKAD of Pematang Regency to improve organizational culture especially related to LMX's relationship to performance by eliminating nepotism practices, while the relationship of compensation to performance is done by providing incentives for prestigious work and practicing promotions based on performance appraisal .
- b. Improving employee performance is done by improving the relationship between superiors and subordinates in particular emphasizing the importance of carrying out tasks that although not their responsibilities but are important to do to better support organizational goals when the leader is able to set an example of this.

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The Influence of Leader Member Exchange (Lmx) and Compensation on Employee Performance With Organizational Culture as Moderating Variable

Tristiana Rijanti, Askar Yuniarto, Sri Rahayuningsih, Naely Ushwaty
(Faculty of Economics and Business, Stikubank University, Indonesia)

Abstract: This study aims to examine the influence of leader-member exchange (LMX) and compensation on employee performance by moderating organizational culture. The population of this study were employees at the Regional Personnel Agency (BKD) and the Financial Management Agency and Regional assets (BPKAD) of Pematang Regency, amounting to 116 employees while the sampling technique used was the census. Data were analyzed using SPSS version 22 by testing the instrument, testing the model and testing the hypothesis. The results of hypothesis testing shows that performance is affected positively by LMX as well as compensation meanwhile organizational culture also moderates the influence of both LMX and compensation on the performance.

Key words: leader member exchange (LMX); compensation; performance; organizational culture

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1. Introduction

Organization is a social unit that is consciously coordinated with a boundary that is reactive and can be identified, works continuously to achieve goals. In an organization, Human Resources (HR) as a planner, mobilizer and thinker for the achievement of organizational goals (Robbins, 2009). HR is the key that determines the success of an organization, so there is a need for good HR management to achieve organizational goals.

Today's HR management is undergoing very rapid changes, in terms of economy, globalization, domestic diversity and technology that have created new demands for organizational needs (Stone & Deadrick, 2015). HR is one of the main roles in an organization, so HR management needs to get more serious attention. The problem concerning HR management is the decline in employee performance, as a result decreasing in the realization of organizational performance in general, because employee performance is the foundation of organizational

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performance (Gibson et al., 2014).

Many factors can influence employee performance, including: employee characteristics, compensation or appreciation and motivation (Gibson et al., 2014). Employee Characteristics are related to psychology and social psychology, namely the relationship between attitudes, perceptions, personalities, norms and performance. A leader cannot ignore the characteristics of his employees as well as employees against their leaders. This is the first factor that is very dominant in influencing employee performance improvement, namely the Leader-Member Exchange (LMX). LMX has a positive influence on improving employee performance related to the relationship between superiors and subordinate.

From a leadership perspective, LMX is defined as the quality of relations between superiors and subordinates, how they can give and need each other, so that this can be an important source of motivation to improve performance (Martin et al., 2016). Employee commitment to leadership can have a more significant impact on employee performance, compared to employee commitment to the organization. Thus commitment to the organization will be created if employees have a commitment to their leaders. So that good communication between leaders and subordinates is very important to foster trust, responsibility and high loyalty to the organization, this can be a motivation to be able to further improve employee performance.

The second factor is compensation, as an important determinant in improving employee performance (Wade et al., 2006; Hartmann & Slapničar, 2012). Organizational culture is a management tool to achieve goals (Sigit, 1993). Strong organizational culture will lead to loyalty to employees that have an impact on improving performance (Robbins, 2015).

Another factor that affects performance is organizational culture (Robbins, 1998). Organizational culture is a system of shared meaning that is embraced by members of an organization that differentiates organizations from one another. Organizational culture provides the right standards about what employees may and may not do. Through socialization by top management of organizational culture will affect performance (Robbins, 2013).

In Martin's research et al. (2016) shows that LMX has a positive and significant relationship in improving employee performance. The results of the different studies stated that LMX had a positive but not significant effect on employee performance (Hutama & Goenawan, 2016). Other studies also state that LMX results do not directly affect employee performance (Kartika & Suharnomo, 2016).

Compensation in the form of intrinsic reward has a positive and significant influence on employee performance (Shahzadi et al., 2014). The analysis was corroborated in another study which stated that motivation and compensation had a positive and significant effect on employee performance (Martinus & Budiyanto, 2016) (Nurchayani & Adnyani, 2016). However, other studies have different results, namely that compensation does not have a significant effect on improving employee performance (Arifin, 2017). The study reinforces other previous studies, which stated that financial compensation did not have a significant effect on both work motivation and employee performance (Riyadi, 2011).

Research by Klaimer et al. (2006) shows that organizational culture is a moderating variable between fairness to LMX. The same thing was stated in the study by Ree et al. (2013) which stated that the culture of collectivism was a significant predictor of the four dimensions of LMX while individualism was not. On the other hand it is proven that organizational culture influences performance, Shabbir et al. (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Parker (2002) states that the compensation system is influenced by two cultures, namely organizational culture and local culture. The results of the study by Zhan Su and Yeganeh (2011) show that organizational culture

is an important factor in human resource management and has a partial and moderate influence in determining compensation. Based on the things mentioned above, it is necessary to do research again, to confirm how the influence of LMX variables and compensation in improving employee performance by moderating organizational culture.

Based on Government Regulation Number 46 of 2011 concerning Civil Servant Performance Evaluation and Regulation of Head of State Civil Service Agency number 1 of 2013 concerning Implementation Guidelines for Work Achievement Assessment, the employee performance used in this study uses indicators of work performance assessment that are included in employee work goals (SKP).

The average work performance of employees at BKD has decreased significantly in all aspects. The most significant decrease is in the commitment factor with an average of 77.90 in 2017, whereas in 2018, on average there is an increase, although a little, the highest increase is in the discipline factor, with a value of 86.50, the difference is 8.58 higher than in 2017. BPKAD also showed a drop in 2017 and then began to improve at the end of 2018. The most significant decrease was in employee discipline, with an average value of 2017 at 79.89 lower than 5.11 the previous year. But it starts to look better at the end of the 2018 assessment, with the highest increase in the factor of cooperation with a value of 86.00 greater than 6.00 compared to 2017.

No different from SKP, employee work behavior has not shown a better change, although there is an increase at the end of 2018, but the increase is still very low. The inauguration of structural officials simultaneously with a considerable number occurred in the beginning of 2017, also led to a relationship between the leadership and subordinates that needed a fairly long adjustment, this has an impact on reducing employee work values in 2017.

In general, the results of an assessment of the performance of employees in BKD and BPKAD in Pematang Regency through a performance appraisal system and electronic presence that is monitored directly in BKD Regency of Pematang show the following:

a) Communication between superiors and subordinates is still not well established, this is indicated through the appraisal process in the performance appraisal application that should be directly directed by all executors, but there are still many that have not been done;

b) There is no instrument for awarding compensation in accordance with the performance of each employee, compensation is given equally to all employees, resulting in no clear work motivation in achieving the objectives of the organization;

c) The process of changing leadership is not carried out with transparent periods and instruments, this results in the absence of clear motivation to improve performance. The rapid turnover process will also have an impact on job adjustments and communication among problem employees.

Based on the results of different studies between researchers with one another and based on the phenomenon of gaps in the research object, the research problems are as follows:

- 1) How does LMX affect on performance
- 2) How does compensation affect on performance
- 3) How is the role of organizational culture in moderating the influence of LMX on performance
- 4) How is the role of organizational culture in moderating the influence of LMX on performance

2. Literature Review

2.1 Performance

Performance is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him (Mangkunegara A. P., 2009). Civil Servants (PNS) use the Government Regulation of the Republic of Indonesia Number 46 of 2011 where quality and quantity are contained in the Employee Performance Target (SKP) and Work Behavior consisting of elements:

- 1) Employee Performance Target (SKP) which covers aspects: quantity, quality, time and cost.
- 2) Work behavior includes aspects: service orientation, integrity, commitment, discipline, cooperation, and leadership.

2.2 Leader Member Exchange (LMX)

Leader member exchange is defined as a multidimensional relationship between superiors and subordinates consisting of four dimensions, namely contribution, loyalty, affection and respect for the profession (Liden & Maslyn, 1998).

2.3 Compensation

Compensation is something that employees get as their service contribution to the company, there are 2 (two) dimensions proposed by Rivai and Sagala (2010), namely:

- 1) Direct compensation is compensation that is directly felt by the recipient, namely in the form of salaries, wages, incentives are employees' rights and the company's obligation to pay it.
- 2) Indirect compensation is additional compensation given based on company policy towards all employees in an effort to improve the welfare of employees. Examples include facilities, such as: insurance, allowances, pensions, etc.

2.4 Organizational Culture

Organizational culture is a system of shared meanings adopted by its members that differentiates organizations from one another (Robbins, 1998). Measurement of Organizational Culture uses 2 dimensions (Pearce & M. Khalid, 1993), namely:

- 1) Bureaucratic practice consists of obedience to rules and clarity of purpose
- 2) Traditional practices consisting of work are private property, evaluation criteria (assessment) are based on not achievement and nepotism

2.5 The Relationship Between Variables and the Development of Hypotheses

2.5.1 The Relationship between LMX and Performance

The relationship between leader member exchange with employee performance is very big, because the boss has the task to lead directly and must have a good interaction with his subordinates. This is supported by a theory that explains Leader member exchange which is a dynamic two-way relationship between leaders and subordinates where a leader treats his subordinates differently according to the time and abilities possessed by superiors (Graen & Cashman, 1975). A good relationship between leaders and employees is expected to improve company performance. The results of the analysis of the relationship between variables have been presented in several research results where LMX has a positive and significant relationship as a work motivation factor to improve employee performance (Erdogan & Liden, 2006; Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016).

Other research that supports states that Leader Member Exchange has a significant influence on employee performance (Christian, 2012). From the above research, the following hypothesis is proposed:

Hypothesis 1: LMX has a positive effect on employee performance

2.5.2 The Relationship Between Compensation and Performance

Compensation is one way companies can provide in the form of rewards to employees. Compensation can increase or decrease employee performance. Compensation is all income in the form of money, direct or indirect goods received by employees in return for services provided to the company (Hasibuan, 2012). With another explanation, compensation is anything received by employees which is a form of appreciation and appreciation of the organization for the contribution of thought and energy in order to support employee performance. Analysis related to previous research states that compensation in the form of intrinsic reward has a positive and significant effect, both in relation to motivation and with employee performance (Shahzadi, Javed, Pirzada, Nasreen, & Khanam, 2014). This is reinforced in other studies which state that motivation and compensation have positive and significant effects on employee performance (Martinus & Budiyanto, 2016; Nurcahyani & Adnyani, 2016).

Based on this the hypotheses proposed in this study are:

Hypothesis 2: Compensation has a positive effect on performance

2.5.3 The Relation of LMX on Performance Moderates by Organizational Culture

Organizational culture provides exact standards of what employees can and cannot do. Through socialization by top management, organizational culture will influence performance (Robbins, 2013).

Research by Klaimer et al. (2006) shows that organizational culture is a moderating variable between fairness to LMX. The same thing was stated in a study by Ree et al. (2013) which stated that collectivism culture was a significant predictor of the four dimensions of LMX while individualism was not. On the other hand it is evident that organizational culture influences performance, Shabbir et al. (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Based on this, it is formulated:

Hypothesis 3: Organizational culture moderates the influence of LMX on performance

2.5.4 The Relation of Compensation on Performance moderates by Organizational Culture

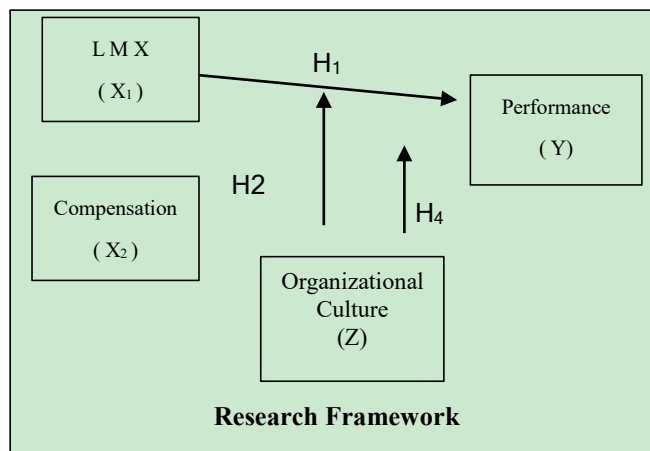
Parker (2002) states that the compensation system is influenced by two cultures namely organizational culture and local culture. The results of studies by Zhan Su and Yeganeh (2011) show that organizational culture is an important factor in human resource management and influences partially and moderately in the form of compensation.. On the other hand it is evident that organizational culture influences performance, Shabbir et al. (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Based on this it is formulated:

Hypothesis 4: organizational culture moderates the effect of compensation on performance.

3. Research Framework

The relationship between variables and hypotheses is illustrated in the graphical model below:



3.1 Methods

Primary data collection using a questionnaire, which was distributed to employees on the BKD and BPKAD Pemalang Regency as many as 116 respondents. To measure these perceptions, a Likert scale 1-7 is used. The population of this study were all employees of BKD and BPKAD Pemalang Regency as many as 116 respondents. The sampling technique used is the census, that is, all members of the population are used as samples, which are 116 respondents.

3.2 Definition of Operational Variables

Performance (Y) base on Civil Servants (PNS) use the Government Regulation of the Republic of Indonesia Number 46 of 2011 consist of Employee Performance Target (SKP) with indicators quantity (Y1.1), quality (Y1.2), time (Y1.4) and Fees (Y1.5) and Work behavior with indicators Service Orientation Y1.6 Integrity Y1.7 Commitment Y1.8 Discipline Y1.9 Cooperation.

LMX (X1) base on (Liden & Maslyn, 1998) consist of Affect, contribution and loyalty. Indicators of affect are: X1.1 Familiarity X1.2 Concern X1.3 Interpersonal relationships. Indicators of contribution are X1.4 Work beyond the duties and responsibilities X1.5 Trust X1.6 Will sacrifice Integrity and Loyalty with indicators are X1.7. Loyalty to superiors X1.8 Support each other in all situations X1.9. Stay in the organization X1.10 Respect for superiors X1.11 Amazed at the reputation of the boss X1.12. Mutual attention.

Compensation (X2) base on Rivai and Sagala (2010) consist of direct compensation and indirect compensation with indicators for direct compensation are: X2.1 Salary X2.2 Honor X2.3 Incentives and indicators of indirect compensation are X2.4 Insurance X2.5 Benefits X2.6 Pensions money.

Organizational Culture (Z). Measurement of Organizational Culture uses 2 dimensions (Pearce & M Khalid (1993), namely: Bureaucratic practice and Traditional practices.

Indicators of Bureaucratic practice are :Z.1 promotion based on work performance, Z.2 employees are very difficult to get out of the organization, Z.3 Carrying out low quality work exacerbates the possibility of being promoted, Z.4 Very good at carrying out easy work will receive a higher reward, Z.5 Clearly defined goals, Z.6 It's easy to explain the goals the organization wants to achieve, X.7 Carrying out good quality work makes developing abilities, while the indicators of traditional practises are Z.8 Assume that the work is private property, Z.9 Cross-cutting cooperation is lacking in this organization, Z.10 A lot of information that cannot or is very slowly disseminated between departments, Z.11 Easily obtain information from other fields, Z.12 There are clear limits

on employee actions, Z.13 Best employees who can occupy the top positions in the organization, Z.14 “Connection” or “know well” is more important than the achievement of good work in achieving progress in the organization, Z.15 “Good image”, Z.16 Pay increases are based on work performance, Z.17 Promotion is only based on work performance, Z.18 Use work to help acquaintances or their families, Z.19 Using one’s position to help a colleague or family, Z.20 Do not feel proud to be a member of the organization, Z.21 Nepotism exacerbates the achievements of this organization.

4. Results and Discussion

4.1 Results

4.1.1 Description of Respondents

There were 57.8% male and 42.2% female respondents. It shows that currently the number of respondents on the BKD and BPKAD in Pemalang Regency is dominated by male employees. The age profile shows that respondents are dominated by employees aged 41-50 years as many as 53 people or 45.7% of the total respondents. The group category reflect the highest number of respondents who belongs to the third group with 81 people or 69.8% of the total respondents, The largest working period is between 11-15 years with a total of 33 people or 28.4% of the total respondents. The last is education, most respondents are graduated from undergraduate (S1)/college (DIV) as many as 46 people or 39.7% of the total respondents.

4.1.2 Instrument Testing

(1) Test Validity

Based on the results of the validity test it is known that all the variables studied, namely LMX, compensation, performance and organizational culture have the required sample adequacy value, namely KMO greater than 0.5, and the value of loading factors for all items studied greater than 0.4 so that it is declared valid except Z16 and Z21 which were not included in the subsequent analysis.

(2) Reliability Test

The reliability test results showed that all the variables studied had Cronbach’s alpha value of more than 0.7 so that they were all reliable.

(3) Regression Analysis

The regression test results are shown in the Table 1.

Based on the table, it can be seen that the LMX regression coefficient has a positive and significant effect on performance, meaning that the better the boss’s relationship with subordinates (LMX), the performance will increase. Compensation has a positive and significant effect toward performance, it means that the higher compensation will improve the performance.

The results of the interaction of organizational culture variables with LMX, shows negative values means that organizational culture weaken the influence of LMX on performance (Table 1). Likewise the results of the interaction of organizational culture with compensation shows a negative value which means that organizational culture weaken the influence of compensation on performance.

The Influence of Leader Member Exchange (Lmx) and Compensation on Employee Performance With Organizational Culture as Moderating Variable

Tabel 1 The Result of Regression

Model	Adjusted RSquare	Uji F		Uji t		Keterangan
		F	Sig	B	Sig	
Equation • LMX on performance • Compensation on performance	0,781	206,330	0,000	0,610 0,323	0,000 0,000	First Hypothesis accepted Second Hypothesis accepted
Moderation • Interaction of organizational culture on LMX • Interaction of organizational culture on compensation				-1,114 -1,651	0,002 0,000	Third hypothesis accepted Fourth hypothesis accepted

Source: Primary data processed (2018).

(4) Model Test

Determination Test

Based on Table 1 it is known that Adjusted R Square 0, 781 means that the performance variable can be explained by LMX variables and compensation of 78.1% and the remainder is explained by other variables outside the model.

Test F

The results of the F test show that the calculated F value is 206.330 with a significant probability of 0.000 less than 0.05, which means that LMX and compensation variables simultaneously influence the performance of BKD employees and BPKAD in Pematang Regency.

Hypothesis testing

H1: LMX has a positive effect on performance

The regression results show that the LMX beta standardized coefficient on performance is 0.610 and the significance level of 0.000 is smaller than 0.05, it can be concluded that hypothesis 1 which states LMX has a positive effect on performance were accepted.

H2: Compensation has a positive effect on performance

The beta standard standardized coefficient on compensation for performance is 0.323 and the significance level of 0.000 is smaller than 0.05, it can be concluded that hypothesis 2 which states compensation has a positive effect on performance were accepted.

H3: Organizational Culture moderates the effect of LMX on Performance

The results of the interaction of organizational culture with LMX are indicated by the standard value of standardized beta coefficient of -1,114 and the significance level of 0.002 is smaller than 0.05, it can be concluded that hypothesis 3 states that organizational culture moderates the effect of LMX on a performance were accepted.

H4: Organizational Culture moderates the effect of Compensation on Performance

The results of the interaction of organizational culture with compensation are indicated by the standard value of the standardized beta coefficient of -1.651 and the level of significance of 0.000 is smaller than 0.05, it can be concluded that hypothesis 4 states that organizational culture moderates the effect of compensation on performance were accepted.

4.2 Discussion

4.2.1 Effect of LMX on Performance

The results of the LMX hypothesis test on performance indicate that LMX has a positive and significant effect on performance, with a standardized beta coefficient of 0.610 and sig. 0,000. To create good organizational conduciveness, LMX or the relationship between superiors and subordinates must be well established so as to improve employee performance. In accordance with the theory put forward by Erdogan & Liden (2006), which defines LMX as the quality of the relationship between superiors and subordinates, how they can give and need each other, so as to improve performance.

Growing a family atmosphere, mutual need, empathy while still respecting and obeying the rules that are set, so that it can create a good relationship between superiors and subordinates is a major need to improve performance. This is in line with the results of Berdicchia (2015), Martin et al (2016), and Yildiz & Duyan (2018).

Effect of Compensation on Employee Performance

Compensation is all income in the form of money, goods directly or indirectly received by employees in return for services provided to companies (Hasibuan, 2012). In this study, compensation has a positive and significant effect on employee performance, as evidenced by the value of beta standardized coefficient on compensation for performance of 0.323 and its significance level of $0.000 < 0.05$. Compensation greatly affects the increase or even decrease in employee performance if it is not in line with expectations.

With the compensation that is actualized in the form of salary, allowances, facilities or other things that can provide comfort and fulfill the needs of employees, the employee can focus more on improving his performance. It can also be a reference in improving employee performance so that the compensation obtained is not reduced, or can even be increased if the performance is increased. The results of this study support previous findings by Arslan et al. (2014), which states that compensation has a positive effect on employee performance. Similar results by Robert et al. (2017) state that employee incentives have a positive impact on employee performance.

4.2.2 Organizational Culture moderates the LMX Effect on Performance

Organizational culture is a guide to organizational members in solving problems of internal integration and external adaptation (Schein, 1985). In the government institution the guide behaves can be in the form of bureaucratic and traditional practices (Pearce & M. Khalid, 1993). One practice of bureaucracy is obedience to rules and clarity of purpose. This has been shown to moderate the influence of supervisor and subordinate relations on performance. the value of interaction between LMX and the performance of -1,114 with a significance of $0.002 < 0.005$. However, because the practice of nepotism is still thick at this institution, the organizational culture weakens the influence of LMX on performance, in accordance with the results of the research by Klaimer et al. (2006) weaken the influence of interactional and distributive justice on LMX.

Organizational culture moderates the effect of compensation on performance

Compensation through increasing Income Improvement Allowances (TPP) in early 2018, has a positive impact on employees in improving their performance. The results of the moderation test indicate that compensation has a positive effect on performance moderated organizational culture. Organizational culture in the object of research, especially the provision of incentives and promotions that are not based on work performance, weakens the effect of compensation on performance. This is shown in the results of the interaction between organizational culture and compensation of -1.651 significance $0.000 < 0.005$. This result is in line with Parker's (2002) writing which states that Japanese culture links between incentives and performance.

5. Conclusion

LMX has a positive and significant effect on performance, compensation has a positive and significant effect on performance, organizational culture moderates both the influence of LMX on performance and compensation for performance.

Implications:

1) Implications of Theory

Based on the results of research conducted shows that:

- (a) LMX has a positive and significant effect on performance
- (b) Compensation has a positive and significant effect on performance
- (c) Organizational culture moderates (weakens) the influence of LMX on performance
- (d) Organizational culture moderates (weakens) the effect of compensation on performance

2) Managerial Implications

(a) It is proven that organizational culture moderates both the influence of LMX on performance and compensation on performance, but the role of organizational culture weakens the influence of LMX on performance and compensation on performance. This implies managerial implications in BKD and BPKAD of Pematang Rejang Regency to improve organizational culture especially related to LMX's relationship to performance by eliminating nepotism practices, while the relationship of compensation to performance is done by providing incentives for prestigious work and practicing promotions based on performance appraisal .

(b) Improving employee performance is done by improving the relationship between superiors and subordinates in particular emphasizing the importance of carrying out tasks that although not their responsibilities but are important to do to better support organizational goals when the leader is able to set an example of this.

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Using A Modified Altman's Z-score Model to Predict Corporate Bankruptcy

Hong Long Chen

(Department of Business and Management, National University of Tainan, Tainan, Taiwan)

Abstract: Previous research suggests that industry-relative financial ratios are more stable than unadjusted ratios. However, most bankruptcy studies use unadjusted financial ratios to develop bankruptcy prediction models. In this study, we develop an industry-relative bankruptcy model based on Altman's Z-score model. Using a balanced combination of accounting- and market-based ratios from 258 bankrupt and nonbankrupt companies, we develop a modified Altman's Z-score model. The result indicates that a balanced combination of industry-relative accounting- and market-based ratios not only captures different aspects of bankruptcy risk, but also may yield a relatively high classification rate. As such, our findings help managers more accurately estimate bankruptcy risk and thus, have a better opportunity to take corrective actions early, enhancing corporate financial sustainability.

Keywords: bankruptcy; financial failure; financial sustainability; industry-relative ratio; logit models

JEL codes: G01, G32, G33

1. Introduction and Background

Whilst the idea of performance relates to how successfully an organization attains objectives or executes a strategy (Otley, 1999), it is relative performance that stands at the core of the literature on predicting corporate failure and bankruptcy (Foreman, 2003). Not surprisingly, numerous academics and practitioners (e.g., Akbar et al., 2019; Altman, 1968; Altman et al., 1977; Beaver, 1966; Charitou et al., 2013; Gavurova et al., 2017; Ohlson, 1980) conduct extensive studies and apply sophisticated mathematical methodologies to develop bankruptcy classification models through examining and identifying the determinants of corporate bankruptcy.

For example, Pompe and Bilderbeek (2005) employ multivariate discriminant analysis to examine the predictive ability of financial ratios during the successive phases before bankruptcy, as well as the relationship between the age of a firm and the predictability of bankruptcy. They conclude that every ratio investigated has some predictive power. Kim and Nabar (2007) discover that although the likelihood of bankruptcy decreases before bond upgrades, the likelihood increases both before and after bond downgrades.

Agarwal and Taffler (2008) use multivariate discriminant analysis to compare market-based and accounting-based bankruptcy prediction models, and conclude that little difference exists in their predictive ability. Kwak et al. (2012) propose a multiple criteria linear programming (MCLP) method to predict bankruptcy based on preselected 13 financial ratios. They compare their MCLP method to both multiple discriminant analysis and logistic analysis, and conclude that the MCLP method is a viable alternative for bankruptcy forecasting.

Charitou et al. (2013) examine the empirical properties of the theoretical Black–Scholes–Merton (BSM)

bankruptcy forecasting models, and conclude that a market-based measure of volatility estimated directly from monthly firm value returns possesses relatively high forecasting accuracy. Subsequent work by Gavurova et al. (2017) evaluates four bankruptcy classification models, which are developed from various financial ratios, to determine the most suitable model for predicting bankruptcy in Slovak. They conclude the index IN05 model outperforms others in the Slovak business environment.

More recently, Akbar et al. (2019) employ hierarchical linear mixed model analysis to examine the relationship between bankruptcy risk and the company life cycle with a set of financial ratios and economic variables. Based on a sample of 301 companies from 12 different industries, they conclude that companies suffer a relatively high level of bankruptcy risk during the start-up, growth and decline stages. They hence suggest managers to incorporate the company life-cycle effect into financial planning and decisions to achieve financial sustainability.

While numerous academics and practitioners (e.g., Akbar et al., 2019; Gavurova et al., 2017; Kim & Nabar, 2007; Kwak et al., 2012; Li & Miu, 2010) conduct extensive studies to develop bankruptcy-prediction models, these models are, however, primarily based on unadjusted financial ratios. Testing the actual predictive power of these models yields somewhat disappointing results. In fact, bankruptcy models described as highly predictive typically report ex ante classification results considerably lower than the models' ex-post results. This disparity between ex-post and ex-ante results is due principally to differential industry effects and data instability over time (Altman & Izan, 1983; Chen, 2013; Platt & Platt, 1990).

To remedy the problem, Altman and Izan (1983), Chen (2020), and Platt and Platt (1990, 1991) propose using industry-relative ratios to control for industry and time variations that cause data instability within samples. The rationale for this is straightforward: sample mean financial ratios and sample variability depend on not only the distribution of companies across industries, but also on the cyclical level of each industry. Thus, relating a company's financial ratio to the industry average should cancel out or at least alleviate differential industry effects and data instability over time.

The object of this study is therefore to develop a bankruptcy prediction model based on industry-relative ratios through modifying Altman's Z-score model. The reason we chose Altman's Z-score model is because the generalizability of Altman's Z-score model has been rigorously examined (Grice & Ingram, 2001; Hamid et al., 2016; Hamid et al., 2016).

2. Research Methods

2.1 The Data

Our sample of bankrupt companies includes companies that encountered bankruptcy or liquidation events as defined by the COMPUSTAT database. We exclude companies that do not have complete data sets available on the COMPUSTAT database for six years prior to bankruptcy. (Although our study period of bankrupt companies is five years before bankruptcy, the computation of some financial ratios (e.g., growth rates) requires an additional year prior to bankruptcy. We therefore need to collect data for six years before bankruptcy. In addition, due to data accessibility, our study period is limited between 1986 and 2008, covering 23 years.) Applying the criteria results in 129 companies included in bankruptcy between 1986 and 2008, ranging in size from \$0.6 million to \$25,576.4 million in five-year-average assets.

To isolate key variables that distinguish bankrupt from nonbankrupt companies, we select a sample of nonbankrupt companies from COMPUSTAT to match the bankrupt companies. The nonbankrupt companies have

the same NAICS (North American Industry Classification System) code, nearly equal average asset size for five years, and complete data sets available for the same years as the matched bankrupt firm up through six years before bankruptcy.

The 129 nonbankrupt companies range in size from \$0.4 million to \$25,998.2 million in five-year-average assets. The average sizes of the bankrupt and nonbankrupt firms are \$442.4 million and \$465.0 million, respectively. The result of a paired-samples t-test further confirms a statistically insignificant difference between the means of the bankrupt and nonbankrupt firms with a p-value of 0.10.

We compute the financial ratios and industry averages using data from COMPUSTAT. To obtain an industry average that is comparable across industries, we use two-digit NAICS codes. Companies with the same first two-digit NAICS code are classified in the same industry.

The 129 firms come from 14 sectors, including mining, construction, manufacturing, retail, transportation and warehousing, information, finance and insurance, real estate and leasing, professional, scientific and technical services, administrative and support, waste management and remediation services, and accommodation and food services. The 14 sectors include 2,613 companies.

The final data sets were split into two subsamples: the ex-post (within sample) data and the ex-ante (out-of-sample) data. We use the ex-post data to build models that test our hypotheses; the data includes information for 158 equally matched bankrupt and nonfailed companies from 1986 to 1994. We use the ex-ante data, composed of 100 equally matched bankrupt and nonfailed companies between 1995 and 2008, to study the predictive ability of the models that test our hypotheses.

2.2 Variables and Analysis

Based on Altman's (1968) Z-score model, we selected five financial ratios for examining whether a significant difference exists in the mean values of the financial ratios between bankrupt and nonbankrupt companies. These ratios include working capital to total assets, earnings before interest and taxes to total assets, sales to total assets, market value of equity to book value of total debt, and retained earnings to total assets. Of the ratios, market value of equity to book value of total debt is the only market-based ratio. Agarwal and Taffler (2008) and Li and Miu (2010) state that market-based and accounting-based bankruptcy-prediction models show little difference in their predictive ability; however, combining the two approaches, not only captures different aspects of bankruptcy risk, but could enhance the predictability and stability of bankruptcy-prediction models.

To develop a more balanced and stable bankruptcy model that captures different risk aspects, we selected several potential market-based financial ratios for further developing Altman's Z-score model. Selection of the market-based ratios was based on a comprehensive review of the literature (e.g., Agarwal and Taffler, 2008; Altman, 1968; Altman et al., 1977; Foreman, 2003; Grice and Ingram, 2001; Scott, 1981). Sample market-based ratios include price-earnings ratio (basic), common dividends, market capitalization, market value of equity to book value of total debt, market value of equity to book value of equity, and market capitalization to total debt.

We use a twofold methodology to develop bankruptcy prediction models. First, after defining the computation of an industry-relative ratio, we use univariate logistic-regression analysis to evaluate ex-post and ex-ante classification rates of the financial ratios and industry-relative ratios for all five years before bankruptcy.

Second, we conduct a hierarchical logistic-regression analysis using a maximum Nagelkerke R-squared improvement procedure to develop a bankruptcy model. Validation of the bankruptcy model is by ex-ante Type I (bankrupt firm sample) accuracy, Type II (nonbankrupt firm sample) accuracy, and overall correct classification

rates.

3. Research Results

3.1 Initial Analysis

Based on Altman and Izan (1983), Izan (1984), and Platt and Platt (1990, 1991), we define an industry-relative ratio as the ratio of a company's financial ratio relative to the mean value of that ratio for the company's industry at a point in time as shown in equation.

$$\text{Industry - Relative Ratio}_{j,i,k,t} = \frac{\text{Company } i\text{'s Ratio}_{k,t}}{k\text{'s Mean Ratio in Industry}_{j,t}}, \quad (1)$$

where i is financial ratio k of company i at time period t , and company i is a member of industry j .

Using data for the one-to five-year period prior to bankruptcy for the bankrupt and nonbankrupt companies, we apply univariate logistic-regression analysis to evaluate ex-post and ex-ante classification rates of each financial ratio and its corresponding industry-relative ratio. The ex-post data include 158 bankrupt and nonbankrupt companies over the nine-year period from 1986 to 1994; the ex-ante data includes 100 bankrupt and nonbankrupt companies over the 14-year period from 1995 and 2008.

Table 1 lists the taxonomy of financial ratios, Kolmogorov-Smirnov tests, Mann-Whitney tests, and univariate analysis results for all five years prior to bankruptcy for 158 equally matched bankrupt and nonbankrupt companies. We use Mann-Whitney tests for the 10 financial ratios because the data are not normally distributed based on the result of Kolmogorov-Smirnov tests, which indicate that the data are nor normally distributed when the probability value is smaller than the threshold value of 0.05.

Table 1 Taxonomy of Financial Ratios as Bankruptcy-Predictor Attributes, Kolmogorov-Smirnov (K-S) Tests, Mann-Whitney Tests, and Univariate Analysis Results

Financial Ratios	K-S Statistic n = 790	Mann-Whitney Statistic n =790	Overall Ex-Post Classification of One- to Five-Year Period before Bankruptcy (%) (1986-1994)		Overall Ex-Ante Classification of One- to Five-Year Period before Bankruptcy (%) (1995-2008)	
			Unadjusted Ratios	Industry- Relative Ratios	Unadjusted Ratios	Industry- Relative Ratios
Working capital to total assets	0.345***	130,497***	57.22	50.25	50.20	53.80
Earnings before interest and taxes to total assets	0.390***	46,079***	57.59	57.34	49.60	51.20
Sales to total assets	0.234***	73,045*	51.90	49.11	51.60	51.20
Retained earnings to total assets	0.460***	73,680	–	–	–	–
<i>Market</i>						
Price-earnings ratio (basic)	0.361***	56,277***	62.67	61.27	46.80	51.00
Common dividends	0.392***	68,338**	64.30	60.13	49.80	49.60
Market capitalization	0.385***	66,199***	54.56	51.77	50.00	50.00
Market value of equity to book value of total debt	0.424***	46,254***	66.33	55.95	43.40	46.80
Market value of equity to book value of equity	0.407***	36,744***	72.53	68.61	43.00	30.60
Market capitalization to total debt	0.426***	45,915***	62.53	58.23	47.20	48.40

Notes: *P < 0.05, **P < 0.01, and ***P < 0.001.

As the table shows, a significant difference exists in the mean values of bankrupt and nonbankrupt companies for nine of the ten ratios in all five years before bankruptcy. Significance of difference in means exists when the probability of the Mann-Whitney test is smaller than 0.05.

The results indicate that the ex-post and ex-ante classification rates of the unadjusted ratios range from 72.53% to 51.90% and 51.60% to 43.00%, respectively. The market value of equity to book value of equity ratio and sales to total assets ratio possess the highest ex-post and ex-ante univariate classification accuracy for all five years, respectively. The respective ex-post and ex-ante classification rates of industry-relative ratios range from 68.61% to 49.11% and 53.80% to 30.60%. The market value of equity to book value of equity ratio and the working capital to total assets ratio have the highest ex-post and ex-ante classification accuracy, respectively.

3.2 The Model

Scott (1981) describes Altman's (1968, 1977) Z-score model as the most impressive bankruptcy-prediction model in terms of classification accuracy and adherence to his theoretical model of financial insolvency. Subsequent work (see, for instance, Altman & Izan, 1983; Izan, 1984; Pindado et al., 2008) furthers this support, noting that Altman's Z-score model is the most common assessment of bankruptcy risk. Following this trend, we base our model specification on Altman's Z-score model.

We selected four industry-relative variables from the original variables in Altman's (1968) Z-score model, including working capital to total assets (WC/TA), earnings before interest and taxes to total assets (EBIT/TA), sales to total assets (S/TA), and market value of equity to book value of total debt (MVE/BVD). We did not include the ratio of retained earnings to total assets (RE/TA), as it is not a significant predictor based on the Mann-Whitney statistic reported in Table 1.

Of the four variables, WC/TA, EBIT/TA, and S/TA are accounting-based. MVE/BVD is the only market-based ratio. Agarwal and Taffler (2008) and Li and Miu (2010) all note that market-based and accounting-based bankruptcy-prediction models show little difference in their predictive ability; combining the two approaches, however, capture different aspects of bankruptcy risk and could increase the stability of the bankruptcy model. Therefore, to develop a more balanced and stable bankruptcy model that captures different risk aspects, we add two market-based ratios from *Market* in Table 1.

Table 2 reports industry-relative logit model results using a maximum Nagelkerke R-squared improvement procedure for the 158 bankrupt and nonbankrupt firms one- to five- years before bankruptcy. As the table shows, the logit model at step 1 (Model 1, based on Altman's Z-score model excluding RE/TA) includes the WC/TA, EBIT/TA, S/TA, and MVE/BVD variables, where 0.69% of the variation in the ex-post data is explained. At step 2, the optimal logit model (Model 2) from adding an additional market-based ratio consists of WC/TA, EBIT/TA, S/TA, MVE/BVD, and the market value of equity to book value of equity (MVE/BVE) explains 20.43% of the variation in the ex-post data, which is 19.74% more than that of Model 1. Adding MVE/BVE results in a significant improvement.

At step 3, the optimal logit model (Model 3) from including an additional market-based ratio consists of WC/TA, EBIT/TA, S/TA, MVE/BVD, MVE/BVE, and price-earnings (P/E) ratio, capable of explaining 21.36% of the variation in the data that is 0.93% more than Model 2. The reason we selected industry-relative MVE/BVE and P/E ratios is because they have higher overall ex-post classification rates than other market-based ratios (see Table 1). As also seen in the bottom portion of Table 2, the condition numbers of Model 3's eigenvalues are smaller than 2.02, suggesting no evidence of multicollinearity in the model (Belsley et al., 1980). Therefore, Model 3 is the optimum industry-relative bankruptcy model.

Table 2 Industry-Relative Logit Model Results Using a Maximum Nagelkerke R-Squared Improvement Procedure

Variables and Sources	Model 1			Model 2			Model 3		
	Coeff.	SE of Coef.	P Value	Coeff.	SE of Coef.	P Value	Coeff.	SE of Coef.	P Value
Intercept	0.0574	0.0834	0.4916	0.6824	0.1119	0.0001	0.7926	0.1216	0.0001
WC/TA	0.0002	0.0008	0.8044	-0.0004	0.0009	0.6724	-0.0004	0.0009	0.6454
EBIT/TA	-0.0008	0.0024	0.7354	0.0007	0.0039	0.8582	0.0007	0.0038	0.8608
S/TA	-0.0347	0.0195	0.0753	0.0165	0.0237	0.4872	0.0176	0.0236	0.4557
MVE/BVD	0.0001	0.0001	0.5375	0.0004	0.0001	0.0005	0.0004	0.0001	0.0007
MVE/BVE				-0.5351	0.0675	0.0001	-0.5324	0.0676	0.0001
P/E							-0.1241	0.0545	0.0228
NK R^2 (%)	0.69			20.43			21.36		
INK R^2 (%)				19.74			0.93		
CNE	<1.3605			<2.0177			<2.0183		

Notes: SE = Standard Error; NK R^2 = Nagelkerke R^2 ; INK R^2 = Improved Nagelkerke R^2 ; and CNE = Condition Numbers of Eigenvalues.

3.3 Classification accuracy

Type I, Type II, and overall correct classification accuracy evaluate the ex-post and ex-ante accuracy. Table 3 reports the ex-post and ex-ante classification accuracy of Model 3's industry-relative and unadjusted analysis for the one- to five-year period before bankruptcy, where the coefficients of Model 3's unadjusted analysis are obtained with unadjusted ratios.

Table 3 Ex-Post and Ex-ante Classification Accuracy of Model 3 – Industry-Relative and Unadjusted Analysis (One- to Five-Year Period Before Bankruptcy)

Year	Industry-Relative Ratios			Unadjusted Ratios		
	Bankrupt Percentage Correctly Classified	Nonbankrupt Percentage Correctly Classified	Overall Percentage Correctly Classified	Bankrupt Percentage Correctly Classified	Nonbankrupt Percentage Correctly Classified	Overall Percentage Correctly Classified
Panel A. 1986-1994 Ex-Post Data: 158 Firms						
1	98.73	98.73	98.73	98.73	98.73	98.73
2	84.81	54.43	69.62	77.22	64.56	70.89
3	84.81	51.90	68.34	82.28	63.29	72.79
4	82.27	55.70	68.99	79.75	68.35	74.05
5	83.54	58.23	70.70	77.22	68.35	72.79
Average	86.83	63.80	75.28	83.04	72.66	77.85
Panel B. 1995-2008 Ex-Ante Data: 100 Firms						
1	92.00	92.00	92.00	88.00	94.00	91.00
2	76.00	78.00	77.00	54.00	84.00	69.00
3	74.00	64.00	69.00	60.00	68.00	64.00
4	80.00	52.00	66.00	50.00	62.00	51.00
5	76.00	52.00	64.00	66.00	60.00	63.00
Average	79.60	67.60	73.60	63.60	73.60	67.60

Panel A reports the ex-post classification results, which consist of 158 bankrupt and not-bankrupt firms during the nine-year period, 1986–1994. The respective average Type I, Type II, and overall correct classifications of industry-relative analysis are 86.83%, 63.80%, and 75.28%; those for the unadjusted analysis are 83.04%, 72.66%, and 77.85%. Overall classification accuracy with industry-relative ratios is 2.57% lower than with unadjusted ratios. However, Type I accuracy with industry-relative ratios is 3.79% higher than with unadjusted ratios.

Panel B reports the ex-ante classification results of 100 bankrupt and not-bankrupt firms during the 14-year period 1995–2008. The respective average Type I, Type II, and overall correct classifications of industry-relative analysis are 79.60%, 67.60%, and 73.60%; those of unadjusted analysis are 63.6%, 73.60%, and 67.60%. Type I and overall classification results with industry-relative ratios are 16.00% and 6.00% higher than those with unadjusted ratios, respectively, although Type II accuracy with industry-relative ratios is somewhat lower than with unadjusted ratios.

In particular, the difference between ex-post and ex-ante classification results with industry-relative ratios is 1.68%, which is significantly less than with unadjusted ratios (10.25%). This echoes Altman's and Izan's (1983), Chen's (2020), and Platt's and Platt's (1990, 1991) proposition. That is, the difference between ex-post and ex-ante classification results with industry-relative ratios is significantly smaller than with financial ratios.

To evaluate predictive performance of Model 3, we apply Altman's (1968) Z-score model to the ex-post and ex-ante data sets. Table 4 reports the ex-post and ex-ante classification accuracy of Altman's model for the one- to five-year period prior to bankruptcy using industry-relative and unadjusted ratios. As the table shows, the ex-post and ex-ante classification accuracy of Altman's model with industry-relative and unadjusted ratios is lower than that of Model 3 with industry-relative and unadjusted ratios. In particular, a considerable difference in accuracy exists in the year prior to bankruptcy.

Table 4 Ex-post and Ex-ante Classification Accuracy of Altman's Z-Score Model — Industry-Relative and Unadjusted Analysis (One- to Five-Year Period Before Bankruptcy)

Year	Industry-Relative Ratios		Unadjusted Ratios	
	1986-1994 Ex-Post Classification Percent Correct, N = 158 Firms	1995-2008 Ex-Ante Classification Percent Correct, N = 100 Firms	1986-1994 Ex-Post Classification Percent Correct, N = 158 Firms	1995-2008 Ex-Ante Classification Percent Correct, N = 100 Firms
1	71.52	68.00	70.25	70.00
2	67.72	65.00	70.89	64.00
3	65.19	64.00	71.52	62.00
4	72.15	60.00	74.68	67.00
5	68.35	62.00	70.25	62.00
Average	68.99	63.80	71.52	65.00

Further, the respective average ex-post and ex-ante classification results of Altman's model with industry-relative analysis are 68.99% and 63.80%, which are lower than those with unadjusted ratios (71.52% and 65.00%). This implies that industry-relative analysis does not necessarily result in higher forecasting accuracy. Nonetheless, the difference between ex-post and ex-ante classification results with industry-relative ratios is 5.19%, lower than with unadjusted ratios (6.52%). This reconfirms that industry-relative ratios are relatively stable.

In order to further assess predictive performance of Model 3, this study compares its results with the

forecasting results from a similar study by Barboza et al. (2017). They combine Altman's (1968) Z-score model with six financial indicators to develop bankruptcy-prediction model based on Machine learning models, producing an 87% classification accuracy one year before bankruptcy. In contrast, the average out-of-sample classification accuracy of Model 3 is 92.00% one year before bankruptcy. This result indicates that Model 3 outperforms the bankruptcy forecasting model of Barboza et al. (2017).

4. Summary and Conclusions

In this study, we develop an industry-relative bankruptcy model based on Altman's Z-score model. The model, which outperforms Altman's Z-score model and Barboza et al.'s (2017) forecasting model, has high classification accuracy one year before bankruptcy, moderate accuracy two years before bankruptcy, and less accuracy in more remote years. This result suggests that a balanced combination of accounting- and market-based ratios not only captures different aspects of bankruptcy risk, but also may yield a relatively high classification rate. As such, management has a better opportunity to take corrective actions early and thereby enhance corporate financial sustainability.

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Church Financing — Is the German System of Church Tax an Alternative for the Slovak Republic?

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Abstract: The aim of the present work is to show that the Church of the Slovak Republic can fulfil its tasks only with the help of sufficient state funding. The German system of church tax or the Austrian variant of the church contribution are not applicable in the Slovak Republic, especially since these systems are increasingly questioned and criticized in both countries¹. Even clerics² assume that this form of church financing is historically outdated and will not survive the next ten years.

Key words: church financing; Slovak Republic; church tax

JEL code: G390

1. Introduction

This thesis deals with the comparison of the financing systems of churches in Germany, Austria and the Slovak Republic. It will be analysed to what extent the financing channels established in Germany and Austria would be successful in the Slovak Republic. A church financing system would be successful if it sustainably secures the financial resources which the church in Slovakia needs to fulfil its tasks.

This work is intended to provide decision-makers and all interested parties with a condensed knowledge base containing all relevant information. This knowledge base will be deepened and focused in a later dissertation of the author on the topic of alternative financing possibilities for church bodies. For this purpose, financing instruments will be named and compared. The theoretical and empirical presentation of all aspects should contribute to the fact that in the Slovak Republic the state continues to guarantee the financing of the churches.

In order to answer the research question about the prospects of success of the German or Austrian model of church financing in this thesis, the church financing systems in Germany and Austria are examined with their historical origins. The differences and the criticism of the existing financing system are presented in a comparative manner. The development of church membership figures, the number of church members leaving the church and the reasons given by those leaving the church are analysed. The causality between the collection of church tax and the number of people leaving the church is examined.

Two theses are to be critically evaluated in this study:

- The church tax, as prescribed and collected in Germany and Austria, is not suitable for a sustainable

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¹ Thuringia's Minister President Bodo Ramelow on the Protestant Press Service, 13.3.2019.

² Bishop Gregor Maria Hanke, interview in the Augsburg Allgemeine newspaper 29.03.2019.

financing of the churches in the Slovak Republic.

- A turning away from the state-financed church by the legislator would endanger the church work in the Slovak Republic.

The publications listed in the literature section were used to compile this paper. The internet portals of kathpress, kath.net, katho-lisch.de, dbk.de, etc. were consulted on current developments, especially in the Roman Catholic Church.

2. Financing of the Churches

2.1 Church Financing in Germany

In Germany 58.5 percent of the population profess Christianity, while 31 percent describe themselves as non-denominational³.

The German constitution allows in its §140 in connection with §137 of the Weimar Constitution those religious and ideological communities, which are corporations under public law, to collect taxes in order to fulfil the church tasks (Hartmann Gerhard, 2014, p. S.34). The state-church law is part of the public law in Germany. The full legal protection is guaranteed by concordats⁴ guaranteed. In addition to church tax, the donations to the German churches consist of state benefits and subsidies. State payments to the churches are permanent obligations of the federal states which existed on 14 August 1919, the date on which the Weimar Constitution came into force.

The state payments are the result of church expropriations. With the main conclusion of the extraordinary Reichsdeputation in 1803, the state took over not only the assets as legal successor but also the burdens associated with the confiscated property. Some states undertook to make annual payments. The state payments are paid by the state without earmarking. The decision on the use of the funds is exclusively up to the churches. Where religious communities perform tasks in the public interest, the state provides subsidies. Kindergartens, schools and hospitals run by church organisations and other services in the public interest, such as care for refugees, are subsidised by the state under separate agreements.

Church tax in Germany is nine percent of income tax, (in Bavaria and Baden-Württemberg eight percent). The taxes are collected by the state tax offices. The link to income tax gives the church tax a sense of justice, because the tax levied takes into account the taxpayer's ability to pay (Hartmann Gerhard, 2014, p. S.38). The state keeps a fee of two to four percent. Critical voices ask whether it is not the church tax payers or the churches that are co-financing the German tax authorities (Hartmann Gerhard, 2014, p. 41). The tax revenue for the Catholic Church in 2017 amounted to 6.4 billion euros (Deutsche Bischofskonferenz). The Protestant Church has raised 5.67 billion euros. In addition, the churches received more than 500 million euros from tax revenues.

Only members of the church are liable to church tax. The decisive factor is the residence or habitual abode of the church member and the taxable capacity. Therefore, only about one third of the German church members pay church tax. The others are not subject to wage or income tax. Foreigners with residence in Germany are subject to church tax. The church tax can be deducted in full as a special expense in the assessment for income tax.

Critical voices accuse the churches in Germany of simony - the sale of spiritual goods for money. Those who do not want to pay the church tax are threatened with expulsion. As an alternative to the German compulsory tax, they refer to the Italian model. The Italians pay the so-called culture tax, which amounts to about ten percent of

³ <http://www.länderdaten.info>, called on 20.06.2019.

⁴ Contract between a (Catholic) state and the Roman Catholic Church.

the German church tax. Citizens can decide for themselves which institution should receive their contribution: the church, La Scala in Milan or an environmental association. Since this culture tax replaced direct state contributions, the introduction is in a different historical context (Hartmann Gerhard, 2014, p. 54). The German expert on state-church law Alexander Hollerbach calls the German church tax system superior to other financing systems in terms of social justice, equality, economy and effectiveness (Demel Sabine, 2010, p. 378).

The following overview shows why church members leave the church in Germany: The resignations are mainly for economic reasons.

The church in Germany loses more than 300,000 members annually by leaving the church. Almost half of the resignations are due to church tax (Kirchenamt der EKD, Deutsche Bischofskonferenz (DBK).

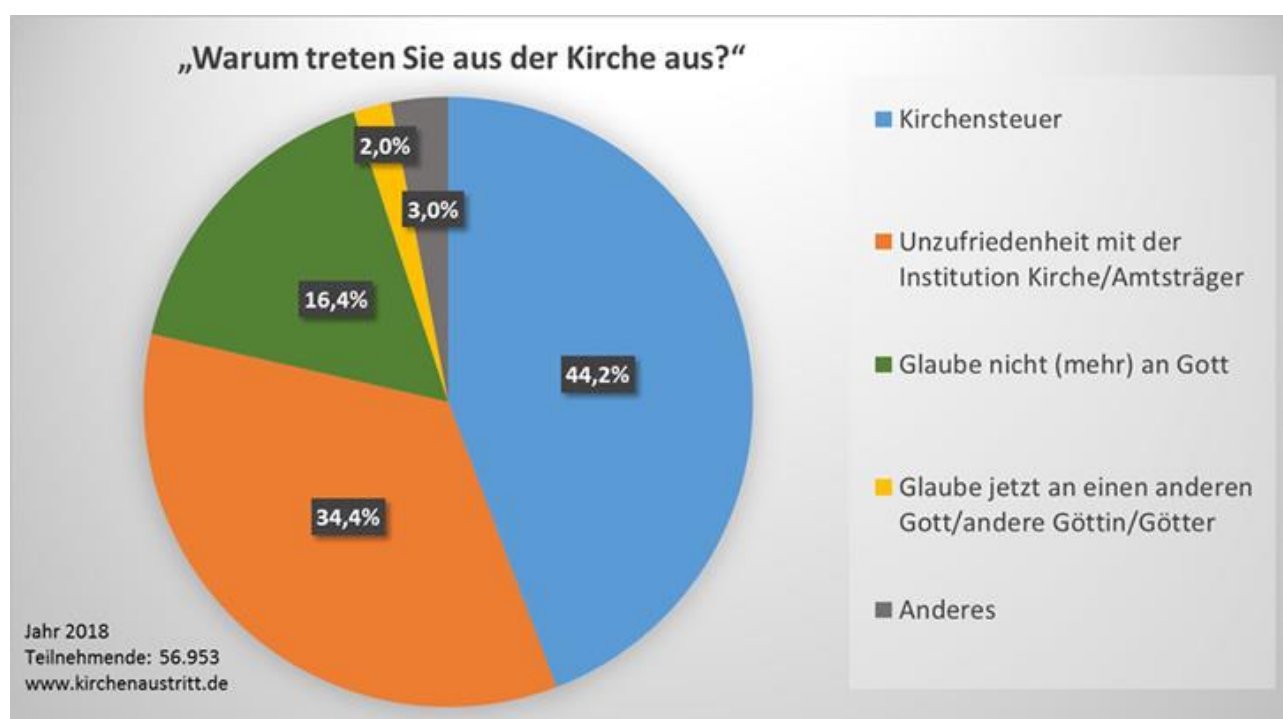


Figure 1 Why are You Leaving the Church (Germany)

Table 1 Reasons for Leaving the Church (D) 2015-2018

Why are you leaving the church (D)?	2015	2016	2017	2018
Church Taxes	45.8	46.9	45.6	44.2
Dissatisfaction with the institution church/official	31.8	30.4	31.5	34.4
Do not (anymore) believe in God	16.7	16.9	17.4	16.4
Believe now in another god/ goddess	2.1	2.2	2.1	2.0
Other	3.7	3.7	3.5	3.0
Interviewee approx. 50,000				

Table 2 Number of Church-Leavers in Germany⁵

	Catholics	Protestants	Total
2006	84.389	121.598	205.987
2007	93.667	131.000	224.667
2008	121.155	168.901	290.056
2009	123.681	148.450	272.131
2010	181.193	145.250	326.443
2011	126.488	141.497	267.985
2012	118.335	138.195	256.530
2013	178.805	176.551	355.356
2014	217.716	270.003	487.719
2015	181.925	211.264	393.189
2016	162.093	190.284	352.377
2017	167.504	200.000	367.504
	1.756.951	2.042.993	3.799.944
Mean value	146.413	170.249	316.662

2.2 Church Financing in Austria

In Austria 80.9 percent of the population profess Christianity (Compare FN3). The church members finance their church mainly through the church contribution, which is payable by the Catholic, Protestant and Old Catholic churches. The legal basis is the Church Contribution Act of 1939, which provides that church contributions are collected through church contribution offices. The law has no democratic legitimacy. There are no automatic tax deductions and collection by the tax office as in Germany. The church contribution is calculated from taxable income and can be deducted in the income tax return as a special expense up to a maximum amount. The assessment basis is 1.1 percent of taxable income.

In Austria, too, monasteries and convents were abandoned and the proceeds were added to the national treasury. State-administered religious funds were set up to finance the clergy. In 1939 the state stopped payments. The religious fund was incorporated into the state property. The Church Contribution Law introduced in 1939 was incorporated into the Austrian legal system after the end of the war. Reductions are provided for sole earners, children, senior citizens, extraordinary burdens, which can be granted on application. There is no income exemption limit in Austria like in Germany. The income from the church contribution makes up on average 78 percent of the total income of all Austrian dioceses. The table shows the development of the membership of the Catholic Church in Austria.

Between 2008 and 2018, the church lost an average of 53,000 members per year. The number of Catholics in relation to the total population shows that the proportion of Catholics in the population has decreased by 10 percent to 57 percent in these eleven years.

⁵ <http://www.kirchenaustritt.de/statistik>.

Table 3 Proportion of Catholics to Total Population in Austria (in thousands)

Year	Catholics	Change	Total population	Share Catholics
2008	5.579	0	8.322	67.05%
2009	5.534	-46	8.341	66.34%
2010	5.453	-81	8.361	65.22%
2011	5.404	-49	8.389	64.41%
2012	5.359	45	8.426	63.60%
2013	5.309	-51	8.477	62.62%
2014	5.265	-43	8.544	61.63%
2015	5.211	-54	8.630	60.39%
2016	5.163	-49	8.740	59.07%
2017	5.111	-52	8.795	58.11%
2018	5.053	-58	8.838	57.17%

Table 4 Church Revenues in Austria According to Sources (WGM = state reparations)

	Church Tax	Gov. WGM	Rent & Lease	Church activity	Grants	Other	Total	ChTx/Cath.
2014	435.424	46.823	24.394	35.418	19.729	25.099	586.887	82.70
	74.2%	8.0%	4.2%	6.0%	3.4%	4.3		
2015	445.319	47.408	26.125	41.283	14.806	20.891	595.832	85.46
	74.7%	8.0%	4.4%	6.9%	2.5%	3.5%		
2016	451.401	47.911	26.531	39.584	15.110	23.392	603.929	87.44
	74.7%	7.9%	4.4%	6.6%	2.5%	3.9%		
2017	462.040	48.337	22.821	40.043	14.959	21.013	609.213	90.41
	75.8%	7.9%	3.7%	6.6%	2.5%	3.4%		

The table shows the small fluctuation range of the sums of church contributions on the one hand and the constancy of their share in the total church income on the other. There are 50,000 fewer contributors per year. The sum of church contributions increases by about two percent annually. Since nothing has changed in the calculation of church tax in these years, fewer church members per capita must contribute higher church amounts. This is shown in the last column of the table. While in 2014 the average per capita church contribution was €82.70, in 2017 it was already €90.40⁶.

In the decision to leave the church, the economic aspect is in the foreground. In no other European country is the number of people leaving the church as high as in Austria. The rate of Catholics leaving the Church in Austria is double that in Germany. The withdrawal rate is highest in the age group between 19 and 30 years. Two thirds of those who left the church cite the church contribution as the reason (Höfer, 2014, p. S111f).

The idea of tax dedication as a new form of citizen participation was introduced into the political debate in 2012 by the then State Secretary and later Federal Chancellor Sebastian Kurz in an interview with the daily newspaper Kurier (Höfer, 2014, p. S114). This is a model of tax deduction. The citizen himself decides on the use of a legally defined share of his paid income tax⁷. Comparative calculations based on a report of the Court of Auditors have shown that the conversion of the church tax system to a model of tax evasion could be carried out

⁶ Höfer also asks himself this question, p. 113.

⁷ Wage tax is a form of income tax and is therefore not specifically mentioned.

in a cost-neutral way. A dedication share of approximately 2 percent of income tax revenue could secure the religious communities' current income. The savings that make the reform cost-neutral lie in the fact that church contributions are no longer deductible, the elimination of costs for lawsuits and approximately 10,000 enforcements⁸, and the processing of 50,000 to 80,000 withdrawal acts annually (Ferk C. & Baumgarten C., 2012).

2.3 Church Funding Slovak Republic⁹

In Slovakia 74 percent of the population profess Christianity (FN 1). Freedom of religion is enshrined in the Constitution of the Slovak Republic. With the establishment of the Charter of Fundamental Rights of Human Rights and Fundamental Freedoms, Act No. 308/1991 Coll. on Freedom of Religion and Status of Churches and Religious Communities is adopted.

The Constitution of the Slovak Republic declares the Slovak Republic a secular, ideologically and religiously neutral state. The relationship between the state and churches is regulated by Act No. 308/1991 Coll. on freedom of religion and the status of churches and religious societies.

The state supports the registered churches and religious communities in the performance of their religious and charitable activities, guarantees their legal status and thus secures their status in public life.

The issues of financial relations between the State and churches are regulated by Act No 218/1949 Coll. on economic security of churches and religious communities by the State, as amended by Act No 16/1990 Coll. The issues of state supervision of churches as amended by Act No. 522/1992 Coll. and Act No. 467/2005 Coll. In order to provide financial support to the church and religious communities, the state finances salaries and contributions of churches through the budget of the Ministry of Culture of the Slovak Republic and provides a subsidy to the running costs of the church headquarters (episcopal offices).

The Ministry of Culture of the Slovak Republic, as the central body of state administration, is responsible for all church and religious affairs. However, the Ministry of Culture is not a superior authority or governing body of the churches. Registered churches and religious communities are Jewish persons with their own organization and self-administration. They administer their affairs, appoint their organs, appoint their clergy and operate religious institutions independently of the state authorities.

3. The Sources of Income of the Church

3.1 Financing From Own Resources

3.1.1 Church Tax (D) — Church Contribution (Ö)

The church tax (church contribution) is a levy (a contribution) which creates the financial basis for the fulfilment of church tasks in Germany and Austria. In Austria 75 percent of the total income of the Catholic Church comes from church taxes¹⁰.

The church tax was introduced in Germany in 1919 by the Weimar coalition, i.e. democratically legitimized. In Austria, the Church Contribution Act was enacted by the Nazi regime in 1939.

3.1.2 Follow-up Fees (Puza, 2002)

⁸ Every year there are about 30,000 legal actions in Austria because of owed church contributions.

⁹ Source: Homepage. Ministerium für Kultur der Slowakischen Republik.

¹⁰ <https://kirchenfinanzierung.katholisch.at/home/kirchenbeitragseinnahmen-auf-451-millionen-euro-gestiegen>.

Stola fee¹¹ (also called *taxa stole*) are contributions collected by the church for ecclesiastical ceremonies such as baptism, church weddings and church funerals.

Pope Francis refuses to pay tribute fees (Domradio.de, 2017) and calls them “unbearable”. A church that exchanges “sacraments for money” is not his church, he says, he wants “a poor and humble church”. It is to be expected that also the German church tax system will come under the critical gaze of the Argentine Pope¹².

3.1.3 Donations — Collection

In the collection (lat. *colligere*: to collect) money was already collected in the early Christian church for ecclesiastical and charitable purposes. In the Catholic Church there are special collections for specific purposes or church organizations. The Peter’s penny supports the apostolic and charitable work of the Pope.

3.1.14 Income from Economic Activity (Czermak G., Hilgendorf E., 2018, §15, pp. 207-222)

Ecclesiastical communities generate income from the management of their own assets or those of church foundations. In Germany, the share of financial resources from assets, renting and leasing or shareholdings accounts for approximately four to five percent. Church-owned businesses that operate breweries, wineries, construction companies and companies that manage the church's real estate assets sometimes generate substantial profits. Churches own shares in banks, insurance companies and media enterprises.

3.2 Financing From State Resources

3.2.1 Positive Government Benefits

Positive state payments are compensation payments for land and property that was seized from the churches in 1803 (see above). This type of church financing is increasingly being publicly criticised. In countries where church property has been confiscated by the state, the state must face up to its resulting responsibility. The state must pay compensation either in the form of ongoing payments or instalments.

3.2.2 Negative Government Benefits (Seeger, 2008)

Negative state benefits consist of tax and fee concessions for religious and denominational communities, insofar as they are organised as corporations. The deductibility of church tax in the assessment of income tax is also to be seen as a negative state benefit.

3.2.3 Subventions

If church organisations take over tasks that would otherwise have to be performed by the state, such as the operation of kindergartens, hospitals or nursing homes, the state provides subsidies. The principle of parity must be observed.

4. Conclusion

The church tax (in Austria called *Kirchenbeitrag*) exists only in Germany, Austria and Switzerland. In Germany, the church tax is linked to the fiscal capacity. Those who do not have to pay wage or income tax do not pay church tax. In Austria, income under € 11,000 is not taxable. The church contribution law does not know any exemption limit. Every Euro earned is subject to contributions. The Church Contribution Act is socially unjust (Höfer Rudolf K., 2019).

Making financial contributions as a condition for belonging to a religious community does not fit into a modern, democratic social order. The system is a relic that has already been criticised by Martin Luther as a trade

¹¹ Stolgebühr deshalb, weil sich der zelebrierende Kleriker bei der Feier eine Stola umlegt.

¹² Vom Missbrauch der Steuer des Kirchenvolkes, <http://www.kath.net/news/68222>, 13.6.2019.

in indulgences. Surveys of those who have left the church show that church taxes and church contributions are the main reason for the consistently high number of church departures in Germany and Austria. The contradiction between the increasing income of the churches from church dues, with constantly decreasing membership numbers, can be explained by rising incomes in a good economic situation. One can only advise against a country that plans to reorganise its church financing to adopt a church financing system like that of Germany or Austria. In Italy, where the financial incentives for leaving the church are missing, there are hardly any members leaving the church (Höfer, 2014, p. 115). Only the state can provide a sustainable economic basis. If the state is interested in maintaining its church organisations, it will decide to introduce a church financing model based on the German or Austrian model.

The development of concrete proposals for a new church financing model in the Slovak Republic requires further research work. It should be examined to what extent the Italian model is suitable for Slovak conditions. The tax deduction motive is gaining ground in Europe (Höfer, 2014, p. 113). The Italian model introduced in 1990 allows taxpayers to dedicate part of their income tax to the Church (Mitterhofer, 2014, p. 121ff). When it was introduced, this system replaced state benefits and was tax-neutral from the citizens' point of view. A good presupposition for the acceptance by the state and citizens. The financial benefits are not perceived as an additional burden, but are part of the wage and income taxes that have to be paid anyway. On the other hand, the direct collection of a church tax by the state or the church itself must be seen as a phase-out model in the light of current developments. The implementation of one or the other state plan to finance the churches remains a question of political will. The task of science is to provide a broad and well-secured information basis for a solution. This solution should be accepted by the population and offer the churches a secure economic basis for their religious and charitable work in the coming centuries.

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Valuation of B3-Listed Brazilian IT Companies

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Abstract: This study presents valuation methods to compare market value and the present value of discounted cash flow, using companies listed on the Brazilian stock market B3, with data from 2009 to 2014. The research adopted a qualitative-quantitative approach and a hypothetical-deductive method to examine ten Brazilian IT companies. This study fills a gap in the literature, which shows few studies on future cash flow to be generated by Brazilian IT companies. The sample collected in Brazil was then compared to a sample of 25 NASDAQ-listed US IT companies, revealing that US companies have higher market value than discounted cash flow. Finally, the study suggests further research to identify the possible correlations of other relevant economic variables, such as the variation of the exchange rate, interest rate, or GDP, which are elements that may influence investors' decision-making.

Key words: valuation; market value; information technology

JEL code: G32

1. Introduction

Corporate finance and optimal capital structure are topics that have been discussed for a long time in the literature. The capital financing system based on funding from third parties can offer the company a way to maximize profits, which explains the need for optimal capital structure (Miller & Modigliani, 1958).

The new business environment poses the challenges of presenting positive results in quarterly financial statements, at the same time as increasing business value. For Damodaran (2005), company valuation is at the heart of investment decisions. It is crucial to find the best way to create value, using investment, funding, and decision-making regarding profit distribution.

The business value has been considered a criterion for assessing the performance of economic sectors. People have kept their expectations based on the future value of their investments, hoping to offset the risk taken. The combination of growth and return on invested capital has determined the business value (Koller et al., 2010). For Copeland, Koller, and Murrin (2002), the three main principles that drive a business valuation are (i) shareholder value creation; (ii) the measurement of operational and financial performance, and the management of the company's goals, and (iii) long-term growth.

Damodaran (2014) wrote a blog post on February 20, 2014, reflecting on the \$19 billion Facebook Co paid for WhatsApp. The transaction resumed the discussion around companies' market value and the price paid for them. In this particular case, was the price paid for WhatsApp based on the purchase price of the above company

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based on the present value of discounted cash flow, or was another method used to analyze the company's value before the negotiation?

Looking at this billion-dollar transaction, the fact that a company like WhatsApp, which has few fixed assets (computers, servers, software), is traded at such a higher price in comparison to other purchases in the market stands out. The report published in March 2015 by Pricewaterhouse Coopers listing the Global Top 100 Companies emphasizes the prominence of IT companies, ranking Appel Inc and Google Inc, respectively, as the first and second-largest market caps in the world.

In Brazil, the 2104 ranking of the 1000 largest national companies published by the journal *Valor Econômico* (2014) awarded first place to *Petróleo Brasileiro S.A. (Petrobrás)*, a company in the oil and gas industry, and second place to *Vale S.A.*, a company in the steel industry. The largest Brazilian companies listed on B3 — Brazilian stock market Brasil, Bolsa, Balcão, different from the US market where IT companies are at the top, operate in raw-material sectors. Therefore, it is worth to conduct specific studies for the country to understand the market cap of the top national companies.

Against this backdrop, this research calculates the present value of discounted cash flow for shareholders and B3-listed IT companies, comparing the present value with the market value and considering the period from 2009 to 2014. While in the US market, there were 154 IPOs of IT companies on the NASDAQ (National Association of Securities Dealers Automated Quotations) in 1994, and 250 IPOs in 2004, the Brazilian stock market B3 lists only ten IT companies. These figures prove how much the US capital market is ahead of Brazil's, especially in the information and technology sector. In the 1990s, the average price of startups in the US jumped from \$11 million to \$30 million over four years (Rogers, 2009, p. 263).

This research also seeks to fulfill a lack of studies on the valuation of Brazilian IT companies, which occur because Brazil is an emerging economy with little experience in IPOs of startups and IT companies in its stock market.

2. Theoretical Framework

2.1 Present Value of Discounted Cash Flow

Business valuation using the present value of discounted cash flow (PVDCF) model was first demonstrated in the study by Miller and Modigliani (1961). Several variations of the model were built later, maintaining the essential characteristics of the original work.

The PVDCF method requires three components that must be determined prior to the final calculations:

- 1) Cash flow projection, obtained from the simulation models applied to the company.
- 2) Discount rate, used to calculate the PVDCF and the perpetuity value
- 3) Perpetuity value, which will be the value of the company at the end of the analyzed period (in this research, ten years). It is the value shareholders can expect when selling their shares at the end of the period.

The PVDCF model is the only form of valuation that requires complete information about the valued company. It ascertains the company's value for all equity owners, both creditors, and shareholders. The real certainty of receiving a future economic benefit is different depending on the asset and on the entity. Risky assets or entities must be evaluated and measured using the discount rate, rate of return, or cost of capital (Copeland et al., 2002; Hitchner, 2003; Damodaran, 2007; Cunha, 2011; Martins, 2012).

Hitchner's formula is:

$$PV = \sum_{t=1}^n FC^t / (1+i)^t \quad (1)$$

where:

PV = value of the company

CF = projected cash flow

i = cash flow discount rate

n = number of periods projected

This method is mostly used in companies that present positive cash flow — as this increases the reliability of the estimated cash flow for future periods — and where there is a substitute for risk, used to obtain discount rates.

2.2 Present Value of Cash Flow to Shareholders

The present values of cash flow to shareholders are restricted to the cash flow of the company's partners. Martins (2012) argues that these cash flows represent the net flow after computing the effects of all debts taken to finance the company, i.e., cash flow related to interest, amortization, and new indebtedness.

According to Martins (2012, p. 280), because the liability of a commercial bank, for instance, is practically entirely operational, it is not appropriate to carry out a valuation of the company considering it does not have liquidity at the acquisition. In other words, to apply the concept of company value, in this case, has no effect, but applying the concept of shareholder value has.

For Copeland et al. (2002, p. 155), investors who have an asset and who receive a residual right on their cash flow are entitled to any exceeding cash flow, particularly after meeting all financial obligations, including payment of debts, and after supplying the company's reinvestment needs.

Pereira (2011) presents the following formula to calculate the present value of cash flow to the shareholder:

$$\text{Net Asset Value} = \sum_{t=1}^{t=\infty} \text{Cft to the shareholder} / (1+Ke)^t \quad (2)$$

where:

Cft = Expected cash flow to the shareholder in period t;

Ke = Cost of equity

Damodaran (2007, p. 123) stresses an aspect to be considered in this model. The present value of cash flow to shareholders is based on the assumption that the shareholder must withdraw not only dividends but also the surplus of operating cash flow. Investors will always have another investment option that will produce at least the cost of their equity. If the operating activity requires more capital, in this case, the shareholder will provide, ensuring the continuity of the company.

2.3 Present Value of Cash Flow of the Company

According to Martins (2012, p. 275), the present value of cash flow of the company represents the business' present values of operating cash flow regardless of who the suppliers of resources are, including resources from third parties. The business economic value, in this case, reflects its assets' potential (present and future) to create wealth, no matter the way these assets are financed.

Pereira (2011) presents the following formula for calculating the present value of cash flow of the company:

$$\text{Net Asset Value} = \sum_{t=1}^{t=\infty} \text{Cft of the company} / (1+WACC)^t \quad (3)$$

where:

C_{ft} = Company's expected cash flow in period t

WACC: weighted average cost of capital

According to Damodaran (2007, p. 134), rights holders are part of a company as well as the equity investors and bondholders. The cash flow of the company is compared with the cash flow accumulated for the rights holders. In this case, the net operating cash flow produced by the operating assets is worked out by deducting the amounts necessary for new investments in working and fixed capital, added with possible resources from divestments. In the end, however, the calculation of the net operating cash flow includes the cash flow related to creditors. In the present value of the cash flow of the company, the cash flow is calculated to present value by the WACC. The discount rate applied to the free cash flow must reflect the opportunity cost of all providers of weighted capital due to their relative contribution to the capital that forms the total of the company.

3. Methodology

For Marconi and Lakatos (2003, p. 90), scientific methods are classified into only four types: hypothetical-deductive, deductive, inductive, and dialectical. The hypothetical-deductive method evolves from the deductive method, which is based on generalizations or scientifically correct assumptions and seeks evidence of cause-effect relationships to explain or validate the events that have common characteristics. The hypothetical-deductive method consists of first formulating, a problem, and an assumption, which will be tested by observation and experimentation. The inductive method observes the phenomena, discovering possible relationships among them, and generalizing such relationships. Finally, the dialectical method uses argumentation and analysis of contradictions to validate or invalidate scientific theories.

The models — and their applicability to assess the object of this study, according to the classification by Marconi and Lakatos (2003) — were produced using a qualitative-quantitative approach to perform the hypothetical-deductive method with the research universe of all ten Brazilian IT companies listed on the Brazilian stock market B3.

The companies were chosen because they are listed on B3, so their financial reports are available, and there is enough information to run the valuation calculations, following the theoretical framework, as well as proceed with the analysis to answer the hypotheses proposed.

The study adopted the market value calculation based on the value of shares of the analyzed companies as informed by the B3, comparing it with their present value of discounted cash flow. Table 1 lists the IT companies studied.

As for the particularities of the sample, three companies are listed in the sub-sector “computers and equipment”, and seven in “software and services”. The ten companies form one of the other nine sectors in the B3 and correspond to 100% of the research universe. The B3 sectors are basic materials; capital goods and services; communications; consumer cyclical; consumer non-cyclical; financial; health; information technology; oil, gas, and biofuels; and utilities.

Valuation of B3-Listed Brazilian IT Companies

Table 1 B3-listed IT Companies

#	Company	Sector
1	BEMATECH S.A	Computers and Equipment
2	IDEIASNET S.A	Software and Services
3	LINX S.A	Software and Services
4	POSITIVO S.A	Computers and Equipment
5	TELEC BRASILEIRAS S.A	Software and Services
6	SENIOR SOLUTION S.A	Software and Services
7	TOTVS S.A	Software and Services
8	ITAUTEC	Computers and Equipment
9	QUALITY SOFTWARE S.A	Software and Services
10	GAMA PARTICIPAÇÕES	Software and Services

The study shows a comparison between the Brazilian and the US markets, calculating the companies value. The US IT companies listed on the NASDAQ that form the sample are named in Table 2.

Table 2 NASDAQ-listed IT Companies

#	Company	Sector
1	Microsoft Incorporation	Computer Software: Prepackaged Software
2	Google Incorporation	Computer Software: Programming Data Processing
3	Apple Incorporation	Computer Manufacturing
4	Arista	Computer Software: Programming Data Processing
5	Allot Communication	Computer Communications Equipment
6	Ansys	Computer Software: Prepackaged Software
7	American Software	Computer Software: Prepackaged Software
8	Chicago Rivet & Machine Co	Industrial Machine Componentes
9	ChannelAdvisor Corporation	Computer Software: Prepackaged Software
10	Current Computer Corporation	Computer Manufacturing
11	EnerNOC Incorporation	Computer Software: Programming Data Processing
12	Fortinet Incorporation	Computer Peripheral Equipment
13	General Employment Enterprise	Diversified Commercial Services
14	Groupon Incorporation	Advertising
15	Imprivata Incorporation	Computer Software: Prepackaged Software
16	Ipass Incorporation	EDP Services
17	Jive Software	EDP Services
18	Linkedin	Computer Software: Programming Data Processing
19	Majesco Entertainment	Computer Software: Prepackaged Software
20	Omnicell Incorporation	Computer Manufacturing
21	QAD Incorporation	Computer Software: Prepackaged Software
22	Qlogic	Computer Communications Equipment
23	RCM Technologies Incorporation	Professional Services
24	TransAct Technologies Inc.	Computer Peripheral Equipment
25	VMWare	Computer Software: Prepackaged Software

The sample was selected, aiming to obtain the maximum diversity of entities, looking for companies with different market values, and operating in different sub-sectors. There are currently 3,000 companies listed on the NASDAQ, and this sample corresponds to only 1% of the total universe. As shown in the introduction of this study, many IT companies are going public in the US. For this reason, it was not possible to collect the information of the entire universe to conduct the survey.

4. Results

Figures 1 and 2 below present a descriptive data analysis, first of the sample of companies in the sub-sector of “computers and equipment”, and then of companies in the sub-sector “software and services”:

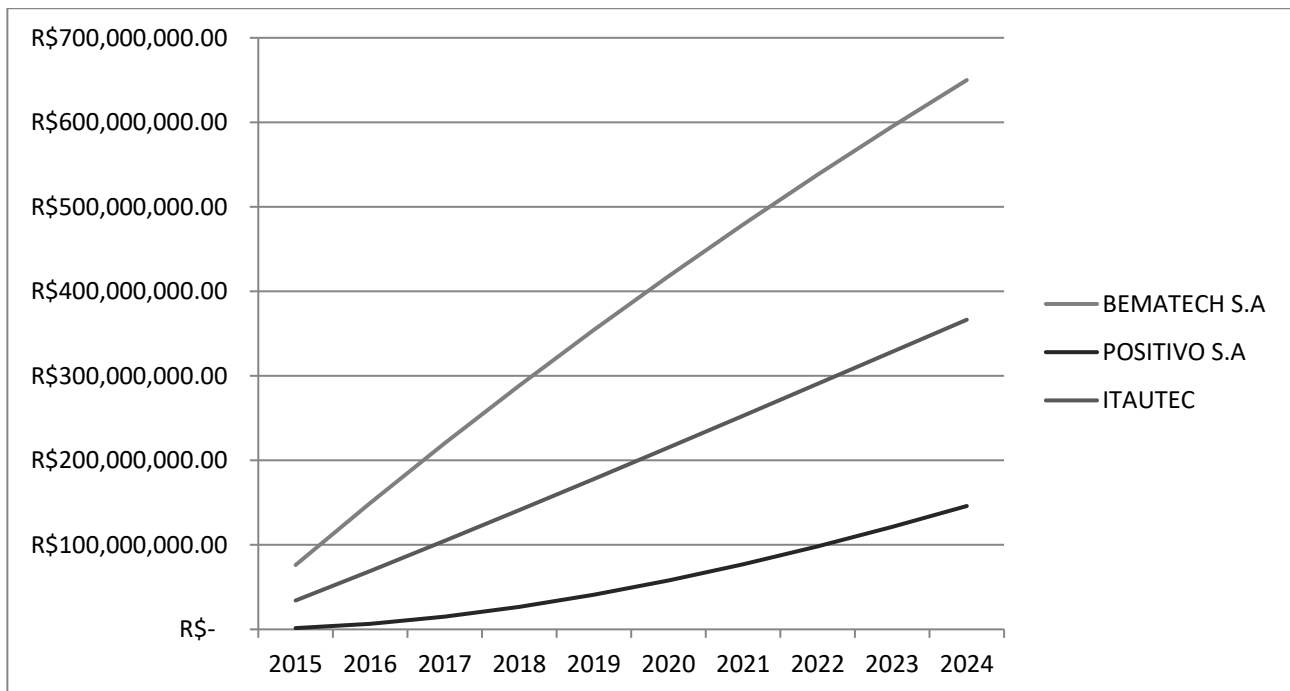


Figure 1 Evolution of the Present Value of Cash Flow to Shareholders (Computers and Equipment)
Values in Brazilian Reals (R\$)

The calculated cash flow corresponds to the net cash flow for shareholders. The whole cash flow was discounted at the rate obtained by the CAPM, up to the date of December 31, 2014. In the case of Positivo S.A., the company presented a negative result in the five years before the year of analysis (2014). The losses reflected the company’s debts, which caused an increase in current liabilities, producing a loss for 2014, registered in the company’s financial statement.

Figure 2 shows companies that work only with software and services, demonstrating a significant difference in the evolution of cash flow compared to the company Senior Solutions S.A. Also, it is possible to observe that the lower the cash flow, the lower the impact of the PVCF to shareholders.

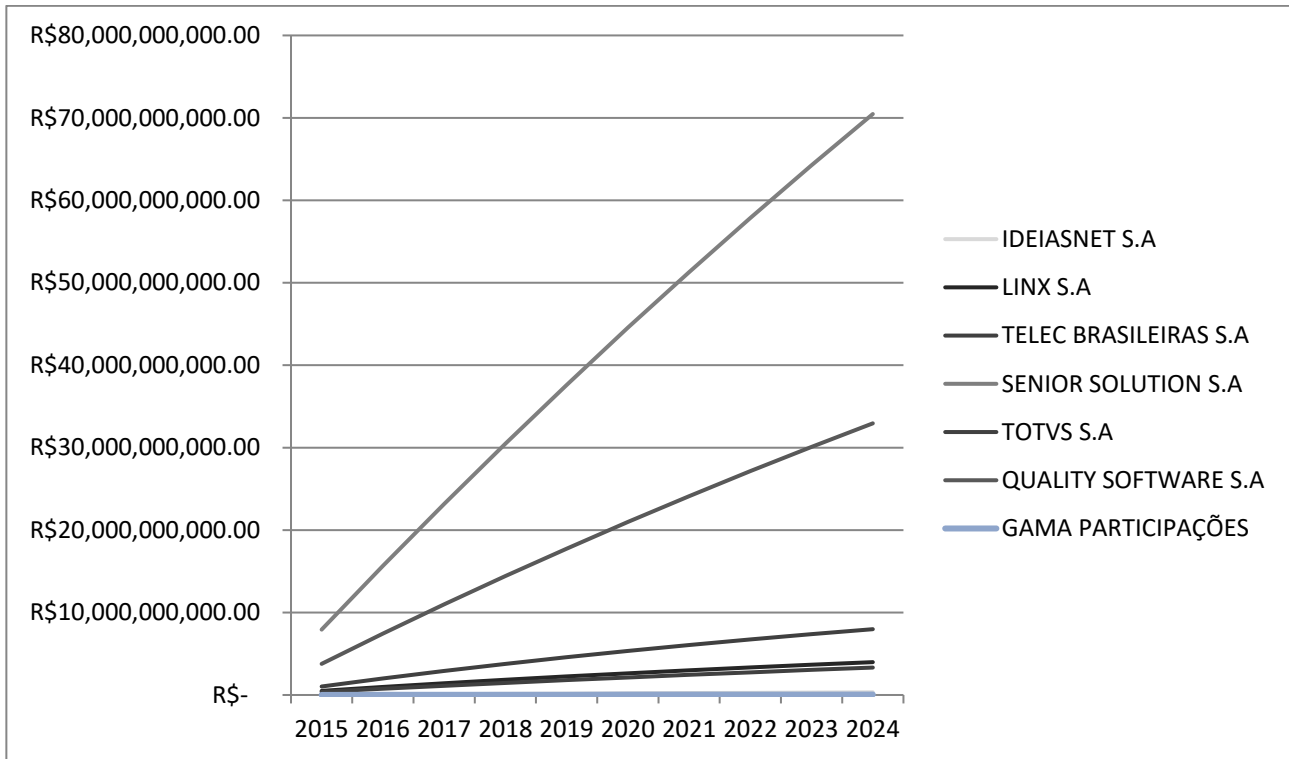


Figure 2 Evolution of the Present Value of Cash Flow to Shareholders (Software and Services)
Values in Brazilian Reals (R\$)

Figures 1 and 2 show a linear reduction in the accumulated present value of cash flow to shareholders, with emphasis on the two companies Senior Solution S.A and Quality S.A, which have relatively high cash flow. Elements that can influence this behavior are the fact that these two companies develop software and count on high intangible assets (R\$ 22 million and R\$ 5 million respectively), as well as the most significant impact in the value when discounting the CAPM over the analyzed period.

All companies showed linear growth in the present values of cash flow, demonstrating that they seek continuity throughout their lifetime.

Figures 3 and 4 demonstrate that the companies' cash flow follows the same trend as the numbers found for the cash flow to shareholders. The value is lower due to the weighted average cost of capital (WACC), which is higher since it considers the companies' debts with third parties.

The same perception of the previous figures applies to Figure 4. The difference between the two scenarios is the cost of equity used for the present value of cash flows of the company. The scenario for the company Senior Solutions S.A. repeats and is well above the others.

As shown in the figures, all companies had linear growth for the present values of cash flow, demonstrating a quest for continuity throughout their lifetime.

Valuation of B3-Listed Brazilian IT Companies

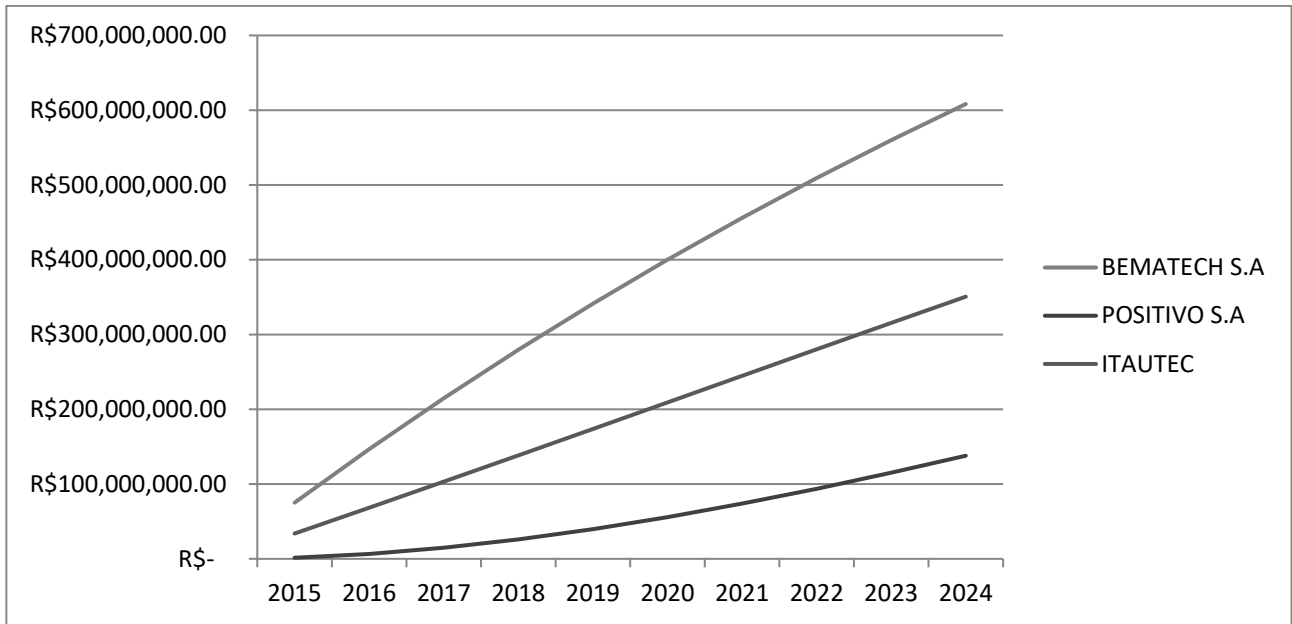


Figure 3 Evolution of the Present Value of Cash Flow to the Company (Computers and Equipment)
Values in Brazilian Reais (R\$)

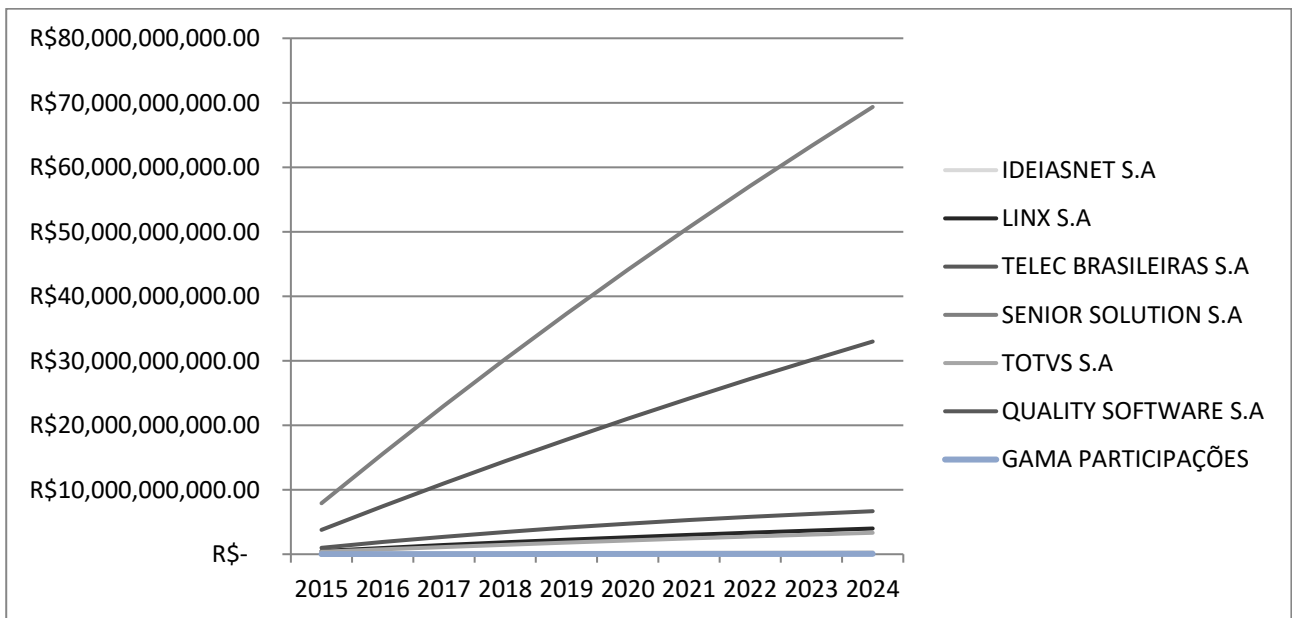


Figure 4 Evolution of the Present Value of Cash Flow Value for the Company in the Service and Programs Sector
Values in Brazilian Reais (R\$)

5. Discussion

Table 7 below shows the results of the comparison between the results of the valuation methods of the present value of cash flow to shareholders, the present value of cash flow of the Company and the market value, obtained based on the share prices for the 10 Brazilian IT companies:

Valuation of B3-Listed Brazilian IT Companies

Table 7 Comparison of the Calculations

	PVCF Shareholder	%	PVCF Company	%	Market Value
BEMATECH S.A	R\$ 650.021.124,56	66.32%	R\$ 608.291.853,78	55.65%	R\$390.815.395,88
IDEIASNET S.A	R\$ 327.272.333,49	52.52%	R\$ 325.931.935,15	51.90%	R\$214.573.260,70
LINX S.A	R\$ 3.981.616.906,02	145.31%	R\$ 3.985.445.372,94	145.54%	R\$ 1.623.121.813,00
POSITIVO S.A	R\$ 145.969.913,45	194.82%	R\$ 137.905.913,64	178.53%	R\$ 49.511.677,72
TELEC BRAS. S.A	R\$ 7.980.004.481,84	67659.72%	R\$ 6.669.171.974,41	56529.19%	R\$ 11.776.915,35
SENIOR SOLUTION S.A	R\$ 70.466.220.668,05	280178.27%	R\$ 69.353.018.442,99	275750.52%	R\$ 25.141.521,60
TOTVS S.A	R\$ 3.325.304.392,35	3590.38%	R\$ 3.322.018.779,59	3586.74%	R\$ 90.107.325,12
ITAUTEC	R\$ 366.417.195,36	-92.21%	R\$ 350.624.429,91	-92.54%	R\$ 4.700.976.385,00
QUALITY SOFT. S.A	R\$ 32.947.412.491,95	940360.45%	R\$ 32.980.143.352,15	941294.73%	R\$ 3.503.327,80
GAMA PARTICIPAÇÕES	R\$ 51.083.652,40	0.00%	R\$ 51.083.652,40	0.00%	R\$ -

Values in Brazilian Reais (R\$)

Except for the company Telec Brasileiras S.A, Table 7 shows that the amounts of the PVCF and the market value were utterly different. In addition, there was a pattern where the PVCF is higher than the market value. This behavior could be explained due to the lack of reliability in the capital market in Brazil, in addition to expectations of economic recession, which drives investors away from trading these stocks.

As for the stocks of Telec Brasileiras S.A, it is possible to estimate the influence of speculation as this company is the only state-owned company in the sample of Brazilian firms, operating through long-term contracts — a context that could stimulate investors.

The value of the shares traded in B3 may incorporate goodwill, but speculation should not be ruled out.

The PVCF of the Brazilian companies were compared to the market value of 25 US IT companies, where the largest (Apple Inc, Google Inc, and Microsoft Inc) have a much higher value compared to the others (Table 8):

Table 8 Comparison of PVCF Shareholder and PVCF Company VS. Market Value

	PVCF Shareholder	%	PVCF Company	%	Market Value
1 Microsoft Incorporation	R\$ 284.302.064.046,58	-27.23%	R\$ 266.352.778.292,12	-46.68%	R\$ 390.686.038.003,00
2 Google Incorporation	R\$ 207.184.409.303,73	-44.52%	R\$ 207.184.409.303,73	-80.25%	R\$ 373.442.471.442,00
3 Apple Incorporation	R\$ 162.762.482.664,22	-78.06%	R\$ 162.169.920.269,53	-357.45%	R\$ 741.847.833.100,00
4 Arista	R\$ 599.565.437,25	-86.29%	R\$ 596.694.746,42	-632.69%	R\$ 4.371.908.670,00
5 Allot Communication	R\$ 216.010.335,04	-16.13%	R\$ 216.593.967,28	-18.91%	R\$ 257.552.548,00
6 Ansys	R\$ 1.880.861.939,98	-75.75%	R\$ 1.885.139.452,83	-311.35%	R\$ 7.754.537.061,00
7 American Software	R\$ 182.309.375,03	-29.45%	R\$ 182.799.235,82	-41.37%	R\$ 258.429.105,00
8 Chicago Rivet & Machine Co	R\$ 7.750.532,90	-73.27%	R\$ 7.751.758,66	-274.03%	R\$ 28.993.621,00
9 ChannelAdvisor Corporation	R\$ 101.868.436,65	-62.76%	R\$ 102.288.036,64	-167.45%	R\$ 273.571.537,00
10 Current Computer Corporation	R\$ 22.305.470,20	-62.50%	R\$ 22.355.740,60	-166.09%	R\$ 59.486.768,00
11 EnerNOC Incorporation	R\$ 150.547.092,39	-50.87%	R\$ 151.250.280,05	-102.59%	R\$ 306.422.222,00
12 Fortinet Incorporation	R\$ 2.513.684.345,00	-61.60%	R\$ 2.521.384.877,56	-159.65%	R\$ 6.546.827.893,00
13 General Employment Enterprise	R\$ 17.898.741,15	-21.90%	R\$ 17.974.372,17	-27.50%	R\$ 22.916.869,00
14 Groupon Incorporation	R\$ 1.718.627.538,82	-62.48%	R\$1.730.513.432,48	-164.73%	R\$ 4.581.147.742,00
15 Imprivata Incorporation	R\$ 62.861.735,85	-81.87%	R\$ 62.991.811,44	-450.54%	R\$ 346.794.581,00
16 Ipass Incorporation	R\$ 58.446.186,00	-19.69%	R\$ 58.680.526,63	-24.02%	R\$ 72.776.158,00

Valuation of B3-Listed Brazilian IT Companies

Table 8 Comparison of PVCF Shareholder and PVCF Company VS. Market Value (Continuous)

17	Jive Software	R\$ 328.507.577,66	-24.82%	R\$ 329.725.125,87	-32.52%	R\$ 436.937.377,00
18	Linkedin	R\$ 6.108.638.398,56	-74.98%	R\$ 6.132.611.668,93	-298.07%	R\$ 24.411.924.751,00
19	Majesco Entertainment	R\$ 106.655.141,15	937.05%	R\$ 107.040.655,71	90.39%	R\$ 10.284.488,00
20	Omnicell Incorporation	R\$ 132.207.555,53	-89.79%	R\$ 132.354.138,69	-878.51%	R\$ 1.295.103.309,00
21	QAD Incorporation	R\$ 272.855.915,84	-41.58%	R\$ 274.100.118,15	-70.39%	R\$ 467.026.044,00
22	Qlogic	R\$ 376.642.017,52	-71.35%	R\$ 378.146.694,63	-247.63%	R\$ 1.314.557.300,00
23	RCM Technologies Incorporation	R\$ 36.488.233,10	-48.92%	R\$ 36.365.610,32	-96.45%	R\$ 71.439.529,00
24	TransAct Technologies Inc.	R\$ 49.240.057,56	-5.28%	R\$ 49.412.712,29	-5.21%	R\$ 51.987.013,00
25	VMWare	R\$ 20.899.167.941,67	-43.65%	R\$ 20.988.099.960,71	-76.71%	R\$ 37.087.998.850,00

Values in Brazilian Reais (R\$)

It is possible to observe that the values of cash flow to shareholders and of the companies are closer to the market value and the fact that in all three cases the variation is negative stands out, that is, the market value was higher than the PVCF of the companies.

Smaller US companies had a market value higher than the present value of cash flow, both to shareholders and of the company. This shows that even if the company is not global in size, it counts on the investor's trust, no matter the company's sector of activity. Many of the researched companies count on little inventories and high intangible value and goodwill, as observed in the financial reports examined to perform the calculations. Another critical point is that the companies are not highly funded by third parties, and their debts are concentrated with shareholders and the company's partners.

Many US IT companies have a large part of their assets invested in an account called marketable securities and restricted cash, i.e., part of their current assets are invested in a real estate securities account.

As for the US companies studied in this research, Arista Inc, Ansys Inc, Chicago River & Machine Co, Imprivata Incorporation, Linkedin Inc, Omnicell Inc, and Qlogic Inc, stand out, for having a market value of at least two times the present value discounted cash flow, both for shareholders and the company. The business focus of these companies is different from the others analyzed, and they present the same behavior toward their investors.

In the case of Apple Inc, the company's market cap is the equivalent of approximately twice its PVCF. This means that investors trust in the company even if future gains are not equivalent to the firm's market value.

Finally, another interesting company to analyze in this comparison is Microsoft Inc, which showed a very close percentage between the market value and the PVCF. A possible explanation would be the fact that investors are familiar with the company's data, and carry out the negotiations with prices closer to the real prices the company presents based on its future gains.

6. Final Considerations

This work presented several methods of company valuation, adopting classical models and those introduced in the modern literature, and offered a comparison between publicly-traded Brazilian and US IT companies, achieving its objective. The findings point to a scenario of the Brazilian capital market based on the lack of trust in IT companies' stocks, which may be explained by the fact that the companies stress the future and perpetual cash

flow. The first scenario presented is marked by the fact that there are only ten IT companies listed in the Brazilian stock market. The second scenario that draws attention is that nine of them show a present value of cash flow higher than their market value (based on the value of shares traded in B3). The American market, in comparison, shows many NASDAQ-listed companies, and many of them with a market value much higher than their PVCF.

As mentioned above, the PVCF of most Brazilian IT companies was higher than their market value. A possible cause could be the lack of knowledge of the investors in this sector since the companies have accumulated profits during the period from 2009 to 2014. Also, they have increased assets, except Gama Participações. This is a holding company, trading investment for shares, and, therefore, has no operating income, only financial income.

The relationship between the market value and the PVCF, where the second presented higher values in the Brazilian case, had the exception of the company Itautec, which showed to count on the investors' trust. This specific situation could be explained by the existence of a well-reputed bank (Banco Itaú) behind the company, providing investors with a sensation of lower risk. The company revealed a sharp drop in revenue after the 2008 subprime crisis. In 2013 it closed its personal computer sales activities and sold 70% of its participation in its banking and commercial automation activities. The company provides services to Oki Electric Industry, a Japanese company.

The company Telec Brasileiras S.A also has a market value lower than the PVCF but presented unexpectedly different behavior in comparison to other Brazilian companies. This situation may be explained by the fact that it is a state-owned company, which possibly inspires the investors' trust. In addition, this company has preferred stock assets, leading the investor to focus on these stocks to obtain dividends.

The comparison with US companies helped to identify a trend of trust, where investors trust in the IT sector as a whole, not only in a few firms as happens in the Brazilian market. In Brazil, the example of Itautec stands out as the only company that had a market value higher than the present value of discounted cash flow.

The extended scope of the subject and the results obtained in this study revealed its importance to increase the knowledge on the Brazilian capital market and on the evaluation of economic and financial strategies that companies adopt in the different national scenarios. When analyzing the year 2015, it is possible to point out cases of the use of inside information, which resulted in a sharp drop in B3 after the elections. Also, there was a risk of deficit in public accounts, resulting in the exit of investors and worsening the financial crises throughout the year, reaching worrisome indicators such as an imbalance in the exchange rate with a high price of the US dollar, and increase in the unemployment rate. In this case, it appears that market efficiency does not reflect the theoretical model where everyone has the same information.

It is expected that accounting sciences and finance researchers find in this study a set of unprecedented and relevant information that will allow understanding better the behavior of the companies examined here and the Brazilian capital market.

Several opportunities for further studies may emerge from this work, identifying possible correlations among the IT publicly-traded companies and other relevant economic variables such as exchange rate variation, interest rates, or GDP. The stock market efficiency and the rationality of investors can also be an object of research, seeking to understand better the valuation and prices in the stock market.

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Indigenous Companies and Organizations in Mexico: Alternative Modalities of Etnodesarrollo

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Abstract: This article uses the analog hermeneutic method to carry out an analysis of indigenous companies and organizations, emphasizing the categories of power, domination and exploitation that occur in the different forms of community work in Mexico; in that, we find an association between ethics, worldview, productivity and identity that sustain its administration. The study presents diverse evidences of a dynamic model of the relations between social and cultural capital, as an alternative model of sustainable development, despite its limitation is the need to extend these studies attending to the state and regional particularities of the country.

Key words: indigenous organizations; community work; worldview; ethics; sustainability

JEL code: Q

1. Problem Statement

In Mexico, the problem of indigenous communities, carries the dilemma of how to integrate them into the National project, González Casanova (2006), coined the concept of “internal colonialism”, as a phenomenon that arises within national borders, within the domain and exploitation of the natives by the natives. Similarly, Eduardo Galeano (1971, 2018, p. 17) adds: “and symmetrically, the well-being of our dominant classes — dominated inward, dominated from without — is the curse of our multitudes condemned to a life of beasts of burden”.

From the conquest until today, inequality is marked in every way: education, institutional support, imparting justice, absence of credits to develop productive activities, lack of legal recognition, of communal property titles.

Throughout the last decades of the 20th century and the beginning of the 21st, indigenous peoples have ventured into social movements and struggles, under the sign of plurality and diversity in the reformulation of national policy, indigenous peoples are re-emerging, showing the possibility to go from “Indians integrated into political subjects” (Flores Jose, 2005).

Initiatives that establish the fundamental right to autonomy and self-government have emerged in different indigenous communities. The problem of indigenous communities has become an eminently political issue; the strategies of these communities to self-manage their historical heritage generate many conflicts of interest.

The study of the legal framework of indigenous organizations refers us to the questions of whether their practice is legal or illegal, legitimate or illegitimate. To address these issues, one must go to the legal pyramid that goes from the Political Constitution of the United Mexican States, the Federal Labor Law, the Political

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Constitution of each State of the Republic and the Law of indigenous customs and uses.

The federal constitutional reform of 08/14/2001 modified articles 1, 2, 4, 18 and 115. Article 2 refers to the rights of indigenous peoples and communities in section B. The multicultural composition of the nation is recognize, the legal definition of indigenous people and community, self-determination and autonomy are contemplate, and the indigenous rights that can be exercise within the framework of the Constitution and laws with respect to the federal pact and the sovereignty of the states are indicated. In the third section, the rights of indigenous peoples recognized in the Constitution and in Convention 169 of the International Labor Organization (ILO) are address, as well as some issues pending discussion by the competent authorities.

The autonomy has given rise to different discussions about the relationship between the Mexican State and indigenous peoples, the customary law of the Indians is in a position of subordination with respect to the positive law of the State, and does not constitute a body of formally recognized norms, there are as many customary rights as there are indigenous ethnicities

In Mexico, community-owned institutions play a crucial role in the sustainable management of natural resources (Cervantes, Carabias et al., 2008). Alcorn and Toledo (1998) refer to communal property institutions as the framework for land tenure and emphasize the importance of their articulation with the legal system that has given them formal recognition.

In indigenous communities, man is not the enemy of nature and the relationship established with nature — through work — is sacred. Herein lies a central difference with Western culture, which understands nature as an enemy that must be dominate and exploited to the fullest.

The sustainable development discourse arises in a context of new paradigms that seek to integrate the economic process with the ecological and population dynamics. It has penetrated different social, business, academic, and international organizations. Indigenous and peasant communities are demanding political organizations from been the appropriation of its resources to conserve and transform them through its values.

The conflict resides in that the context of the political ecology of sustainable development does not correspond to an accounting or financial exercise of cost-benefit, according to the negotiation rules of the dominant financial and technological centers, everything is reduce to a market value. Compared to conventional accounting, environmental accounting emerges as a new way of revaluing natural assets, as a potential for alternative development.

Cultural identities and natural resources cannot be account for and regulated by the dominant economic system. In our country, the loss of ecosystems, plants and animals, and cultural values is alarming, for this reason the urgent need arises for a strategy and public policy aimed at conserving and using in a sustainable way the cultural and biological wealth of Mexico.

2. Conceptual Theoretical Framework of Indigenous Businesses and Organizations

In this section we begin an approach to the epistemological and sociological problems of the administration of indigenous companies and organizations, the debate focuses on the definitions of companies and organizations, which from functionalist and positivist perspectives distract the basic questions of society such as power, domination, exploitation. Contrary to these approaches, new unconventional management research agendas are proposed synthetically

Different theories and approaches to administration ranging from the classics Taylor and Fayol (1973) and neoclassical like Koontz O. Donnelly (1964), and other authors based on the reading of Parsons (1951)), who distorted Weber's work, use the same criteria that defines the organization as a synonym for company.

The so-called Theory of Administration, (Management science) arising from the Anglo-Saxon liberal context, and the Organizations theory (Jo Hatch, 1997), consider companies and organizations as similar entities, are conceived as communities or societies, relatively permanent oriented towards the same objective, focused on organizational action, as a set of organs and functions.

Mills (1961, pp. 44-47)), questioned Parsons' work claiming that "neutral" social science does not exist, by distracting the basic questions of society such as power and domination, this author and the sequel to authors Based on his work, they hide the structural realities of society itself. The vacuum created by the functionalist and positivist currents in the administration has sparked new research agendas, in search of an interdisciplinary understanding of companies and organizations, within these approaches are readings associated with Weber's work.

That is why we return to some concepts derived from this author. The concept of "administrative ordering" that Weber proposed is a set of institutions that regulate social practice, the history that is created in companies and organizations is defined through the rules of the game from which certain forms of subjectivity arise, types of knowing and therefore of truth. In the course of historical evolution, words change their meaning, but it also happens, sometimes, that the word loses its meaning, not having the social efficacy implied by its original concepts; is the case with institutions that lose their social efficacy.

By looking at how administrative law makes management possible, Weber introduces two essential terms: legitimacy and legality. Likewise, this author does not dissociate the legality and legitimacy of "domination": "Domination must be understood as the possibility of finding obedience to a mandate of a given content among given persons" (Weber, 1962, 1922, p. 42). Weber recognizes three pure types of legitimate domination: "legal domination by virtue of statute, traditional domination and charismatic domination (Weber, 1962, 1922, p. 707)".

Another essential concept that we must address, which will help us to develop the concept in the area of indigenous organizations is that of "Power", It means the possibility of imposing one's own will, within a social relationship, even against all resistance and whatever the basis of that probability" (Weber, 1922, p. 42). In this regard, Foucault dictates: "that power is not something that is acquired, started or shared, something that is conserved or is allowed to escape; power is exercised from innumerable points and in the game of mobile and non-egalitarian relations" (Foucault, 1977, p. 118).

The organization itself leads us to a questioning to know what their culture is and the codes are located, how they interact and what significant relationships they do not have with each other: "As long as the systems codes are in question, these systems can be accepted within their limits, one next to the other". "It is obvious to suppose — and the investigations of the simplest societies seem to confirm it — that a moral conditioning is developed, first of all, in communication and is limited in the participants in it (first variable)" (Luhmann, 2008, p. 301).

Companies cannot understand each other without their counterpart, the organizations that regulate them, which conventional management theory cannot see as a whole, as is the case of the relationship of indigenous companies and organizations, where the dominant interests of society capitalist, and the direction of technical and scientific progress subordinated to pre-modern forms of administration

That is why in this space we make a theoretical-conceptual approach to how the productive activities of indigenous communities are manage. Habermas (1993) has characterized traditional societies by the existence of a

centralized system, which is imposed by the existence of a central vision, any of the world (myth, magic, religion). Traditional authority is imposed by gerontocracy, by routine, by questions of honor. The transformation of traditional or legal or bureaucratic patrimonial domination is associated with processes of secularization (Protestant, Calvinist religion) that generates a world view that implies constant work by virtue of a moral obligation, coupled with secular ideas and habits that favor the rational economic purposes (Habermas, 1976).

In tribal society, the political is above the specialist and commands respect, as it is decided collectively. In modern society the role has been reverse, since the specialist imposes his logic on the situations that arise, politics is subordinate to technique: “the popular political will is replaced by the imminent legality of the things that man produces as science and technology” (Habermas, 1976, p. 86).

In the patrimonial administration and, later, in the bureaucratic one, this gregarious principle is lost, in these cases, the administrative staff is organized based on servile or bureaucratic principles tending to legitimize a process of exploitation or domination. The servants of power emerge slaves, eunuchs, courtiers, monks, maceguales, mayorales, supervisors and, finally, the figure of the legitimized administrator on bureaucratic and rational principles (Cosser, 1978, p. 11).

Communal organization is the relationship of a group or a community of people who pursue the same ends, ethnic characteristics, values, etc. Its regulation depends on its size and the characteristics of the members. If the group is small, the organization may be primary in nature; in such a case, in the regulation of shares all members participate in conditions of equality (which is not the same as equality). In large organizations, the nature of integration is secondary; that is, it is characterized by interests that do not affect its members intimately, but rather in their economic, political or cultural interests.

It is important to mention another aspect that distinguishes companies from organizations: organization is related to the “expansion” of power; that is to say, the organization has to do with control outward, its actions permeate other instances, on the other hand, the concept of “power” in the company is closely related to actions that are poured inward.

The main distinction between MYPYME and the family business depends on parameters such as the number of members or annual income (Hellriegel, Jackson & Slocum, 2006; Secretary of Economy, 2009), another criterion essentially depends on blood ties, or marital relations, within the same family (Hellriegel et al., 2006; Dodero, 2002; Rodríguez, 2005; Ronquillo, 2006; Puig, 2007)

The family presence in the MSMEs cannot be qualified as something positive or negative by itself, in some companies their unprofessional practices, their structural weaknesses, the inadaptability to the trends of the markets are frequent, little development of a business culture, among others (Lafuente & Yagüe, 1989; Tirado et al., 1995; Camison, 1997, 2001).

Business culture has been studied from different works, Lee and Peterson address it in relation to entrepreneurship and competitiveness, Alberti and Giusti (2012), with a social and regional development approach, Hult (2002) observes the role that culture has in the creation of competitive advantages, and specifically the relevance of culture in the competitiveness of family businesses (Zachary, 2004; Vallejo, 2011).

Hofstede (2000), suggests that culture is a “collective mental programming” of the members of a group based on a value system developed from the family and in the organizations in which a person develops throughout his life. Schein (1992) refers to culture as a pattern of basic assumptions shared in an organization; they are learned from solving problems of adaptation to the exterior and integration within, these assumptions are validated by their “functionality” or correspondence with the interests of the organization.

Schein (1992) and Kreps (1990) study organizational culture based on beliefs or tacit assumptions, feelings, attitudes, conscious values, anecdotes and legends, translated into the practice of ceremonies, customs, rewards, punishments and in basic manifestations such as design of products, buildings, logos or decorative aspects.

In the case of organizational culture in the family business, they state that it is a set of basic artifacts, values, beliefs, norms, habits, customs and assumptions that are learned and practiced by the members of a company whose ownership and management is in the hands of family members (Schein, 1985; Belausteguigoitia, 2004; Davis, 2006; Bjursell, 2011; Cheung, Wong & Wu, 2011; Gupta & Levenbur, 2012; Stinnet, 1983).

Kleanthous and Anastasiou (2006), add the social interaction, the collaborative level and the patriarchal role of the board of directors, as part of the formal and informal aspects of the organization that affect its mission (Denison & Mishra, 1995).

The family businesses of the indigenous groups they made on of cousin brothers, uncles, nephews, brothers-in-law where practically everyone is related. The family and the ethnic group cover the satisfaction of the needs: "That is, the family provides identity, being at the same time a corporate entity, in addition to assuming different functions. In ethnic MSMEs there are informal recruitment networks created by family and friends who fulfill this mission. The ethnic group, the family, the community and the commonwealth are within the scope of privileging the selection and choice of the group" (Miranda, Contreras & López 2013, p. 87).

According to research carried out by Gervasio (2006), among the outstanding characteristics of the ethnic family business is the division of labor, based on cultural capital, as a cognitive corpus of skills and abilities inherited from millennial times.

In the case of indigenous peoples, by virtue of their traditional forms of family organization, a domestic economy based on family work and reciprocal aid for production among friends or relatives, acquires different modalities between different ethnic groups. At the base of their collective life is where people and groups linked at intra-family, inter-family, community and inter-community levels.

According to INEGI (2010, 2015), 12 million people live in indigenous households, which represent 10.6% of the national population, 25.7 million people self-subscribe as indigenous, which represents 21.5% of the national population, there are 64,172 localities with indigenous population, 1.3 million people consider themselves Afro-Mexican, which represents 1.2% of the national population, which includes sixty six different ethnic groups.

A quarter of the country's social property is located in the territories of Indigenous Peoples, which corresponds to 4,786 *ejidos* and 1,258 agrarian communities; in addition, there are 304 thousand small property units. Much of the wealth of the subsoil and air is located in the territories of indigenous peoples, INPI (2018-2024, p. 6).

According to the National Survey of employment in indigenous areas (ENEZI, 1997), the preponderance of agricultural activity among men absorbs three quarters of the total number of employed people and leaves them little time for other activities. Among women, agriculture is predominant, but slightly more than half is dedicated to manufacturing, followed by trade; many of these activities have little possibility of developing in other markets, except for some activities such as pottery, textiles, leather.

The figures on economic activities of indigenous populations do not reflect the reality of individual and collective work carried out by these communities, it is common for statistics to classify the activity of men into farmers and women, who are masters of casa, but additionally carry out other activities. For example: midwives, healers, artisans, musicians, etc. Child labor occurs at an early age, which inhibits school attendance and places

them at a disadvantage in the labor market.

Regarding the workplace, more than 80 percent of the population employed in indigenous areas works in a precarious place, which includes the plot, the home itself or the street. Only ten percent work in formal establishments (public administration, educational and health services).

There are also indigenous groups that, with the exhaustion of their natural resources, choose to migrate to other localities, states, regions or countries, work in the *maquila* in border cities or as swallow migrants in the United States in companies with high intensity of exploitation, indigenous women resort to domestic work in urban locations. There are also circuits of migration, misery and exclusion, where indigenous people live on alms or garbage *pepena* in large cities, in conditions of extreme poverty and vulnerability

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This situation of the labor market and poverty is not exclusive to indigenous people, although if it is accentuated due to multiple factors such as agrarian backwardness, the economic structure of indigenous areas is temporary for subsistence purposes, although they also grow some products with commercial purposes.

There is another sector of indigenous groups that are organized with their own dynamics, especially those that conserve the territories or assigned areas with resources that have worked for a long time, have developed paradigmatic business models that have turned to manifest sustainability in certain entities such as cooperatives, ejidos or indigenous productive associations. Miranda, Contreras, Salazar (2012), present a directory of these paradigmatic companies located throughout the Mexican Republic¹.

Many of these companies have adopted the cooperative model, which has now become an economic plan for employment and wealth in many countries, is more than 1,200,000 cooperative companies worldwide that generate 100 million jobs (International Cooperative Alliance²).

¹ <http://www.uaim.edu.mx/webraximhai/Ej25articulosPDF/Art05.pdf>.

² <http://www.ica.coop/statistics>.

In an attempt to synthesize the correlation of variables between organizational cultures in ethnic companies, as a competitive advantage, we have an empirical comparative study of amaranth producers (Robles, Ballina, Solis, 2017). The first case is a union of producers, made up of 107 ejidatarios located in the municipality of Xochimilco, Tulyehualco in Mexico City.

This organization works in a territory of 400 hectares, based on the plantation, harvest and commercialization of amaranth since pre-Hispanic times, the culture of its inhabitants is traditional and conservative, it has been an obstacle to work differently because they are not trained and updated in innovative ways of working, as a result they have not been able to legalize, market or position their products on the market.

In contrast to this model, the Quali cooperative group emerged, constituted as a three-level cooperative, which covers the entire organic amaranth production chain, dedicated to planting, processing and marketing through specialized cooperative units, made up of indigenous communities, from The Mixtec, Popolocan and Nahuatl families located in the states of Puebla, Oaxaca, Tlaxcala, Veracruz, cover an area of 628.44 hectares. They have obtained many awards and recognitions; they export to the United States and Europe³.

The study establishes the relationship between the strategy the company uses to compete in the market and its performance. To measure strategy, the typology of Milles and Snow (1978) is used and to measure performance, the model proposed by Quinn and Rohrbaugh (1983) is used. As a result, the Quali cooperative group is located according to the typology of Milles within the group of exploration companies; they are those that make changes and improvements in products and markets, trying to be the first to develop new products. While producers in Tulyehualco are not interested in technological innovations, they do not make strategic alliances, they compete with each other in prices and markets, they do not seek quality certificates, and they are not in a position to respond to the demands of the environment.

Among the successful strategies of economic appropriation of nature and culture to revalue human life, is the development of organic agriculture in the world. In Mexico, there has been a boom and growth in different products, organic coffee that is produced with the fair trade label, is consumed mainly in Europe, employs a rural population of 1.9 million people, of which 1.1 million are indigenous.

In the regions where the indigenous population of Mexico lives there are a wide type of ecosystems and a great biodiversity; it is calculated that about 60% of their territory are protected natural areas. Likewise, ecotourism or ecological tourism in indigenous areas has developed in recent years, which represents a good source of income for these communities and contributes to preservation and sustainability. The National Commission for the Development of Indigenous Peoples (CDI* has promoted the program “Indigenous paradises”⁴, which offers information on their location and contact in each ecotourism center.

Another sector that offers great development potential is the knowledge, development and marketing of alternative medicines. UNESCO has recognized traditional Chinese, Mesoamerican and other medicine as “World Heritage”.

3. The Administrative Regulation of Community Work in Mexico

When speaking of indigenous companies and organizations in Mexico, we must understand that indigenous groups manifest a cultural and territorial, and even cosmological, identity that expresses a determined way of

³ <http://www.quali.com.mx/>.

⁴ <http://www.paraisosindigenas.com/>.

relating materially and spiritually between human beings and nature.

Different multidisciplinary studies highlight the above: Lenkersdorf (1999), Boege (2003), Habermas (1993), Sahlins (1992), Leff (2002, 2005), Levi-Strauss (1998), Miranda (2011), etc. These authors recognize that indigenous peoples have different ways of structuring their knowledge and that it is based on the local worldview and culture, therefore, each village, each culture reveals a unique way, contrary to what the West “made believe” for centuries to humanity (Miranda, 2011, p. 70).

This situation does not necessarily imply that of a change in the nature of knowledge “between primitive” and “civilized”, between “wild thought” and “scientific thought”, with the apparent superiority of scientific knowledge over popular narratives or accounts that legitimize institutions of society based on myths or legends or stories that regulate the actions. In fact, the phenomenon of syncretism arises that admits a plurality of language games referring, for example, the known of the sky, the seasons, flora and fauna. Statements that prescribe what should be done as these same references, about the knowledge of human nature and that of nature (Argueta, Licona, 2015)

The ancient political economy is important in understanding the role of community relations, specializing in alliances (Gregory, cited by Hirth, 1995, p. 99): have argued that, in the absence of coercive political mechanisms, activities cooperatives and attributes such as celebrations, group marriages, and various forms of scheduled and ritual exchange served to establish and strengthen peaceful relationships between otherwise hostile groups. All pre-state societies faced the same political dilemma. They had to seek peace and resolve their problems before hostilities broke out, or face the danger of an endless cycle of wars against which there was no effective intermediation.

Exchange mechanisms allow the accumulation of wealth to occur in a society: “Here wealth is defined as the accumulation of goods with a socially prescribed value. Wealth is generally define in terms of rare, high-priced, or exotic items that may need to be obtain in regions outside the group’s immediate control. Often a society prescribes specific uses for accumulations of wealth. Wealth can be used to build clientele, strengthen social relationships, acquire spouses (dowries), compensate families for their losses (mortuary payments), and convert perishable surpluses into accumulative wealth” (Hirth, 1995, p. 99).

The economic structure, in these cases, behaves according to various strategies linked to productive, commercial and associative family self-consumption options, where people develop ways to solve the problems they face. All this according to their accesses (cultural, social and economic) and differentiated by the “needs” of the regions or by the specific niches given in the market (Miranda, Contreras & Lopez, 2013, pp. 71-72).

According to various studies, found that: “Throughout its history, indigenous communities have carried out numerous and varied forms of communal, family or individual work: ‘Many of these strategies applied to guarantee subsistence, social security or harmony. of the group, to obtain a service in exchange for the provision of labor, and to achieve the smooth running of interpersonal relationships ...’ these forms of contribution, with or without reciprocity, are called *tequio*, *tequil*, *gozona*, *mano back*, *fajina*, *guelagueta*, *homework*, *córima* and middle work, among others”.

“Tequio is the best known, it has a long history and it did not always present the characteristics that indigenous communities retain today. Through this institution it has been possible to build community services in these communities: water, electricity, roads and other community services” (Zolla, Márquez, 2010, p. 81).

The concept of the tequio gives rise to different philological, semantic, phonetic, legal, sociological and administrative connotations: “The tequio is a common and collective work called by the authorities and which is

generally oriented to the realization of works of social or collective benefit for the town” (Rendón, J. 1995). It is defined as the treat, the correspondence, the help, it has, and a historical meaning that is attributed to the word *tequio* is “tax on work” from *tèquitl* (Gibson, 1967).

Another reference is: “The eminent function of the neighborhood or *calpul* should be sought in the political organization (regional council), in the religious organization (stewards) and in the organization of cooperative work (*tequio*)” (Zolla, 2004). The topic of *tequio* in Mexico has been treated from historical (Case 1956), anthropological, (Barbro 1976) and social economy (Kliksberg, 2011), perspectives (Ragazzini 2011). In Good’s proposal (2005), the author explains Nahua reciprocity from work (*tèquitl*) as an expression of “strength” (*chichahualistli*), because whoever loves and respects another recognizes their “strength” to achieve — through their work — a collective benefit. The “strong” or “respected” people are able to mobilize large numbers of people to act by asking for “the favor”. “Aid” is a form of institutionalized relationship that acts as the forger of a system of “reciprocity”. In the case of the Nahuas, the motivation to ask for help lies with the people of “respect” of the families that make up the community.

There are few empirical studies of community administration, among these (VelázquezY., 2014, pp. 41-50), he analyzes the role that “aid” (*quipalehuiya*) plays as a system of exchange that regulates social organization, collective life, social responsibility and the worth or “gift” of the participants in the Mixtec community. In this community, the *tequio* or *faina* is the work that gives for the benefit of the people to which it belongs, which can be used, for example, to clean rivers of garbage, place piped water. The planting of the cornfield in the Mixtec community is carried out from February 3 and ends on March 19, the dates are established by tradition.

According to this study, communal work in general is not seen as a burden, but rather a way to socialize with friends, *compadres*, and relatives: “Men carry *itacates* prepared by women and place them in the center to share them with everyone. . .” (Velázquez, p. 46).

“Aid” is a form of institutionalized relationship that acts as a forger of a system of reciprocity. In this case, “aid” is a kind of gift that is exercised “individually” or “collectively” is a voluntary act between givers and recipients, from which derives an ethical norm and a component of obligation (Godelier, 1998) .

Other authors (Alberti, Mayer, 1974, p. 23) point out that the center of the exchange lies in the mutual obligation, which at some point in the future will become a “turned hand”. This is what makes them “equal” so despite the inequality that may exist in asymmetric exchanges they are still reciprocal. (Alberti, Mayer, 1974, p. 43).

In addition to the *tequio* and the “help system”, each city has its patron saint. Stewardship is a pyramid-based model: at the top, the deity who is the object of worship, on the second level, past stewards, the godfather of the image and the current stewards, the singers, the church administrators and the sacristan, at the base of the pyramid, all members of the community.

In Santa María Alotepec, there are two types of authorities: the political, and the traditional, the former exercise their authority through electoral processes, the latter obtain it through power entrusted to them by the community and manifested in events of nature civic, in traditional or religious events (Zolla & Márquez, 2010, p. 98).

Freighters do not receive any payment during their period of service, on the contrary, very often the payment means a considerable cost in time of lost work and in expenses in cash, but as compensation the charge gives the person in charge a great prestige in the community” (Torres Cisneros, 2003, quoted by Zolla & Márquez, p. 98).

Another activity derived from the uses and customs of Mexico, receives the name of *Guelaguetza* means

intention to serve each other” (Henestrosa, 1991, pp. 15-16). “This spirit of cooperation and help to relatives and neighbors and countrymen and friends is something that is found in daily life and is never sporadic or eventual. It comes from the remotest antiquity”... “The help that the Zapotecs grant is in two ways: one is a gift or alms; the other is a kind of loan or cooperation. For example, it is free to help a mourner to dig a grave, to lay the foundations, walls and roof of a house. On the other hand, cooperation is that which is given to defray the expenses of a stewardship, of a marriage, of a profane or religious feast” (Henestrosa, 1991, p. 16)

In each indigenous community, communal ethics influences the organization of work through its linguistic and oral narrative conception; the worldview affects in each case the productivity in the organization of work. In turn, in each case, different levels of legitimacy and legality are perceived.

In indigenous worldviews time and calendar occupy a prominent place”. “The calendar not only determines the appropriate times for sowing and harvesting, but also sets the days on which religious festivals must be held, which serve to worship the gods (and from colonial times to patron saints), carry out exchanges and renew the traditional authorities” (Henestrosa, 1991, p. 86)

According to González Casanova (1958, pp. 11, 12), “Technique is the reproduction of knowledge in reality”. The same author distinguishes different kinds of techniques: empirical, scientific, and the magical technique. Each of these techniques corresponds to a way of being and knowing. In the case study that concerns us, the magical technique occupies a preponderant place, it corresponds to a series of procedures where daily experiences are combined, and very exceptionally scientific ones. The magic technique is transmitted by oral tradition and practical imitation.

Within indigenous spirituality, various rituals and sacred roles are formalized: “even the smallest cultures have priests, priestesses, or shamans, who conduct collective ceremonies to celebrate the passing of the seasons, celestial events, and the various rites associated with birth, puberty and marriage” (Fisher, 2003, pp. 33-34).

In the calendar of the Mesoamerican tradition, myths speak of these processes of what was, or will: “The processes remain as causal chains; but all of them, in all their links, are always present time. In other words, things are neither expected nor gone there: they simply are, and are ordered in the logical sequence of cause and consequences” (López Austin, p. 45).

In all the cultures of the world, there are certain objects or places considered sacred, in the same way: “the indigenous peoples of our country have places and objects that they consider sacred and that are protected with extreme zeal. Caves, rivers, lagoons, islands, temples, cemeteries, rocks, in which ceremonies are performed and offerings are deposited: crosses, stone sculptures, sticks of command and other objects related to the history and religion of the peoples” (Rajsbaum, 2001, p. 60).

In this section, we have approached the description of social and anthropological variables, backed by the theory of social administration, where an attempt has been made to locate and identify the order of the *tequio*, the figure of power, dominance and authority, the legality and legitimacy, ethics linked to the governed worldview.

4. The Epistemology of Indigenous Knowledge and the Construction of the Ecoproductive Paradigm

Without a doubt, Mexico is among the richest countries in the world in biodiversity and cultural wealth. The geographical location of Mexico, its environmental evolution, results in a great wealth of flora and fauna, which places us among the top five places in the world. Cultural wealth is in turn measured by the sum of indigenous

peoples, located in various geographic settings, hotbeds of knowledge, traditions, and languages from diverse cultures, Olmec, Mayan, Teotihuacan, Toltec, Zapotec, Mixtec, Aztec, and many others who developed complex astronomical and mathematical knowledge, their worldview still has validity and considerable influence on the daily life of indigenous communities.

In the case of indigenous peoples, by virtue of their traditional forms of family organization, a domestic economy based on family work and reciprocal aid for production among friends or relatives, acquires different modalities between different ethnic groups. At the base of their collective life is where people and groups are link at intra-family, inter-family, community and inter-community levels.

In the poor countries, new theoretical developments and political strategies in the face of sustainability are being generated, from a more critical and conscious perspective of their ecological, cultural and political conditions. The potential of solar energy and wind sources turns tropical countries into a potential of enormous wealth for the development of clean energy sources for the 21st century. The construction of the eco-productive paradigm would allow establishing new ecological balances and provide a basis for sustainability, would allow alleviating poverty and improving the quality of life of the indigenous population of each region.

For this, the epistemology of indigenous knowledge must be potentiate; it implies the registration of an environmental accounting and a sustainable administration, with a gregarious, cooperative sense, of the self-determination of their needs and the self-management of the ecological potential of each region. It raises the need to rescue, conserve, and develop its cultural manifestations, such as music, language, archaeological sites and everything that comes from the past.

In Mexico, with the advent of López Obrador's (Obrador, 2019), a series of reforms and programs to support indigenous peoples, to the effective exercise of their rights, the sustainable use of their territories and natural resources, as well as the strengthening of their autonomies, institutions, cultures and identities, through the implementation of permanent processes of dialogue and participation.

Specific objectives seek to promote and strengthen the economies and productive activities of indigenous communities and regions, in particular traditional agricultural systems and basic crops, to achieve self-sufficiency and food sovereignty, job creation and sufficiency of economic income. Access, establishment and operation of services and means of communication, broadcasting and telecommunications in indigenous communities and regions will be guarantee.

5. Conclusions

The strength of community organizations and companies is manifest by the fact of their transcendence and survival as indigenous peoples, who challenge the "universal" values that are born of modernity and Eurocentrism. In both indigenous organizations and companies, we find an association between ethics, worldview, productivity and identity, which has guaranteed their survival. The concept of social capital emerges in the XXI century as a central theoretical concept for sustainable administration.

Is necessary integrate different mechanisms to promote actions to protect all kinds of knowledge, artistic and cultural works, agricultural knowledge, medicinal plants and the rational use of flora and fauna, governments must take immediate measures, in cooperation with indigenous peoples, to identify sacred and ceremonial sites, including cemeteries, traditional teaching sites, and protect them from any unauthorized entry or use.

Indigenous companies and organizations must have the support of the state as a guiding axis that fosters a cooperation model, to streamline processes and generate feedback that allows public organizations to be more efficient and less bureaucratic.

In México, is necessary to incorporate a strategy in the National Development Plan to integrate indigenous communities into the nation's project, protect their biodiversity and cultural wealth, and establish actions through win-win relationships, rather than relationships where there is abuse of power and mistreatment of those who perform subordinate jobs.

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Challenges of Mexico's Environmental Policy in the Light of the Circular Economy

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Abstract: The circular economy in México has a novel theme and little known on the margins of public policies, its dissemination obeys to the production and sale of goods that represent it. Individuals who approach it directly and indirectly, do not see its international significance immersed in a new stage of economic and social life.

The challenges to be assumed by the governments in turn, condition its reception within the country, in view of the legislative, regulatory production and programs that allow its development in the Mexican economic.

Under this order of ideas, the actions of the environmental policy group the scenarios that enable its development, attentive to its specific competences that enable it to carry out prevention and controls in favor on the environment.

Many tasks are required to adopt international standards that guide the management of the circular economy between civil society and the state. We are attentive to the mandates of public entities that inform and instruct us in a new environment culture and use of goods and products that affect the conservation of natural resources.

Currently, individuals and society as subjects with environmental responsibility: it is up to them to assume their duties that lead to the maintenance and prolongation of life of the goods of nature, through the programs of the environmental policy as holder of these state assets.

The necessary link is made latent in this topic, with the purpose of environmental extrafiscality, with allude to the decision-making of fiscal policy, faced with the scenarios of taxpayers who emit externalities to the environment, such as taxpayers in regimes that for the goods and services that make up the basis of their taxation, cause environmental problems.

Key words: policies; environment; economy; external taxation; administered

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1. Introduction

At present it's up to Mexico to face and design new scenarios that guide the lives of citizens, they in order to provide a better quality of life, and comprehensively conjugation of elements in a plane of equality as the environment, economic growth, personal development, quality of life, among others totaling the union of interests protected by the State, in view of its teleology that justifies its existence in society.

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We must return to the traditional elements of that: people, territory, legal system, and the common good; In light of new roles that it exercise in its sovereignty and linkage with the exterior, been backed in the globalized schemes, which have addressed the private and public relations in the last two decades.

The “laissez-faire” in favor of the private economy has marked various tendencies of the nation-state, in the light of constitutional premises that establish lifestyle of citizens, in agreement with their fundamental rights and guarantees, past these Human Rights.

Economic freedom deposited in civil society, has set the pace to live an institutional restructuring that affects less favorably on the overall progress of the individual. Thus, we see the effects that are present in the elements of nature, that condition healthy lifestyle for environment and people.

Now it's up to public policies, establish the bases and levees this gigantic economic and productive interaction, to mitigate the damage to nature, essential to our daily lives.

In other words, the government in charge of the economy, in use of its constitutional and regulatory competences, has the task of seeking mechanisms to reconcile these policies, which in a degree of equity propitiate tasks to acculturate the population, in being an active part of the current scenarios of countries with a more consolidated economy, which are going from a period of production of goods and services to the detriment of the environment, to that which marks the route in the use of harmonic products for the environment and the health of the people.

They are addressed as an object of study in this investigation, environmental policy, first order, to identify legislative powers and administrative provisions necessary to protect nature. Similarly, we identify the contributions regulations and programs in this area we lead to the implementation of circular economy in Mexico. And shares issued by the Fiscal Policy as an aid in the conservation of the environment, based on the decline occurring in the tax field, via the business activities tax.

Based on the foregoing, we point out the following approach: Does Mexico currently, through its environmental and fiscal policies, provide the basis for the development of a circular economy?

It is therefore our objective to analyze the environmental and fiscal actions of the federal government, leading to the application of the circular economy in national territory.

In order to comply with the above, we refer to a guiding deductive methodology in this investigation, given the approach made to the proposals derived from the Government Plan, in the Environmental and Fiscal Policy, as the basis for the subsequent work that leads to the proposal of social programs and modifications to the regulations of those areas.

Also invoke the methods of knowledge that allow us to develop each of the paragraphs cited -Supra-, via the analysis of the purposes underlying the exercise of environmental actors, facing the delegation of the powers of the state in protecting the environment, equal importance we turn to the description, exegesis and systematization of tax charges, as an adjunct to the highest constitutional, legislative means which regulates taxpayers to cause externalities to goods of nature.

The methodological steps outlined allow develop the content of this product partial scientific, consistent with the research project entitled: “environmental sustainability within a circular economy strategy: proposals on financial and tax instruments” in process with the University of Castilla-La Mancha, Spain.

2. Environmental Policy Purposes

In the aims of the Environmental Policy, we find the work that the National Executive has estimated to carry out those programs that have as an objective the care of the environment. It is a matter of following a series of tasks and strategies aimed at preventing damage from the execution of acts and services.

Its task is to seek harmony between citizens and the environment.

However, the goals will therefore depend on its vision correlated to the national and international mission in this social field.

Constitutionally healthy environment is guaranteed by the State, responsibility with individuals, their care is extensive in society and access to human rights in Mexico. This regulation is due to preventive measures “damage and nature conservation” (Const., 2019, Art. 4).

To this foundation, we add Mexico’s supranational participation in the Confederations¹ it has been part of, to establish within them, the principles that govern the protection of the environment, in view of the present demands that give basis to the diagnosis and goals to be fulfilled in the short and long term in its defense (Planelles, Manuel, 2015).

We crown these ideas with the quotation from the Jurisprudential Thesis, which alludes to the role of the authorities in the respect and application of Human Rights, in the face of the Pro-Personnel Principle, regulated in numeral 1, in fusion to the access to a healthy environment, as a right belonging to that group that weaves the guarantees to those immutable Rights. Furthermore, these foundations are correlated with the commitments emanating from the international commitments in Rio de Janeiro. In this way, a comprehensive jurisprudential position can be observed, which combines constitutional contents, in the light of the authorities in fulfilling Human Rights, in an extensive way to the environment, inserting such criterion in the international context.

The thesis of jurisprudence XXVII.3o.9 CS (10a) sustained by the Third Collegiate Tribunal of the Twenty-seventh Circuit is guiding, visible on page 1840 of Volume II, published in the Judicial Weekly of the Federation in December 2016, Tenth Period, whose text alludes to environmental protection:

Principio de precaución de derecho ambiental. Su fundamento en las obligaciones de protección y garantía del derecho humano a un medio ambiente sano para el desarrollo y bienestar de las personas y elementos que le son propios. De los artículos 1o., párrafo tercero y 4o., párrafo quinto, de la Constitución Política de los Estados Unidos Mexicanos (1) deriva que todas las autoridades, en el ámbito de sus competencias, tienen la obligación de promover, respetar, proteger y garantizar los derechos humanos, entre ellos, el derecho de toda persona a un ambiente sano para su desarrollo y bienestar. Así, con base en una interpretación progresiva de las obligaciones anteriores, en especial las de protección y garantía, el principio de precaución que rige en esa rama del derecho, previsto en el principio 15 de la Declaración de Río sobre el Medio Ambiente y el Desarrollo, de la Conferencia de las Naciones Unidas, encuentra fundamento interno; de ahí que cuando haya peligro de daño grave o irreversible al medio ambiente, la falta de certeza científica absoluta no deberá utilizarse como razón para postergar la adopción de medidas eficaces (de acción o abstención) en función de los costos, para impedir la degradación de aquél. Por tanto, son elementos de dicho principio: i) la dimensión Inter temporal; ii) la falta de certeza científica absoluta del riesgo ambiental; iii) los riesgos tendrán que ser graves e irreversibles; y, iv) la inversión de la carga de la prueba al infractor (Tercer Tribunal Colegiado del Vigésimo Séptimo Circuito, 2016, p. 1840).

¹ Así podemos enunciar la Cumbre París 2015, como corolario de sus precedentes, en retomar las recomendaciones vertidas en la Cumbre de Río y demás homólogas, elpais.com. COP21: La Cumbre de París cierra un acuerdo histórico contra el cambio climático, París, 12 de diciembre de 2015. Conferencia de Naciones Unidas sobre Desarrollo Sostenible: Río+20, ecodes.org, Qué es Río+20-Ecología y Desarrollo, España, 2012.

As can be inferred from the above quotation, Mexico acquires by means of a Jurisprudential Thesis the Precautionary Principle of Environmental Law, to avoid risks in the natural elements. The authorities of the country, as recipients of this judicial criterion, have to comply with it in their respective jurisdictional enclosures, due to the priority that our Maximum Court has throughout the country.

Up to this point the foundations and ideas poured, frame the substantive function of the State in environmental matters — preferably as prerogatives in its favor — we link below three aspects that allow us to denote more precisely our object of study:

a) Economic leadership. We invoke it because it constitutes the source of the acts that the government plans for the development of the country. This has received changes that affect the reality that prevails today in Mexico, in light of the permits that have been introduced, via their adaptation to international scenarios, so we find the following stages: I. From 1950-1984. It remained linked to the constitutional guiding principles of a mixed economy, guided by the Federal Executive, based on national imperatives, with little influence from the private economy. II. From 1984-2000. The borders and dikes derived from the 1917 Constitution, which limited external influence and privileged development with national wealth, were opened. In this way the economic leadership acquires a strong connotation in support of foreign investments and becomes a market economy — due to globalization. III. From 2000-2018. The government is based on neo-liberalism applied by the intervention of transnationals, concessions and the use of exclusive materials of the Federation: fuels, hydrocarbons, energy — nuclear, reserve areas, seas, rivers, natural resources; in national and international companies (Tépach, Reyes, 2005).

Based on this preamble, and supported in this last period, Mexico through the administrative regulations, foreign investment and other laws that guarantee the exploitation of such patrimonies, has generated the public economic increase, at the same time that of businessmen at the cost of the damages that are lived in those natural elements, to the degree of disabling the use of rivers and some beaches, by the lack of implementation of sanitary controls in the lenders of real estate, tourist services and the own parastatal that has contaminated seriously the Southeastern region of the Country.

These aspects, and many others, have caused a great avalanche of acts that have a negative impact on the environment, without the administrative authorities having the structure to receive these services that are harmful to the environment and, worse still, to follow up on the tasks of rehabilitation and restoration of these deteriorated elements by businessmen who acquire the economic profits — by branches, establishments and shareholders — and live in their countries of origin far from the consequences that are spilt on the environment.

This is the problem that we are living, to compensate the damages caused in front of the economic interests that exclude the environment, by the progress finished in the capitalism and consumerism.

b) Secretariat of the Environment and Natural Resources. In this government agency are located the competences that are exercised in Mexico, to protect the natural goods in general; it is an administrative entity of federal rank, which assumes the challenges to keep safe the resources and goods of nature. It is developed through functions emanated from the General Law of Ecological Equilibrium and Environmental Protection (Ley General del Equilibrio Ecológico y la Protección al Ambiente, 2019) — as well as other relative ones — as well as in the programs it issues in areas that attend to environmental diversity. We also highlight the regulatory and economic instruments available to it to cover its development and apply these environmental prevention programs; thus, we find the tax link in the remunerations and sponsorships emanating from the Fiscal Policy, through taxes, decrees and incentives that finance such state work.

Development Plan 2018-2024. We also add as contributions to environmental protection in holding the circular economy in Mexico, the projection made by the Federal Government in its working document for this Public Administration, by recognizing a life of the country, based on collective development, encouraging agricultural areas, indigenous and producers, who as holders have harmony with natural resources, In addition, reference is made in parallel to business activities, which as such generate sources of wealth and work, but with the conditions in favour of the environment, in the decrease of their deterioration and increase of their capital, as actions adhered to the commitments of Agenda 2030 — sustainable development — and the Paris Summit of 2015.

The content of the aims of the Environmental Policy is woven through 10 Transversal Axes and 12 Thematic ones, which are the incidents in this National Project, which involves all actors in the conservation of the environment (Plan Nacional de Desarrollo 2019-2024).

3. Linking to Environmental Taxation

a) Fiscal policy. Environmental protection (Const., 2019, Art. 4, paragraph 5) is not enough with the performance of a Department of State, we must extend it to other pairs that contribute to this collective work, social and economic impacts arising from environmental impairments.

Mexico must take on the task of prevention and continuity of environmental deterioration, which is why the taxes are used as economic instruments to strengthen this public function.

Thus, the (National Development Plan 2019-2024) Fiscal policy also must be added this task, through their actions and acts via transit contributions to protecting the environment.

Federal taxes — IVA, ISR, IEPS, AD VALOREM — are the action channel to amortize damages in nature, with the business activities of taxpayers.

b) Tributes. Thus, we find the obligation of tributaries that is extinguished with its payment, in parallel to the decreases that the environment receives.

Tributes may contain the basis for developing circular economy, profits, services, products, imports, exports and production assets subject to a collective benefit. This leads to a correlation with the Foreign Economic and Trade Policy, to harmonize the exercise of those activities with the attributes in the products transiting in the Mexican market.

c) Fiscal stimulus. This work also opens up the possibility of generating fiscal stimuli, in order to motivate the work of taxpayers that affect these environmental benefits.

Therefore, we find the fiscal stimulus regulated in Section 202 of the Law on Income Tax (2020), for taxpayers engaged in 2019, research and technological development. Here we locate the ends of the circular economy in relation to the obligation for Rent, where the authorized state tax credit for those conducting business activity by scientific innovation, that affect environmental benefit when products created meet the very categories that generate externalities to the environment.

This stimulus in our interpretation, shows the path that can go in addressing this incentive, placing therefore creative work in goods and products reach the quality levels expected in the field of embedded relationships in the economy circular.

4. Environmental Strategies Against Circular Economy

In the competencies that the protective authority applies to the environment, it seeks to establish programs that improve the behavior of those administered.

We note below a list of products circulating within the national territory, whose manufacturing processes and materials are in compliance with environmental purposes followed in the circular economy; these products are classified according to their components and environmental linkages.





They are in the Mexican market, by private and business initiative; who have innovated in producing them, with recycled and alternative elements to be in balance with the environment.







This category of goods is mostly imported, is in its diffusion, being purchased by users.

We find therefore, the contribution of employers as an amendment to the environment, by the reduction in the use of plastic, development of new packaging in cosmetics and the introduction of footwear; made them with source in recycling.

The circular economy in this sense, begins to echo in the chain and movement of products, which I trade are already acquired by their domestic processing and import.

Below is a table with some of those products aimed at circular economy; they participate in new strategies introduced by the company for its production, who's the elements and components reveal harmony with natural resources.

Company name	Product	Description	Product image
Biophase	Avocado straws	Its products based avocado seed that can be buried in the ground and have a decomposition process as any fruit, straws that degrade in 240 days instead of almost a hundred years like plastic. Created by Scott Munguia from Guadalajara.	
Niewana Alam Hijau (AVANI)	Yucca bags	Paper straws or bags created from yucca starch which, on contact with water, dissolve in minutes and are also suitable for ingestion. From the Indonesian creator Kevin Kumala.	
You adidas	Tennis	Adidas alida at Parley for the Oceans has designed sneakers made from plastic recycled from waste dumped at sea, to protect and conserve the seas. Plastic waste found in coastal areas is collected and sent to recycling companies by Parley's partner organizations. There they are shredded and transformed into Parley Ocean Plastic™™ which is the base material used to make the Adidas X Parley product.	
Granutec	waterproofing	Transformation of waste tires, into ecological products specifically in acrylic-based waterproofing, useful for Mexican families that also contribute to improving the environment.	

Renovare	shoes	The package contains 3 tin socks made in Mexico from 72% bamboo, 14% Nylon and 14% Latex. Bamboo is the fastest growing plant in the world. It is 100% biodegradable, does not need chemicals or pesticides and requires very little water to grow so it is one of the most sustainable materials.	
Ecu	Tines Bamboo Women	Recycling, Reducing and Reusing plastic bottles (PET) to create a unique and different footwear able to give a second life to a waste, using processed natural leather, with vegetable products, 7.5 bottles, of pet, for the elaboration of this footwear, besides that water based. Adhesives are used, for the assembly of the cut and the sole, being not harmful for the one who elaborates it.	
	Shoes	With synthetic silk and vegan leather as well as recycled tire soles and designs inspired by indigenous art (the purpose of the original designs is to highlight the beauty of our culture and put the name of Mexico on high). Packaging made of blanket and cambaya fabric. Every 24 pairs of shoes, 1 tire is recycled in its entirety and 102 PET plastic bottles.	
Natura	Products with spare parts	Another development of Natura for the care of the environment is that common packaging contains 30% recycled PET in its composition, which represents a reduction of about 15% in its environmental impact. They require up to 50% less raw material for their manufacture.	
Desplastificate	Biodegradable products 14 days, refillable containers	A proudly Mexican brand with cleaning products that are filled at home or in ecologically responsible stores such as Alcachofa and Romero. Created by Karina González Ulloa.	
Sargánico	Notepads, napkins, cup holders	Turning seaweed into raw material for processing into practical, useful and aesthetic products.	

5. Waste Programs and Products

Of the programs in charge of the owner of the medium — SEMARNAT² for the present year of government, they are verified in their digital platform, diverse schemes of environmental content, we mean the relative one to the recycling of the companies, whose objectives look for: to diminish the use of natural resources, educating the behavior of entrepreneurs and to spread the actions of this program in favor of the recycling (Organiza

² “Con el objetivo de diseñar acciones que permitan transitar hacia una gestión integral y sustentable de los residuos sólidos urbanos, en la que participen expertos, académicos y sociedad civil, la secretaria de Medio Ambiente y Recursos Naturales, Josefa González Blanco, inauguró [...]” el Foro para diseñar el Programa Integral de Manejo de Residuos. En el año 2015, se realizó otro Foro Internacional Sobre Valoración Energética de Residuos Urbanos.

SEMARNAT foro para diseñar el programa integral de manejo de residuos, 2019; Foro Internacional, 2015; Valorización Energética de Residuos Urbanos, 2017).

A great door is opened with the outlined approaches, which gives way to the environmental culture in the society, in the awareness of the managerial behaviors, which acquire economic advantages and at the same time they provoke externalities that demerit the common good.

The purpose of the program called Waste is the integral management of solid waste classified as special and hazardous: “This includes the prevention and reduction of its generation, its economic recovery, its maximum use and its adequate final disposal. These actions are complemented by strategies for education, training, communication and strengthening the legal and administrative framework. Thus, waste can be used as raw material for the productive sector and as a source of energy” (Residuos, 2017).

Linked to this national program, there is a comprehensive prevention and management of waste, to be developed in states and municipalities (Prevención y gestión integral de los residuos, 2017).

6. Conclusions and Proposals

We believe, in accordance with the ideas outlined in previous chapters, that Mexico has to face great changes in the development and content of its public policies with regard to the circular economy, which must be observed in the various social areas.

The administrative and fiscal authorities represent the public entities in which the function of the State falls to coordinate the corresponding actions for the sake of the benefits derived from the protection and conservation of the environment.

Now, the circular economy as a prototype to follow for a new design of the enunciated policies, implies the joint work of individuals, businessmen and government, to incorporate it and its benefits, based on the processes of scientific, technological, agricultural, and food production; that provide the standards required to adopt the bases and strategies for the benefit of health and the environment.

In this order, it is required to promote the integration of the procedures that design and install the circular economy in Mexico, where entrepreneurs and producers raise their products to an optimal level for consumers and nature.

The Environmental Policy must be renewed and updated in its actors, by means of the implementation of programs and training of its administrators; attentive to the tendencies of environmental protection, facing the commitments derived from the Confederations where Mexico is part, in addition, to interact in the schemes of the OECD, with other peer developed countries, in benefits that are reciprocal to them for the increase of environmental conservation.

The programs regulated — to date — by the environmental authorities with regard to the circular economy, achieve the arrival of their objectives in a first level of application of their axes; due to the policies in the matter of recycling destined to the entrepreneurs who use the natural elements for the elaboration of their products.

These advances are not sufficient to achieve improvements in the use of natural goods and also reduce the elimination of natural resources in production, sales and consumption, as well as generate new products and services for recycling.

Society requires environmental education, which leads to the use of goods in the market with source in recycling. This brings as effects the informed acquisition of these goods, the weighting of their individual and

collective benefits.

Community altruism is needed to adopt such policies and legitimize them, according to sufficient sensitivity, to prolong the life of natural resources.

On the other hand, we add a great deal of these challenges to the Fiscal Policy, in view of its permanent relationship with the taxpayers, who deliberately contribute to the deterioration of the environment.

The creation of fiscal incentives does not guarantee the elimination of damage to the environment, the fiscal legislator does not intervene to establish taxes that link the payment of obligations with the reduction of effects on their business activities.

The following proposals are made:

- a) Generate greater channels of communication between fiscal and environmental authorities.
- b) To carry out joint programmed that have an impact on the production of recycled goods.
- c) Encourage the creation, disposal, import, export and consumption of recycled products.
- d) To adopt international perspectives on the circular economy in binding administrative legislation.
- e) Disseminate the collective benefits of using goods derived from recycling
- f) In Income, Value Added and Ad Valorem Taxes, the link to the circular economy can be introduced via the taxable base of each tax.
- g) Review the schemes of the Special Tax on Production and Services; by regulating its purpose in special matters and effects on the environment, attentive to the purposes sought in the circular economy.

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Financial Factors Affecting the Value of Companies With Disclosure of Greenhouse Gas Emissions as Mediation

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Abstract: This study aims to examine and analyze the influence of financial factors on firm value. This research is conducted on mining companies listed on the Indonesia Stock Exchange in 2014-2018. The sampling method used is using purposive sampling technique. The number of companies that meet the criteria is 14 companies with 70 observations. The analysis technique uses path analysis and multiple linear regression analysis. The results showed that high profitability and growth rate of the company can increase the value of the company, while the size of small companies does not affect the value of the company. The disclosure of greenhouse gas emissions affect the value of the company. The high profitability, the size of the company and the growth rate of the company affect the disclosure of greenhouse gas emissions. Disclosure of greenhouse gas emissions can mediate the affect of profitability, company size and firm growth at the value of the company.

Key words: profitability; company size; company growth; disclosure of greenhouse gas emissions; company value

JEL code: Q560

1. Introduction

Boosting up the value of the company is very important for the company, because the value of the company is a reflection of the good or bad performance of the company which of course will affect the views of investors in the company (Kusumayanti & Astika, 2016). Company value can be reflected in the annual report which is the final process of accounting. The quality of information in an annual report can be assessed from how extend the information disclosure is being made and published by companies (Kelvin et al., 2017).

Disclosure of carbon emissions or greenhouse gas emissions is a form of the company's contribution to environmental change, especially global warming. Disclosure of carbon emissions is usually reported in annual reports and sustainability reports (Akhiroh & Kiswanto, 2016). Disclosure of carbon emissions by companies can be assessed by readers of the annual report as a sign of the seriousness of the company in addressing the problem of global warming, due to greenhouse gases (Choi et al., 2013).

According to the Ministry of Energy and Mineral Resources 2013, many emissions are generated from industry, this sector uses 70% of fossil energy from the total energy consumed. Mining industries such as oil and gas, coal, and related are the biggest contributors to emissions in developing countries, including in Indonesia (Suhardi & Agus, 2015).

Indonesia's commitment to reduce greenhouse gas emissions can be seen from the legislation that has been made, namely Law No. 17 of 2004 where Indonesia has ratified the Kyoto Protocol which contains an agreement to reduce greenhouse gas emissions in a global scale. The implication of the Kyoto Protocol is it brings out carbon accounting, which is a must for companies to recognize, measure, record, present and disclose carbon emissions (Irwhantoko & Basuki, 2016).

High profitability can provide company added value as reflected in its share price (Kevin et al., 2017; Wijoyo, 2018; Mardi et al., 2019). The greater the size of the company, it will affect management decisions in deciding what funding will be used by the company, then funding decisions can optimize the value of the company (Kusumayanti & Astika, 2016). Companies that have higher growth opportunities have prioritizes in economic goals rather than considering environmental sustainability (Prado-Lorenzo et al., 2009).

In several studies related to the disclosure of greenhouse gas emissions, Faisal et al. (2018) found that profitability, leverage, company size and industry type are significant determinants that can explain how extend the disclosure of greenhouse gas emissions is. Jannah and Muid (2014) found that the extent of disclosure of emissions was significantly affected by profitability, company size and leverage, but was not significantly affected by environmental performance (PROPER ranking).

Research on disclosing greenhouse gas emissions has a direct effect in increasing company value. Li et al. (2015) revealed the effect of carbon emission disclosure on rising company value through market liquidity and the cost of market equity in China. The research of Saka and Tomoki's (2014) about the disclosure of carbon emissions and company value proves that disclosure of carbon emissions affects the value of the company.

Researchers assume that if the disclosure of greenhouse gas emissions by the company is getting better, then the stakeholders will be more satisfied and will provide full support to the company for all its activities which have purpose at increasing performance and achieving profits that in the end ultimately increasing the value of the company.

2. Literature Review and Hypothesis

2.1 Stakeholder Theory

Stakeholder theory explains that companies are not entities that only operate for their own interests but must provide benefits for stakeholders (Magdalena et al., 2018). Thus, the existence of a company is strongly influenced by the support given by stakeholders to the company (Ghozali & Chariri, 2007).

2.2 Legitimacy Theory

Legitimacy theory, a theory used to ensure and maintain partiality for both internal and external stakeholders. Companies need to ensure a match between the existence and objectives of stakeholder expectations (Dewi et al., 2014).

2.3 Effect of Financial Factors on Company Value

Profitability is the company's ability to generate profits. The higher the profitability, the better (Mardi et al., 2019). To attract investors to invest, the management will attempt to incline the profitability of the company. With the boost in profits, it will have a positive impact on increasing stock prices in the capital market, which means the value of the company is in a good position. Mardi et al. (2019), Mery et al. (2017), Nurmindia et al. (2017), have proven that profitability affects company value.

H1: Profitability has a positive effect on firm value.

According to Nurmindia et al. (2017), the large scale of the company will be responded by an enhance in the company's stock price resulting an escalation in the value of the company. Kusumayanti and Astika (2016), Arifianto and Chabachib (2016), Gill and Obradovich (2012), in their research, state that company size has a significant positive effect on the value of a company.

H2: Firm size has a positive effect on firm value.

Growth (firm growth) can be seen from changes in the company's total assets, because changes in company's assets either in the form of an ups or downs can indicate that a company is developing or not. Research of Rasyid (2015) which states that the growth rate has a significant positive effect on firm value and it is supported by Widayanthi and Sudiarta (2018) who states that growth influences firm value.

H3: Company growth has a positive effect on firm value.

2.4 The Effect of Financial Factors on Company Value by Disclosure of Greenhouse Gas Emissions as Mediation Variables

Company value is influenced by several financial factors, including profitability, firm size, firm growth and disclosure of greenhouse gas emissions. The higher the profitability, the higher the position of company's value in the eyes of investors. The higher the level of profitability, the greater the level of disclosure of environmental activities by the company. In accordance with the results of research by Mardi et al. (2019) that profitability has a positive effect on the amount of social responsibility disclosures that companies make to the community.

The large size of the company shows that the company is developing, to this extent investors will respond positively and the value of the company will be boosted (Sujoko & Soebiantoro, 2007). Large companies tend to disclose social information more broadly (Mardi et al., 2019). Companies that are in a growing period will be more conservative in utilizing their resources. The tendency to use resources is focused on improving operational performance and developing the company's economic sector. Thus, companies that are still in a period of growth tend to prioritize the value of the company to achieve business expansion (Luo et al., 2013).

Stakeholder theory and legitimacy theory, support the disclosure of greenhouse gas emissions because it indicates that the company pays attention to stakeholders and the company's presence is recognized by the public (Pristianingrum, 2017).

H4: Disclosure of greenhouse gas emissions can mediate the influence of financial factors on firm value.

3. Research Methods

The purpose of this study is to examine and analyze financial factors that affect the value of the company and to test and analyze the disclosure of greenhouse gas emissions as a mediation between financial factors to the value of the company in mining companies listed in the Indonesia Stock Exchange which consist of profitability (ROA), firm size (size), and firm growth (growth).

This type of research is a quantitative study using path analysis and multiple linear regression analysis. The population of this study is the Mining Companies listed on the Indonesia Stock Exchange (BEI) in 2014-2018 as many as 41 companies. The sample selection in this study used the purposive sampling method and we found 14 companies with 5 years of observation, with total sample of 70. The data used in this study are secondary data in the form of annual reports and company sustainability reports obtained from the Indonesia Stock Exchange (IDX) through the website www.idx.co.id and the company's website. The linear regression analysis model includes:

$$Y = \alpha + \beta_1 \text{Prof} + \beta_2 \text{Size} + \beta_3 \text{Grow} + e$$

3.1 Definition of Variable Operations

3.1.1 Company Value

The company value used in this study is measured by using Tobin's Q modified by Gaio and Raposo (2011) in the form of Simple Q because of the difficulty in estimating market value of debt and replacement costs. Tobin's Q calculation formula is:

$$Q_{n,t} = \frac{BVA_{n,t} + MVE_{n,t} - BVE_{n,t}}{BVA_{n,t}}$$

Information:

$Q_{n,t}$ = the value of Tobin's Q for company n in year t

$BVA_{n,t}$ = book value of total assets for company n in year t

$MVE_{n,t}$ = market value of equity for company n in year t

$BVE_{n,t}$ = book value of equity for company n in year t

3.1.2 Disclosure of Greenhouse Gas Emissions

Parameter items for disclosure of carbon emissions by using an index adopted from the study of Choi et al. (2013). A checklist consists of 18 items that need to be identified. Each item in the disclosure of carbon emissions is assessed by a dichotomous score, 1 if disclosed, and 0 if not disclosed. Then score 1 is added up and divided by the maximum number of items that can be disclosed and then multiplied by 100% (Kelvin et al., 2017).

3.1.3 Probability

Profitability in this study is measured by using ROA (Return on Assets). The measurement of profitability is as follows:

$$ROA = \frac{\text{Net Profit}}{\text{Total Asset}}$$

3.1.4 Firm Size

The size of the company in this study is by using Natural Logarithms (ln) with the help of Microsoft Excel.

3.1.5 Firm Growth

The company's growth rate can be measured by using the Asset Growth ratio. The growth calculation is as follows:

$$\text{Growth} = \frac{\text{Total Asset}_t - \text{Total Asset}_{t-1}}{\text{Total Asset}_{t-1}}$$

4. Results and Discussion

4.1 Descriptive Analysis

Descriptive statistics in this study are used to see the mean value, minimum value, maximum value, and standard deviation of the dependent variable, mediation variable and independent variable. Descriptive statistical results for each variable can be seen in the Table 1.

The company value variable has an average value of 40,0339 and a standard deviation of 68,2415 with a minimum value of the company value of 0.00 and a maximum value of 243,23. The profitability variable has an average value of 0,2569, a standard deviation of 0,3079 with a minimum value of profitability of 0.00 and a maximum value of 0,94. The company growth variable has an average value of 0,2986 and a standard deviation of

0,3650 with a minimum value of company growth of 0.00 and a maximum value of 0.41. Variable disclosure of greenhouse gas emissions has an average value of 0.4242 and a standard deviation of 0.2806 with a minimum value of disclosure of greenhouse gas emissions of 0.11 and a maximum value of 1,00. This means that the average value is smaller than the standard deviation, thus indicating that the results are less good. Those results reveals that the value of the company experienced fluctuations that are not too large. The company size variable has an average value of 19,3986 and a standard deviation of 3,7095 with a minimum value of company size of 11.86 and a maximum value of 29.00. It means that the average value is greater than standard deviation, thus it indicates that the results are quite good. That is because the standard deviation is a reflection of a very high deviation, thus the spread of data shows normal results and does not cause bias.

Table 1 Descriptive Statistics

	Min.	Max.	Average	Std. dev
Firm Value (Tobin's Q)	0.00	243.23	40,0339	68,2415
Profitability (ROA)	0.00	0.94	0.2569	0.3079
Firm Size (Size)	11.86	29.00	19,3986	3,7095
Firm Growth (Growth)	0.00	1.41	0.2986	0.3650
Greenhouse Gas Emissions	0.11	1.00	0.4242	0.2806

Source: SPSS Output, Secondary data processed.

4.2 Statistical Test F (Goodness of Fit)

The results obtained from the F statistical test are the F-test value of 83,565 with a significance level of 0.000. It means that because the significance value is smaller than 0.05, it can be concluded that the regression model can be used in this study where the independent variables namely ROA, Size, and Growth simultaneously affect the Company Value variable.

Table 2 Regression Test I

Model		Unstandardized Coefficients	Standardized Coefficients	Sig.
		B	Beta	
1	(Constant)	-14.181		0.533
	ROA	166,467	0.751	0.000
	Size	0.036	0.002	0.977
	Growth	36,038	0.193	0.012
	R			0.890
	RSquare			0.792
	F Hitung	Sig. F	Adjusted R ²	
	83,565	0.000	0.782	
a. Dependent Variable: Tobin's Q		Tobin's Q = -14.181 + 0.751 ROA + 0.002 Size + 0.193 Growth		

Source: SPSS Output, Secondary data processed.

4.3 Significance Test of Individual Parameters (Statistical t-test)

Statistical t-test is a test used to determine the effect of each independent variable on the dependent variable. T-test results can be seen in Table 4. Based on Table 4 above, it can be seen that the results of the t test, the probability value of the profitability variable is $0.000 < 0.05$ and the statistical t value $9.368 > 1.997$. These results

explain that profitability has a positif effect on firm value. The growth variable of the company has t value of $2.578 > 1.997$ and a significance value of $0.012 < 0.05$. It can be summarized that growth has a positif effect on the variable value of the company. The company size variable has t value of $0.029 < 1.997$ and a significance value of $0.977 > 0.05$. These results explain that company size does not have an influence on firm value.

4.4 Coefficient of Determination (R²)

Based on the R² statistical test on financial factors, the Adjusted R Square value is 0.782 or 78.2% (Table 4). It presents that the independent variables (Profitability (ROA), Firm Size (Size), and Firm Growth (Growth) in this study can explain the dependent variable of the company’s value as many as 78.2%. The independent variable in this study can explain the dependent variable as many as 78.2% while the remaining 21.8% is explained by other variables or other factors outside of this research model.

4.5 Path Analysis

Testing data in this study uses the path analysis technique (Path Analysis), where path analysis is an extension of multiple linear regression analysis to test the causality relationship between 2 or more variables. Path analysis in this study produced direct effects p1 (Table 2) and indirect effects p2 (Table 3) and p3 (Table 4). The parameter value of p1 (Table 2) is the value of Standardize Coefficients (Beta) obtained from the regression results from profitability, leverage, company size and company growth to the company value of $0.946 (0.751 \text{ ROA} + 0.002 \text{ Size} + 0.193 \text{ Growth})$. The p2 value (Table 3) is a Beta parameter of $0.537 (0.475 \text{ ROA} + -0.270 \text{ Size} + 0.193 \text{ Growth})$ in p3 value (Table 4) for the Beta parameter disclosure of environmental performance against the company value of 0.544.

Table 3 The Effect of Financial Factors on Disclosure of Greenhouse Gas Emissions

Model		Standardized Coefficients	Sig.
		Beta	
1	(Constant)		0.000
	ROA	0.475	0.001
	Size	-0.270	0.024
	Growth	0.332	0.012
Dependent Variabel: CDP			

Source: SPSS Output, Secondary data processed.

Table 4 The Effects of Disclosure of Greenhouse Gas Emissions on Firm Value

Model		Standardized Coefficients	Sig.
		Beta	
1	(Constant)		0.205
	CDP	0.544	0.000
Dependent Variabel: Tobin’s Q			

Source: SPSS Output, Secondary data processed.

Based on the table above, it is known that the Standardized Coefficient (beta) value of each variable. The first indirect effect of profitability, leverage, company size and company growth on company value through the disclosure of greenhouse gas emissions is as many as $0.537 (p2) \times 0.544 (p3) = 0.292$.

4.6 Discussion of Research Results

4.6.1 Effect of Financial Factors on Company Value

Based on the results of the regression analysis above, it shows the effect of profitability on firm value. H1 is accepted, it can be seen from the results of the analysis which presents that, with the increasing of profitability, the better the value of the company in the eyes of investors in accordance with the perspective of signal theory, where the company gives a positive signal with high profitability which reflects good performance. The results of this study are consistent with research of Mardi et. al. (2019), Mery et al. (2017), and Nurmindia et al. (2017).

Based on the results of the above regression analysis shows that there is no influence between firm size and firm value. H2 rejected, the results of this study explain that investors do not consider the size of the company at the time of buying shares (Pristianingrum, 2017). This is in line with the study of Suwardika and Mustanta (2017) stating that the small size of the company has no impact on the value of the company supported by the research of Mardi et al. (2019). The results of the analysis demonstrate that the size of the company is not able to influence the value of the company.

Based on the results of the regression analysis above, it shows the effect of firm growth on firm value. H3 is accepted, this can be seen from the results of the analysis which demonstrates that the company's growth in this study cannot produce a higher rate of return on the investment that has been made. The results of this study are in line with the research of Rasyid (2015) which states that the level of growth has a positive effect on the value of companies in which also supported by Widyanthi and Sudiarta's (2018) research.

Based on the results of the regression analysis above, it demonstrates the influence of financial factors on firm value which are obtained from the statistical F test with a significance value of $0.000 < 0.05$ and F value of $83.565 > F$ table of 2.513. This means that because the significance value is smaller than $\alpha = 0.05$, accordingly these results explain that the regression model can be used in this study where financial independent variables, namely profitability, firm size, and firm growth simultaneously have a positive and significant effect on firm value variables.

4.6.2 The Effect of Financial Factors on Company Value through Disclosure of Greenhouse Gas Emissions

According to the results of the regression analysis above, it shows that there is positive effect of profitability on the disclosure of greenhouse gas emissions, can be seen from the value $\alpha = 0.001 < 0.05$. Companies with a low level of profitability are not in the public spotlight, in such manner they do not require disclosure of more carbon emissions information. The study results in line with the study Kevin et al. (2017), Suhardi and Agus (2015). Based on the results of the regression analysis above, it demonstrates the influence of company size on the disclosure of greenhouse gas emissions, can be seen from the value $\alpha = 0.024 < 0.05$. It supports the theory of legitimacy that large companies have greater pressures from environmental problems so they tend to incline responses to the environment. The study results in line with the study Majid and Ghozali (2015), Janah and Muid (2014). The company's growth variable has positive effect on disclosure of greenhouse gas emissions, can be seen from the value $\alpha = 0.012 < 0.05$. The study results in line with the study Luo et al. (2013). The results of this study proved that the increase or decrease in profits would affect the disclosure of greenhouse gas emissions.

Disclosure of greenhouse gas emissions has a positive effect on company value in mining companies listed on the Indonesia Stock Exchange in the 2014-2018 period, with the value $\alpha = 0.000 < 0.05$. The results of this research are consistent with the research conducted by Mardi et al. (2019) states that the disclosure of environmental performance is positively committed to the value of the company. Companies that reveal carbon

emissions information have a positive image in the community because the company pays attention to and considers the costs and costs received by the company.

The greater disclosure of greenhouse gas emissions implemented by the company affect the value of the company. Mediation variables in this study are considered capable to mediate the relationship between financial factors on firm value. H4 is accepted, this means that financial factors can increase the value of the company supported by the disclosure of greenhouse gas emissions activities by the company.

5 Conclusions and Limitations of the Research

In this research shows that high profitability will attract investors to invest in their capital in order to increase the value of the company. The high level of company growth affects the value of an enterprise. However, this study failed to provide empirical evidence that the company size has a positive influence on the value of the company. This research provides evidence that profitability, company size and company growth have positive effect on greenhouse gas emission editors and greenhouse gas emission influencers positively impacting company value. Thus, the results of this study indicate that the intervening variable, which is the disclosure of greenhouse gas emissions, can this means that financial factors can increase the value of the company supported by the greenhouse gas emissions disclosure activities undertaken by the company.

Researchers are aware of the limitations in this study related to the disclosure of greenhouse gas emissions by using the Kyoto Protocol which was ratified and updated in 2014. It is because of the activity of disclosing greenhouse gas emissions which is still voluntary. Therefore, the samples in this study are few and have not been able to describe overall, especially the disclosure of greenhouse gas emissions to the value of the company. Suggestion for further researchers is to enhance the company's population.

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Social Capital and Population Perception on Aspects of Sustainable Development in México's Central Region, 2018

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Abstract: The promotion of sustainable development, an important objective of most societies world-wide today, requires the participation of all members of society, but it is more viable when the populations' actions and the public policies pull in the same direction, which in turn requires that people know such policies and act accordingly. This paper shows the results of a study realized in 2018 in four urban areas of the Mexican Puebla-Tlaxcala region, based on a survey among the populations of those areas, with the specific objective of detecting those populations' perceptions of both the implementation of public policies for sustainable development, and its relation to the conditions of their communities, focusing on their social capital and also considering the environmental, economic, technological and institutional aspects of development. With the calculation of Indexes for each one of those development aspects, and the help of Pearson's correlation analysis applied to such Indexes, the study shows a generally positive relationship among all Indexes, but a low perception of the application of public policies. In particular, social capital relates more to human and institutional capital in the larger cities, although natural capital is the most noticeable form of capital in all cities.

Key words: social capital; sustainability; urban development; social perception; México

JEL codes: O180, Q560, R110, Z130

1. Introduction

Since at least four decades ago, there are serious discussions in Mexico on the link between underdevelopment and the degradation of the natural environment. In fact, the Mexican Constitution establishes in articles 25 and 26 the responsibilities and obligations of the government sector in terms of national planning for sustainable economic development. Nevertheless, there exist some obstacles which prevent the design and efficient application of public policies for sustainable development, such as the lack of knowledge of the population about the importance of actions in favor of the ecosystems which individuals can carry out to boost the positive effects of the governmental actions in that respect.

The main objective of this paper is to share the results of research realized in 2018 in four urban areas of the Mexican Puebla-Tlaxcala region with the objective of studying the population's perceptions of the application of public policies for sustainable development which could allow the identification of some characteristics and

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suitable strategies to favor a better implementation of such policies in the region. The investigation included the application of a survey among the populations of the cities of Puebla and San Martín Texmelucan, in the state of Puebla, and of the cities of Tlaxcala and Santa Ana Chiautempan, in the state of Tlaxcala, with the specific objective of detecting those populations' perceptions of both the implementation of public policies and of the development conditions of their communities, stressing their social capital and its relation to the environmental, economic, technological and institutional aspects of development.

The paper is organized into five sections and an Appendix. Section II includes a discussion of some theoretical aspects of the sustainable social development process in general, as well as some of its core elements. Section III presents some general socioeconomic information about the municipalities where the studied cities are located and also, the methodology used for the application of the survey and the determination of the total sample size, stratified for the studied cities on the basis of their socioeconomic characteristics. In Section IV, the results from the study are presented; it shows an attempt made at relating the results obtained for social capital to those obtained for the other elements of development, with the help of correlation analysis. Section V includes some final comments derived from the study. The Appendix includes the questionnaire used in the survey.

2. Theoretical Framework for the Study of Sustainable Development, Social Capital and Population's Perception

2.1 Sustainable Development

Although the term development has never been uniquely defined, and therefore there is not a consensus among social scientists about its exact meaning, the idea which is common in all attempts at defining it, is that "...it is a process by (and during) which, there is a betterment of society's quality of life; that is, an improvement in social wellbeing." (Carrillo, 1978).¹

So defined, development must be considered and evaluated through time. However, evaluating the quality of social life through time is a difficult task, as wellbeing is determined by all kinds of variables. Thus, the study of social development faces, at least, the following three main problems: a) to define the variables which affect positively (or negatively) the quality of life; b) to evaluate the effects of all and each one of such variables in life quality, and; c) to measure the variables significantly so as to be able to compare their values for different points in time.

a) The variables which affect the quality of life

Usually, the variables which influence the quality of life in society are shaped by tradition, habits or past experiences; that is, by culture. Thus, variables such as democracy, justice, women's opportunities for professional development, caring for the environment, education, health, housing, empathy, love or internal peace and the like, usually impact wellbeing in the same positive direction, although with different intensities for different societies.

b) The measures for development and its evaluation

¹ The distinctive characteristic of this definition is that it considers development as a process, and although a process at the universal level neither has a beginning nor an ending in time and space, when defined partially, it has to have boundaries in both elements (time and space). Thus, partial processes such as production, consumption, investment, or development, must be clearly located in time and space to be studied. An ample discussion of the meaning and characteristics of the study of processes can be found in Carrillo (2002). If the proposed definition of development as a partial process is accepted and it is also accepted the separation of aspects of social life, then it is easier to accept that the development process includes as much sub-processes as social life might have, including the economic, political, cultural and environmental development, among others.

What could be done to measure and evaluate a phenomenon such as development, which involves so many aspects of social life? And, how can one say whether the quality of life improves or deteriorates without having an exact measure to apply to such a phenomenon?

Since development involves a great number of elements of wellbeing, some of which cannot be measured cardinally, researches have opted to measure it through indicators which combine such elements significantly; that is, so as to allow one to compare development for different societies for a certain period of time or for a single society in different time periods. Such measures are the Development Indexes, for the positive elements of development, or the Exclusion Indexes, for the case of deficiencies.²

2.2 Formal Background for Sustainable Development

As it was argued some time ago (Carrillo & Carrillo, 2001), sustainable development is a theme which has attracted recently the attention and enthusiasm of researchers and of society in general. However, such an enthusiasm, which already is reflected on the curricula of basic education in a great number of countries, it is not always shared by the governments which, pressured either by population growth or by poverty (underdeveloped countries) or by big businesses which could lose income if sustainability was attended (developed countries), have preferred to postpone decisions about promoting a development which could resolve any one of these three problems which define the lack of sustainability: poverty, regional inequalities, and care of the environment. (Carrillo & Carrillo, 2001).³

The relationship between humankind and their environment has bothered social scientists for ages. Perhaps among the first references of the preoccupation about the impact of the economic activity on the environment was the one advanced by A. C. Pigou (1960), who shared with the Classical economists their preoccupation for the fixity of the land, but suggested, in addition, that there were some unpaid costs in some extractive activities, which overestimated national income.⁴

With population growth and economic development, associated always with the processes of urbanization and industrialization, the rates of use of some natural resources besides the land increased. At the same time, the pollution of the environment by society was intensified, so that a new version of the Malthusian ghost began to preoccupy humankind: that the energy of planet Earth, which is fixed because it is a closed system, could be subjected to a nonreversible process of destruction.⁵

² A Development Index can be built as a weighted summation of the variables which influence the quality of social life, where the weights are either subjective, or determined with the use of specific statistical models. For the case of a weighted summation, one could have: $ID = w_1X_1 + w_2X_2 + \dots + w_nX_n$, where: ID, is the Development Index; (X_1, \dots, X_n) , are the development variables, and; (w_1, \dots, w_n) , are their respective weights. An example of a widely used Development Index is the Human Development Index (HDI), calculated and used by the United Nations for international comparisons of development. (See Carrillo (2002), for a discussion of the HDI).

³ In the case of Mexico, federal and local governments are subjected to a double pressure. On one hand, the need to resolve the high poverty indexes is permanently competing with the need for the care of the environment for the scarce public funds. On the other hand, pressures from the market, both direct and indirect, represent an increasing pressure to capitalize on the comparative advantages of regions and their different groups of people, which result in a widening of the interregional and inter-groups gaps of their levels of wellbeing, totally non congruent with the sustainability of development.

⁴ In fact, Pigou (1960), sustained that "...the destruction of the natural beauty due to the extraction of coal...leaves national income unchanged, although if a charge had been collected for altering the view, thus national income would have decreased." Pigou (who wrote on this issue in 1920) worried about the treatment of the activities of some people which affect the wellbeing of others, and therefore suggested the application of taxes as a compensatory mechanism. This preoccupation was a most influential element in the advancement of economic theory when dealing with the effects that polluting activities of some producers had on the production processes of others, and which have been identified since then as externalities.

⁵ The idea that planet Earth is a closed system, comes originally from the writings of Kenneth Boulding (1966), who thought of the planet as a spaceship which in its walking goes on consuming energy and throwing to space resources in the form of waste.

Thus, the Eco-development framework of analysis appeared in the literature, conceived as a style of development by which there was harmony between "...their social and economic objectives with an ecologically appropriate handling of resources and the natural environment."⁶ With this concept, it was attempted to resolve the debate on the caring of the environment and the development planning efforts, which took place in the early 1970's where the arguments were heavily charged with ideology, and when some event went to the extreme of suggesting that underdeveloped countries should remain as they were, in order not to destroy the environment with traditional economic growth patterns.

It is important to stress that since the 1990's, it was accepted (Lee, 1993) that sustainability problems arise from scale non-congruencies (or lack of concordance) of these three types: spatial, functional and time-binding, between human responsibility and natural interactions. Spatial, such as polluting at rates which exceed nature's assimilative capacity; functional, such as the waste of resources (for example, water), and, time-binding, such as the exploitation of renewable resources at rates which exceed nature's replenishment capacity (over-exploitation).

Thus, the sustainability principles are applied differently, depending upon the types of non-congruencies and the types of resources. In the case of renewable resources, the sustainability principle is that the exploitation rate must be, at the most, equal to nature's regeneration rates. For the case of pollution, that the rates of waste emissions be equal to the natural assimilation capacities of the ecosystems which receive them. In the case of non-renewable resources, that the rate of exploitation be at the most equal to the rate of creation of renewable substitutes (Daly, 1990).⁷

2.3 The Relationship between the Environment and the Development Process

Undoubtedly, those theoretical reflections on the relationships between humans and the environment resulted from the fact that sustainable development started to be shaped only after recognizing that all societies, rich and poor, present or future, have the right to develop, as long as none of them cancels the possibilities of others to develop and, since the future societies are not here yet, the equality principle obliges all contemporary societies. Thus, sustainable development was defined in 1987, by the World Commission on the Environment, in a report known as the Brundtland Commission Report as a development "...which satisfies present needs without cancelling the possibilities for the future generations to satisfy their own needs." (WCED, 1987).

After such report was issued (scarcely three decades ago) there have been a series of worldwide meetings dealing with the increasing importance of public policies related to sustainable development. Because of the nature of its contributions, it is appropriate to refer to the United Nations General Assembly realized on September 25th, 2015, whereby the Agenda 2030 for Sustainable Development was approved (UN, 2015).

That agreement includes a plan for actions such that, within the framework of international law, promotes the attention to persons, to the planet and to their prosperity. Also, there are established therein, as central axis, the human liberties, the elimination of poverty and the promotion of sustainable development, establishing seventeen objectives and 169 targets for such promotion.

⁶ MSachs (1982) resumes the arguments of the debate, and classifies them as optimistic and pessimistic. Among the pessimistic ones, there are those associated with Ehrlich (1970), who "...even suggest that Earth's resources are too scarce so as to allow the industrialization of all countries..." so that "...the third world should be pleased with a '*cuasi*' development (together with the control of the birth rate)" (p. 4). Among the optimists, Sachs includes those of Nicholson (1970), who "...emphasizes that, up to this moment humans have demonstrated to have a very weak imagination in relation to the planet and its almost infinite variety of resources..." (p. 5).

⁷ For the case of non-renewable resources, Daly considers to equal the rates of exploitation and the creation of renewable substitutes as a "*cuasi*" sustainability principle, since sustainability is impossible for such a case.

Among those 17 objectives, these six are notable because of their direct impact on public policies and on sustainable development: Objective 1, to abolish poverty in all of its forms and in all countries; Objective 3, to guarantee a healthy life and to promote wellbeing for all at all ages; Objective 8, to promote an inclusive and sustainable economic growth as well as full and productive employment and decent jobs for everybody; Objective 12, to guarantee forms of sustainable production and consumption; Objective 13, to adopt urgent actions to fight climate change and its effects, and; Objective 16, to promote peaceful and inclusive societies for sustainable development; to ease access to justice for all and to design accountable efficient and inclusive institutions at all levels (UN, 2015).⁸

2.4 Factors which Influence Sustainable Development

Although everyone has an idea of particular things or conditions that improve (or not) the quality of life of society, one could say that society would be in better conditions the larger the number of goods and services it has access to.⁹ Clearly, quality of life is much more than the simple fact of having more goods and services for its members, that is, much more than simple economic growth. However, economic growth combined with mechanisms which assure a just distribution, are positive candidates to generate an improvement in the quality of life of society, that is, in its development.

Also, it is generally recognized that economic growth is generated by the accumulation of capital, and that, when growth is combined with an appropriate distribution of the increased production, it is most likely that the quality of life increases, independently of the types of capital which accumulate: economic capital, natural capital, human capital or social capital. Thus, a discussion of those types of capital is in order. This will be done in the next section, emphasizing the case of social capital.¹⁰

2.5 Different Forms of Capital and their Impact on Development

a) Economic (Manufactured) Capital

From the point of view of economic theory, this type of capital consists of produced durable goods which can be used to produce other final or intermediate goods or services. Such is the case of the factories or business buildings where productive activities take place, but also the energy stations, the roads, streets, highways and bridges, and the tools and equipment which enter the production process, with the new technologies of information and communication included.¹¹

⁸ Some other not less important objectives include the following: to achieve the gender equality and the empowerment of women; to assure the availability and sustainable handling of water and its disposal; to guarantee the access to secure, sustainable and modern energy, and; to protect and promote the sustainable use of the ecosystems, protect the forests, combat desertification, prevent the degradation of the soil and stop the loss of biodiversity.

⁹ For example, to have more physicians and medicines, with better houses, more educational options, a better and more balanced diet for all, better transport possibilities, better roads, more time for entertainment, more leisure time, and, of course, better wages and more incomes, among many other things, without the need to destroy nature around us, and without taking those things away from other communities, means to live better; to have a life of better quality.

¹⁰ Traditionally, researchers have associated the growth of production to the increase or accumulation of the factors which intervene in such a process: human work (human capital), produced or economic capital (tools, equipment, physical infrastructure), raw materials offered by nature (natural capital), and technology, which is the way in which those factors of production are handled and combined into the productive process. More recently, another form of capital was recognized: social capital, whose accumulation also has demonstrated to positively influence both economic growth and social wellbeing. (See Georgescu-Roegen (1971), for natural capital, Schultz (1971), for human capital, Carrillo et al. (2007) for economic or manufactured capital, and Bourdieu (1980), for social capital).

¹¹ It has to be stressed that, in order for durable goods to be considered as capital, they have to be used for productive purposes and not for consumption. The classic examples for this distinction are automobiles, which in some societies could be used for consumption (as riding them for pleasure) or as capital goods when used to go to work, or as working instruments, as when used as taxis.

In economic theory, physical capital is related to production through what is called the 'production function', which is defined as the catalog of different forms or processes that exist at a certain point in time to obtain a certain product, and can be represented as: $Q = F(K, L, T, O)$, where Q , is the product obtained with the combination F , of factors K , capital; L , labor force; T , land, and; O , organization (Carrillo, 2005, p. 334).

In the case of such a function, its variables can refer to the production of an individual producer to the aggregate production of a country. In fact, when it refers to national production, such a function has been used to show the effects of those factors in the productive capacity of society, so that many public goods, such as roads, bridges, schools, hospitals, among others, contribute to economic growth.¹²

b) Human Capital

Together with manufactured capital and other factors, human participation (labor force) in the productive process can increase its quality through education and training, which in turn increase the productive capabilities of society.

Indeed, the contribution of education to the betterment of the quality of social life can be done into two different ways. On one hand, it promotes social wellbeing directly by generating the advancement of knowledge which has given humankind greater freedom and capacity to understand and handle surrounding phenomena. On the other hand, education has indirectly contributed to development since as human capital has increased the productivity of society, both individually and collectively, thus allowing the improvement and the expansion of its capacities to generate production and income.

Investment in human capital is then understood as entailing all expenditures which individuals realize on themselves, which might contribute to increase their productivity (Bracho & Zamudio, 1992). Thus, the theory of human capital explains the relationship between education and the income which results from the increased productivity of individuals who receive more education; that is, that can be attributed to the better education and the formation of abilities which are compensated by the market through higher incomes. Therefore, the theory of human capital treats education and training as forms of investment which generate future benefits in terms of higher incomes, both for the individuals and for society as a whole (Schultz, 1963; Becker, 1962).

c) Natural Capital

Up until the end of the past century, economists considered that natural resources were an important factor in productive processes, but that they were not limitative as manufactured or human capital; they simply were considered as raw materials so that they entered the production function as a parameter, in a way similar to technology or organization.

On the basis of some theories advanced by Georgescu-Roegen (1971a) in the area of production processes, Daly (1990) argued first, that as capital should be considered not only the one produced by humans or humans themselves, but also the natural capital composed of natural resources and their capacity to regenerate and assimilate waste, and, second, that natural capital should be considered as complementary to human and manufactured capital, and not as substitutes, as it is done in traditional neoclassical analysis (Carrillo, 2006).¹³

¹² The formal way in which one could see the impact of manufactured capital on economic growth, is through some growth models which consider it a fundamental factor. (Carrillo et al., 2007).

¹³ Georgescu (1971) argued that neoclassical economic analysis caused an inadequate use of natural resources by not recognizing them as complementary to the labor force and to manufactured capital in the production function, which in turn allowed the use of polluting technologies and undervalued raw materials. Also, he argued that for any product, there are factors and raw materials going into its production process, and there are usable goods coming out of it, but there is also waste coming out of the process.

2.6 Social Capital

According to Carrillo (2015), the main difference between social capital and the other types of capital is that social capital is always determined by the productive interactions of the members of society, while the other types can be generated also at the individual level. Bourdieu (1980) asserts that social capital refers to the institutions, relations and norms which shape the quality and quantity of social interactions in a community. Numerous studies show that social cohesion is a central factor for societies to prosper economically and for development to be sustainable.

A restrictive notion of social capital considers as a series of horizontal associations among people which include social networks and associated norms which affect productivity and wellbeing in the community. Social networks can increase productivity by lowering the costs associated with the establishment of business firms. Social capital facilitates coordination and cooperation. A wider interpretation of social capital considers both horizontal and vertical associations as necessary to give a sense of identity and common causes to communities. But it is also insisted that if relations do not transcend various social divisions (for examples religion, race, socio-economic status), horizontal relations can become a base to look for narrow interests which could prevent access to the information and material resources which could be of great assistance to the community (Carrillo, 2015)

The widest point of view about social capital includes the social and political environments which constitute the social structure and allow for the development of norms. Such an analysis extends the importance of social capital to include the more formal relationships and institutional structures such as the government, the political regime, the rule of law, the judicial system and the civil and political liberties. This point of view does not only take into account the virtues of social capital and the importance of the formation of relations within and among communities, but also vices of social capital in the form of the capacity of certain social groups to act on self-interests.

Existing literature points at these three ample perspectives about social capital; one, Putnam (1993) definition which considers it as a set of 'horizontal associations' where networks of civil compromise, norms and trust facilitate the cooperation and coordination which lead to the achievement of common benefits which promote society's efficiency. Thus, social capital combined with human and manufactured capitals stimulate economic growth, but social capital is the only one which enhances the benefits from investing in human and manufactured capital. Putnam (1993) suggests that society will be more efficient the more coordinated actions take place. Thus, social capital is a public good, different to the conventional one which tends to be undervalued by private agents.

Coleman (1990) offers a wider definition of social capital which focuses of its function and indicates that: "It is not a simple entity, but a variety of different entities with two common elements which are: some aspect of the social structure and the facilitation of the actions of the actors — individuals or groups — within the structure. As in the case of others forms of capital, social capital is productive, making it possible to achieve certain objectives which could not be achieved without it".¹⁴

To Coleman, the usefulness of social capital is contingent: "A form of social capital which is of high value and facilitates certain actions could be less useful in other actions..." (1990, p. 75). From the point of view of Coleman, factors which influence the creation or destruction of social capital include the following: a) proximity;

¹⁴ The idea is that subjective values such as trust are closely related to the well functioning of the economy. Those associations where there exists an environment of trust among its members and toward their authorities are more solid and show a better functioning.

b) the stability of the social structure; c) ideology, and d) government support.

This definition also considers that the concept of social capital might include not only the horizontal associations, but also the vertical ones, as well as the behavior within the firms and among the firms.

According to Woolcock and Narayan (2002), social capital refers to norms and networks which facilitate collective actions. And, according to Morris (2002), associations and social networks can be formal or informal. Thus, informal social capital refers to networks which operate outside of the formal system, that is, relations among relatives, and informal networks among them (measured, for example, by the amounts of resources transferred), and among individuals or groups. This social capital is a form of improvement or development in the community (in its objective of abandoning poverty) to help it take advantages of the business opportunities out of the restrictive options in the community.

The World Bank (1998) definition considers both of the previous ones and includes -besides the horizontal and vertical associations- the socio-political environment as well as formal national structures such as the government and the legal framework.

Although those three viewpoints recognize the enormous potentials that social relations have of economic performance, they do not disregard the possibility that those same relations might have negative effects. The final result will depend upon the nature of the relationships, the preexisting cultural norms and values, as well as the historical background and the political and legal contexts. Around these three variables: networks, norms, and trust, is where one could find social capital, and the three variables are clearly interconnected.

It is not possible to have a strong civil society with functioning networks if it is not based upon trust as the basic element. In turn, norms which are clear and are strictly enforced might generate trust. To analyze the importance of trust for a society and for its development is very important because, among the elements associated with social capital, trust is one of the most difficult to measure, as it relates to something that is experienced only at the subjective level.

2.7 Special Characteristics and Measurements of Social Capital

As the fourth category of capital in the production function, social capital has its own distinctive characteristics, which include the following: 1) Unlike the other forms of human capital (knowledge), social capital is created and transmitted through cultural mechanisms such as tradition, religion and historical traits; 2) It is not acquired by rational decisions of people who act individually, but through the interactions of the members of a society; 3) Its transformation and destruction take place through a slow process; 4) At the aggregate level is not limited by the laws of diminishing returns, because it is not bounded by the market limits; 5) It does not depreciates with its use; on the contrary, it grows and develops; 6) It generates future bonuses (trust, courtesy, respect for the law) which are not limited by income or wealth; 7) It reduces costs and/or complications in social transactions; 8) The benefits derived from it are not susceptible to be valued in the market, although in theory it is possible to develop indicators alternative to those of the market.

In terms of the measurements for social capital, some recent studies have tried to quantify it and estimate its contribution to economic development. Nevertheless, to obtain a unique and certain measure of social capital is probably an impossible task. The following are some reasons for that assertion.

First, the most complex definitions of the concept are multidimensional as they involve different levels and analytical units. Second, the nature of some forms of social capital change throughout time, as the balance between informal organizations and formal institutions might change. Third, given that at the start of the research in this field, researchers neither contemplated the long run nor selected specific areas for study, contemporary

researchers have had to collect indicators from a wide spectrum of proxy elements (measures of trust, trust in government, electoral tendencies, social mobility, among others). Nevertheless, there are some recent studies which have identified useful indicators for measuring social capital or, at least, some of its distinctive elements.

One measure is the enrollment in associations and networks, formal and informal. In underdeveloped countries in general and in their rural zones in particular, the measures which detect informal transactions through community festivals, sports events and other traditional methods to promote social interactions are important indicators of the existence of social capital (Narayan & Pritchett, 1997).

Another form of social association includes norms and values which facilitate exchange by reducing transaction and information costs, as they allow commerce without contracts, and stimulate a responsible citizenry and the collective handling of resources (Fukuyama, 1995). The contribution by Inglehart et al. (1997) for the Study of World Values is the most advanced one in this field, and the questions which the involved economists considered as the most telling are those which measure the presence of trust (“In general, would you say that most people is trustful or one should be very careful when relating to them?”)

In order to evaluate social capital at the community level, Narayan and Pritchett (1997) prepared a questionnaire which included eight basic factors which constituted the social capital of an individual: participation in the local community, proactive action in a social context, feeling of trust and safety, contacts with neighbors, contacts with family and friends, tolerance when facing diversity, valuation of life and labor contacts.

Capital formation through social capital is not easily observable because one has to take into account aspects such as trust, honesty, personal and social responsibility. That suggests that there exists a great difficulty to prepare social capital indicators, as they should include a definition both conceptual and operational. Grootaert and Bastelaer (2001) suggest some of the characteristics which social capital indicators should have, as follows: 1) To be determined within an operational and conceptual framework; 2) To be clearly defined and be easily grasped; 3) To be susceptible for aggregation (that is, such that it can be used for analyzing different aspects which might transcend from the family to the community, and from the community to the nation); 4) To be objective (independent of the researcher's opinion); 5) That the requirement of the necessary data for the elaboration of the concept be reasonable (that is, those which are available and can be obtained within certain costs limits, and be available so that the statistical national mechanisms be able to gather them); 6) To be limited in numbers; 7) It has to reflect processes, relations; in other words, it must allow one to obtain results.

In most recent studies realized in the area of social capital, one can identify these three main forms to build indicators: a) Through the density of voluntary associations (Putnam, 1993); b) By using rates of participation in voluntary associations (Scott, 1977); c) Measuring levels of trust (Knack & Keefer, 1997).

2.8 Social Perception

One of the most important elements which define perception is the recognition of daily experiences which, in turn, is an important process that allows one to recall all of the knowledge acquired through life in order to contrast the new experiences for a better interaction with the environment (Vázquez & Carrillo, 2017).

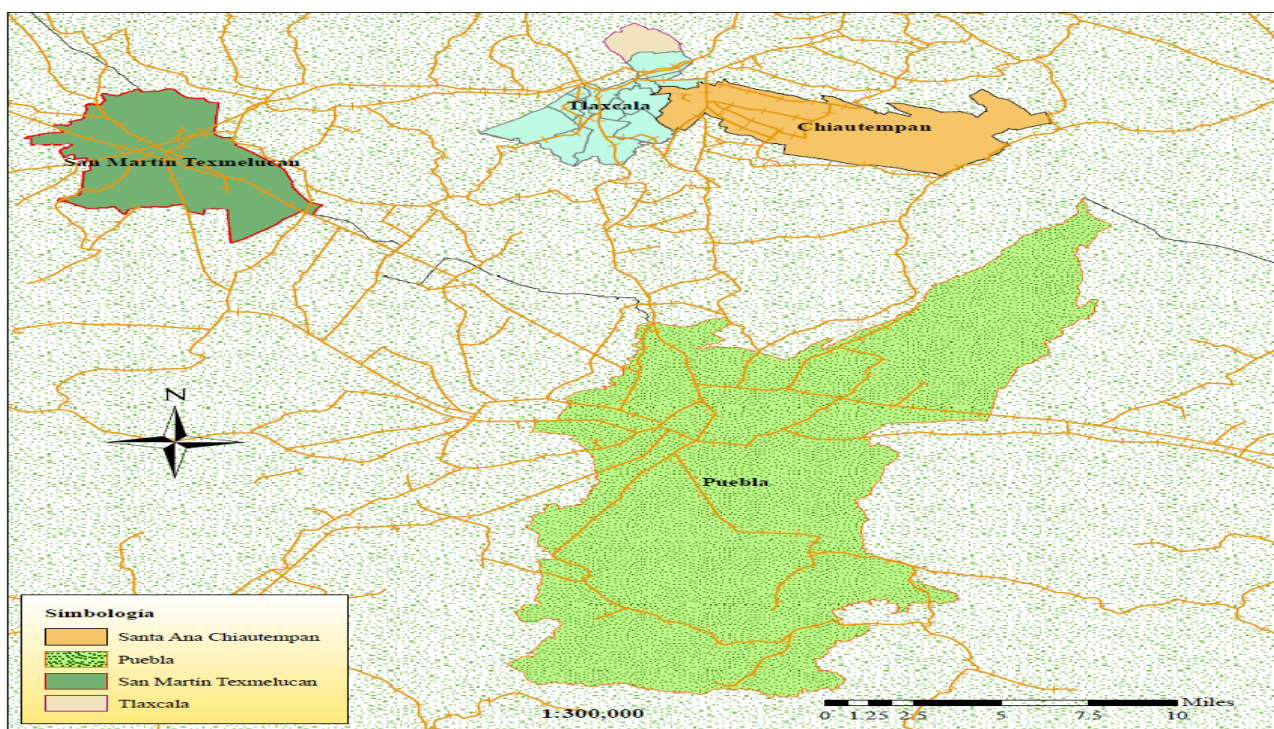
One of the disciplines which has studied perception is psychology where, in general terms is defined as a cognitive process of conscience which consists of the recognition, interpretation and signification for the elaboration of judgments about sensations gathered from the physical and social environments, in which other psychological processes intervene, including learning, memory and symbolization.

In the perception process there intervene ideological and cultural elements which reproduce and explain reality, and which are applied to different daily experiences for their ordering and transformation. Perception must

be understood as referring to the socio- historical situation, as it has space and time locations, and depends upon the changing circumstances and the acquisition of new experiences which introduce other elements to the previous conceptual structures, modifying and adapting them to the new conditions.

3. The Framework of Reference of the Investigation

The framework of reference for the investigation is constituted by the populations of four cities of Mexico's Central Region, of which two cities are in the state of Puebla (San Martín Texmelucan and Puebla) and the two other cities are in the state of Tlaxcala (Santa Ana Chiautempan and Tlaxcala), where a survey was conducted by the end of 2017 and the beginning of 2018 (Map 1).



Map 1 Location of the Geographical Area of the Study

Source: Own preparation with data from INEGI, 2017

The most recent data available show that in terms on Gross Domestic Product (GDP) the state of Puebla was well ahead of the state of Tlaxcala in 2014-2015, as it can be seen from the data shown in Table 1 (INEGI, 2017).

Table 1 Gross Domestic Product by State, 2014-2015 (Millions of Mexican Pesos at Constant Prices)

States	2014	2015
Puebla	425,693	435,028
Tlaxcala	72,749	75,578

Source: Own preparation with data from INEGI, 2017.

In terms of population, by 2017, the studied cities had the following structures: Puebla, with a total population of 1,539,819 inhabitants, with 734,352 male and 805,467 female; San Martín Texmelucan, with a total

population of 141,112 inhabitants, with 67,505 male and 73, 607 female; Tlaxcala, with a total of 89,795 inhabitants, with 42,529 male and 47, 266 female, and; Santa Ana Chiautempan, with a total population of 66,149 inhabitants, with 31, 651 male and 34,498 female.

The following expression was considered to determine the size of the sample for the survey:

$$n = \frac{Nz_{\alpha/2}^2pq}{(N-1)e^2 + z_{\alpha/2}^2pq}$$

where: n , is the sample size; z , the confidence level at 95% = 1.96; p , the negative variability 50 = 0.5; q , the positive variability 50 = 0.5; N , the population size, and; e , the error, equal to 0.1.¹⁵ The results from those calculations are shown in Table 2.

Table 2 Sample Sizes by City

City	Number of Questionnaires	Euivalence in %
San Martin Texmelucan, Puebla	66	17.18
Tlaxcala, Tlaxcala	66	17.18
Puebla, Puebla	186	48.4
Santa Ana Chiautempan, Tlaxcala	66	17.18
TOTAL	384	100%

Source: Own preparation with data from the survey

4. The Methodology and the Results From the Investigation

4.1 The Calculation of Indexes for Social Capital

As it was mentioned in the Introduction, this research project aimed at detecting the population's perception of public policies implemented to promote sustainable development in their communities. Thus, all of the calculations realized for the different analyses made in this study come from population's perceptions.

Four main questions relating to social capital which were included in the questionnaire represent the core of this study: 51 (satisfaction with social relations); 52 (trust on social actors and relations); 53 (participation in associations), and 54 (personal opinion about the associations).¹⁶ The responses to those questions were used to calculate partial indexes of social capital by applying the Linkert scale, and assigning values, depending upon the number of response options. Such indexes were then combined to obtain a General Social Capital Index, for the populations of each one of the four cities studied.¹⁷ The results from the calculations of all indexes are shown in

¹⁵ According to data from INEGI, the total population of the Puebla-Tlaxcala Metropolitan Urban Zone was 2 785,778 inhabitants in 2010 (Iracheta, 2012).

¹⁶ The questionnaire is included in full in the Appendix.

¹⁷ The method used to calculate the indexes are explained as follows. It is important to mention that only the questionnaires which had one option of response answered were considered. Then, considering question 51, if an individual answered option (1), a value of 0.0 was assigned; for option (2), a value of 0.25 was given; for option (3), a value of 0.5 was assigned; for option (4), a value of 0.75, and for option (5), a value of 1.0 was assigned. Thus, each element of the possible responses had a value for each individual. Then, an average of the values for all individuals was calculated for each element in each city. The same was done for all the elements of the question, and then, an average value was calculated for all the elements of question 51 for all the individuals of a certain city, thus obtaining the (Partial) Index of Social Capital corresponding to Social Satisfaction for the city, and the same was done for each one of the other cities. Similarly, with the responses to the different elements of question 52, a (Partial) Index corresponding to Social Trust was calculated. In the case of question 53, the values assigned to different responses were as follows: a value of 0.25 for answers (1), a value of 0.5 for answers (2), a value of 0.75 for answers (3), and a value of 1.0 for answers (4), proceeding then in a similar way as for questions 51 and 52, to calculate a (Partial) Index of Social Capital, corresponding to Social Participation. For the

Table 3.

Table 3 Partial and General Indexes of Social Capital

City	Satisfaction (Q. 51)	Trust (Q. 52)	Participation (Q. 53)	Opinion (Q. 54)	General Index
Puebla	(4) 0.603000	(4) 0.458210	(3) 0.261749	(2) 0.310084	(4) 0.4081451
S.A. Chiautempan	(1) 0.746069	(1) 0.523582	(1) 0.293432	(1) 0.310116	(1) 0.4683001
S. M. Texmelucan	(3) 0.650505	(3) 0.483939	(4) 0.246666	(4) 0.283670	(3) 0.4161953
Tlaxcala	(2) 0.664477	(2) 0.500000	(2) 0.266567	(3) 0.296020	(2) 0.4404617
Averages	(I) 0.665750	(II) 0.491250	(III) 0.267000	(IV) 0.300000	

Source: own preparation. The numbers inside parentheses show the place of the value of the Index in the order among cities.

4.2 The Indexes for the Different Types of Capital

Table 4 shows the indexes calculated for the different types of capital in the studied cities. The data in that table show that, in almost all cities considered, the local population perceives technological capital as the most noticeable one, followed by natural capital, while in all of the cities, their populations perceive that institutional capital and social capital are the least noticeable ones.

Table 4 Indexes of Different Types of Capital, by City, in the Puebla-Tlaxcala Metropolitan Zone

Types of capital	Puebla	Santa Ana Chiautempan	San Martín Texmelucan	Tlaxcala
Economic	(2) 0.773414855	(3) 0.746579602	(4) 0.764035296	(3) 0.801616915
Human	(4) 0.766304348	(4) 0.744169776	(3) 0.765144231	(4) 0.771688433
Natural	(3) 0.769248188	(2) 0.754975124	(2) 0.775883838	(1) 0.864427861
Institutional	(5) 0.751766304	(5) 0.732089552	(5) 0.737500000	(5) 0.757089552
Technological	(1) 0.786911232	(1) 0.789179104	(1) 0.791666667	(2) 0.807189055
Social Capital	(6) 0.408145139	(6) 0.468300166	(6) 0.416195286	(6) 0.440461724

Source: own preparation. The numbers inside parentheses show the place of the value of the Index in the order among types of capital.

4.3 The Calculations of Correlation Coefficients

The relationship between social capital and other aspects of development, perceived by the population of the cities in the Puebla-Tlaxcala Metropolitan Zone included in this research, was done with the help of Pearson's correlation analysis, and considering the different Indexes calculated from the responses to the questionnaire for all of the individuals included in the corresponding sample.¹⁸ As it was expected, the results show positive correlations among all types of Indexes in all cities considered. However, as it will be shown shortly, each city had its own particular behavior in this respect.¹⁹

case of question 54, a value of 1.0 was assigned to answer (1), a value of 0.0 was given to answer (2), and a value of 0.5 to answers (3), proceeding then to calculate a (Partial) Index corresponding to Opinion about Social Groups, for each city. The General Index of Social Capital was calculated considering, simultaneously, all the elements of the four questions. Thus, a General Index was calculated for each city.

¹⁸ According to Anderson et al. (2008), the correlation coefficient of Person's product-moment, is calculated by dividing the covariance into the multiplication of the standard deviation of x , by the standard deviation of y , as it is shown in the following equation: $r_{xy} = \frac{S_{xy}}{S_x S_y}$, where: r_{xy} , is the correlation coefficient; S_{xy} , the covariance; S_x , the standard deviation of x , and; S_y , the standard deviation of y .

¹⁹ The indexes for the other studied aspects of capital (economic, human, natural, institutional, technological), were calculated as it was done in the case of social capital, from the responses to questions in the relevant sections of the questionnaire. The main difference is that in those five cases, partial indexes were not calculated (as it was the case for social capital).

Table 5 shows the correlation coefficients found between social capital and the other different types of capital for the four studied cities. The data shown in that table suggest the existence of positive relationships in the cities which are the capitals of the respective states (Puebla and Tlaxcala), and coefficients with negative values (although non-significant) in some cases of the other two cities (San Martín and Santa Ana).

Table 5 Correlation Coefficients between Social Capital and other Types of Capital in the Cities of Puebla, San Martín Texmelucan, Santa Ana Chiautempan and Tlaxcala

Types of Capital	Cities			
	Puebla	San Martín Texmelucan	Santa Ana Chiautempan	Tlaxcala
Economic	(2) 0.280273067	(3) 0.077503544	(4) 0.068030753	(5) 0.305919441
Human	(1) 0.313066693	(1) 0.172088616	(3) 0.125089742	(2) 0.396043656
Natural	(4) 0.169326549	(5) -0.113842724	(5) -0.072280032	(3) 0.356238395
Institutional	(5) 0.140044752	(4) -0.012441763	(1) 0.267654023	(1) 0.407008812
Technological	(3) 0.274487884	(2) 0.15199012	(2) 0.205346846	(4) 0.327230041

Source: own preparation. The numbers inside parentheses show the place of the value of the Index in the order among types of capital.

It is also noticeable that the strongest relationships of social capital (that is, the highest correlation coefficients) in general are with human capital and institutional while the weakest ones are with natural capital and with economic capital. This was as expected since the social, human and institutional forms of capital refer to relationships that take place among the members of a society.

5. Final Comments

As it was said in the Introduction, this paper has the objective of presenting the results from an investigation into the perception of the population of the social capital in their communities, and how it is related to other different aspects of social development (economic capital, human capital, natural capital, technological capital and institutional capital).

Through the paper one could see that the analysis of the perception of social capital was made by virtue of the calculation of a series of partial indexes, built from the responses of the participants in the survey, as well as a General Index of Social Capital. Also, the analysis of the relationships between social capital and the other aspects of development was made through a comparison between cities of the results of the application of correlation analysis between the Index of Social Capital and the corresponding indexes of the other variables, calculated also from the responses to relevant questions of the questionnaire.

A comparative analysis of the partial indexes of social capital showed that the population of the two cities from the state of Tlaxcala value more the different aspects of social capital than those from the cities of the state of Puebla suggesting that the relationships which constitute social capital are stronger among larger cities with higher economic levels than among smaller cities without such advantageous conditions.

On the other hand, a comparison of the social capital index to the indexes for the other aspects of development considered showed that the population perceives that social capital is more comparable to the institutional capital in the cities of the state of Tlaxcala, while in the cities in the state of Puebla social capital compares more to human capital, but in none of the cities, social capital relates to natural capital. Finally, in all of the cities studied, technological capital is perceived as the most noticeable one, together with natural capital.

Finally, it is important to mention that the public's perceptions of the public policies to promote sustainable development, is not very optimistic, taking into account that their opinions about the authorities and public officials in general, neither show high levels of trust, nor high satisfaction from the relations they have with them.

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Appendix The Questionnaire

A) General Data

1. Place of residence: _____ 1a) Municipality: _____
2. Age: _____ 2a. Gender: M ___ F ___ 2b. Do you work? Yes ___ No ___
3. Occupation: _____
4. Civil status: Single ___ Married ___ Divorced ___ Widow ___ Free union _____
5. Complete studies of: a) Primary ___ b) Middle ___ c) High school ___ d) Technician _____
e) College _____ f) Graduate _____
6. Number of persons living at home: _____

B) Questions Related to Factors Which Influence Social Sustainable Development

(RESPONSES: 1. No answer; 2. Does not know; 3. In disagreement; 4. In agreement)

I) Economic Development	1	2	3	4
7. There have been programs of government support for entrepreneurial development				
8. There exists a place where one can get information about PYMES programs				
9. There is access and promotion of new technologies (computerized systems, internet and the like)				
10. There are conditions to start businesses				
11. Local resources are used for the realization of productive activities				
12. Own family enjoys a good quality of life				
13. Women earn as much as men do				
14. There are means of communication available and in good shape				
15. There are systems/centers of information which support productive processes				
16. There exist centers for promoting development (consulting and formation of human resources)				
17. There exist good conditions for family development				
II) Human Capital				
18. Services are of good quality				
19. The urban transportation systems are sufficient				
20. There exist programs, projects and actions to combat poverty				
21. There exist quality and quantity in educational services				
22. Women have access to the public decision making process				
23. The state has the capacity to retain its technicians and professionals				
24. There exist infrastructure for disabled persons				
25. There exist social participation in the development process (all sectors of society participate)				
26. There exist good conditions to achieve agreements among different social actors of the municipality				
27. There exist respect, conservation and care for the historic and cultural wealth				
28. The government relates closely with research centers, universities and the productive sector				
29. All members of the community count				
III) Natural Capital				
30. There are programs, courses and lectures on environmental education				
31. There is no pollution				
32. There is a good availability of water for the long run development				
33. There is a water-care culture				
34. There are green areas in the community				
35. The environmental normative is applied				

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IV) Institutional Capital					
36. There seems to be coordination among different government levels (federal, state and municipal)					
37. There is transparency on the expenditure of public resources					
38. Public servants are well prepared					
39. Public servants offer good attention to citizens regardless of gender					
40. Women can be integrated to public services under the same conditions as men					
41. There are instances which favor the cooperation between the public and private sectors					
42. Government works for the benefit of citizens					
43. Government promotes programs and policies in favor of women					
44. Citizens have equal opportunities to access public posts					
V) Technological Capital					
45. All citizens have equal access to the internet services					
46. Access to the wide band has grown (to internet through cellular phones, computers, and the like)					
47. The use of technology is adequate for the development of the community					
48. Access to internet has improved the quality of life of the members of the community					
49. Girls have a level of dominance of technology equal to boys'					
50. There is an improvement plan for the technological renovation of my community					

VI) SOCIAL CAPITAL

51. How do you feel with the following aspects of your life? *(mark one option only for each element)*

Elements	Highly unsatisfied (1)	Unsatisfied (2)	Indifferent (3)	Satisfied (4)	Highly satisfied (5)
a) Relationships with my neighbors b) Relationships with my friends c) Relationships with my family d) Relationships with my mate e) Relationships with my children f) Relationships with my colleagues at work g) Relationships with my boss at work h) My occupation/work i) The use of my free time j) The level of my income k) The level of my studies l) The level of my children's studies m) With politicians and authorities in general n) With my present conditions of life o) With my rights and obligations					

52. How much do you trust.....? *(mark one option only for each element)*

Element	No trust (1)	Low trust (2)	Regular trust (3)	High trust (4)	Complete trust (5)
a) People who live in the community b) Public servants c) Political parties d) The police force e) The military f) Spiritual and religious leaders g) Colleagues at work h) My family i) Teachers j) Friends					

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53. Indicate if you participate in groups or organizations in your community and how

Elements	How often do you participate?			
	Do not participate	Once a year	Once a month	One or more times a week
a) Cooperatives b) Unions c) Neighbors committees d) Parents/teachers associations e) Religious groups f) Study groups g) Sports/recreational/cultural clubs h) Self help associations i) Political party j) Other (specify)				

54. If you participate in a group or organization, comment on them (*mark only one option for each element*)

Elements	Yes	No	Do not know
a) The members of the organizations have political ideas similar to own b) The members of the organizations live in the same community c) The members of the organizations have a religion similar to own d) The leaders consult with the members of the organizations and then decide e) All members of the organizations receive the same benefits f) The organizations interact with other groups with interests similar to own g) There are supports for the organizations h) Know that own opinion is important for the organizations i) The organizations are trustful			

The Influence of Leader Member Exchange (Lmx) and Compensation on Employee Performance With Organizational Culture as Moderating Variable

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Abstract: This study aims to examine the influence of leader-member exchange (LMX) and compensation on employee performance by moderating organizational culture. The population of this study were employees at the Regional Personnel Agency (BKD) and the Financial Management Agency and Regional assets (BPKAD) of Pematang Regency, amounting to 116 employees while the sampling technique used was the census. Data were analyzed using SPSS version 22 by testing the instrument, testing the model and testing the hypothesis. The results of hypothesis testing shows that performance is affected positively by LMX as well as compensation meanwhile organizational culture also moderates the influence of both LMX and compensation on the performance.

Key words: leader member exchange (LMX); compensation; performance; organizational culture

JEL code: M12

1. Introduction

Organization is a social unit that is consciously coordinated with a boundary that is reactive and can be identified, works continuously to achieve goals. In an organization, Human Resources (HR) as a planner, mobilizer and thinker for the achievement of organizational goals (Robbins, 2009). HR is the key that determines the success of an organization, so there is a need for good HR management to achieve organizational goals.

Today's HR management is undergoing very rapid changes, in terms of economy, globalization, domestic diversity and technology that have created new demands for organizational needs (Stone & Deadrick, 2015). HR is one of the main roles in an organization, so HR management needs to get more serious attention. The problem concerning HR management is the decline in employee performance, as a result decreasing in the realization of organizational performance in general, because employee performance is the foundation of organizational

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performance (Gibson et al., 2014).

Many factors can influence employee performance, including: employee characteristics, compensation or appreciation and motivation (Gibson et al., 2014). Employee Characteristics are related to psychology and social psychology, namely the relationship between attitudes, perceptions, personalities, norms and performance. A leader cannot ignore the characteristics of his employees as well as employees against their leaders. This is the first factor that is very dominant in influencing employee performance improvement, namely the Leader-Member Exchange (LMX). LMX has a positive influence on improving employee performance related to the relationship between superiors and subordinate.

From a leadership perspective, LMX is defined as the quality of relations between superiors and subordinates, how they can give and need each other, so that this can be an important source of motivation to improve performance (Martin et al., 2016). Employee commitment to leadership can have a more significant impact on employee performance, compared to employee commitment to the organization. Thus commitment to the organization will be created if employees have a commitment to their leaders. So that good communication between leaders and subordinates is very important to foster trust, responsibility and high loyalty to the organization, this can be a motivation to be able to further improve employee performance.

The second factor is compensation, as an important determinant in improving employee performance (Wade et al., 2006; Hartmann & Slapničar, 2012). Organizational culture is a management tool to achieve goals (Sigit, 1993). Strong organizational culture will lead to loyalty to employees that have an impact on improving performance (Robbins, 2015).

Another factor that affects performance is organizational culture (Robbins, 1998). Organizational culture is a system of shared meaning that is embraced by members of an organization that differentiates organizations from one another. Organizational culture provides the right standards about what employees may and may not do. Through socialization by top management of organizational culture will affect performance (Robbins, 2013).

In Martin's research et al. (2016) shows that LMX has a positive and significant relationship in improving employee performance. The results of the different studies stated that LMX had a positive but not significant effect on employee performance (Hutama & Goenawan, 2016). Other studies also state that LMX results do not directly affect employee performance (Kartika & Suharnomo, 2016).

Compensation in the form of intrinsic reward has a positive and significant influence on employee performance (Shahzadi et al., 2014). The analysis was corroborated in another study which stated that motivation and compensation had a positive and significant effect on employee performance (Martinus & Budiyanto, 2016) (Nurchayani & Adnyani, 2016). However, other studies have different results, namely that compensation does not have a significant effect on improving employee performance (Arifin, 2017). The study reinforces other previous studies, which stated that financial compensation did not have a significant effect on both work motivation and employee performance (Riyadi, 2011).

Research by Klaimer et al. (2006) shows that organizational culture is a moderating variable between fairness to LMX. The same thing was stated in the study by Ree et al. (2013) which stated that the culture of collectivism was a significant predictor of the four dimensions of LMX while individualism was not. On the other hand it is proven that organizational culture influences performance, Shabbir et al. (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Parker (2002) states that the compensation system is influenced by two cultures, namely organizational culture and local culture. The results of the study by Zhan Su and Yeganeh (2011) show that organizational culture

is an important factor in human resource management and has a partial and moderate influence in determining compensation. Based on the things mentioned above, it is necessary to do research again, to confirm how the influence of LMX variables and compensation in improving employee performance by moderating organizational culture.

Based on Government Regulation Number 46 of 2011 concerning Civil Servant Performance Evaluation and Regulation of Head of State Civil Service Agency number 1 of 2013 concerning Implementation Guidelines for Work Achievement Assessment, the employee performance used in this study uses indicators of work performance assessment that are included in employee work goals (SKP).

The average work performance of employees at BKD has decreased significantly in all aspects. The most significant decrease is in the commitment factor with an average of 77.90 in 2017, whereas in 2018, on average there is an increase, although a little, the highest increase is in the discipline factor, with a value of 86.50, the difference is 8.58 higher than in 2017. BPKAD also showed a drop in 2017 and then began to improve at the end of 2018. The most significant decrease was in employee discipline, with an average value of 2017 at 79.89 lower than 5.11 the previous year. But it starts to look better at the end of the 2018 assessment, with the highest increase in the factor of cooperation with a value of 86.00 greater than 6.00 compared to 2017.

No different from SKP, employee work behavior has not shown a better change, although there is an increase at the end of 2018, but the increase is still very low. The inauguration of structural officials simultaneously with a considerable number occurred in the beginning of 2017, also led to a relationship between the leadership and subordinates that needed a fairly long adjustment, this has an impact on reducing employee work values in 2017.

In general, the results of an assessment of the performance of employees in BKD and BPKAD in Pematang Regency through a performance appraisal system and electronic presence that is monitored directly in BKD Regency of Pematang show the following:

a) Communication between superiors and subordinates is still not well established, this is indicated through the appraisal process in the performance appraisal application that should be directly directed by all executors, but there are still many that have not been done;

b) There is no instrument for awarding compensation in accordance with the performance of each employee, compensation is given equally to all employees, resulting in no clear work motivation in achieving the objectives of the organization;

c) The process of changing leadership is not carried out with transparent periods and instruments, this results in the absence of clear motivation to improve performance. The rapid turnover process will also have an impact on job adjustments and communication among problem employees.

Based on the results of different studies between researchers with one another and based on the phenomenon of gaps in the research object, the research problems are as follows:

- 1) How does LMX affect on performance
- 2) How does compensation affect on performance
- 3) How is the role of organizational culture in moderating the influence of LMX on performance
- 4) How is the role of organizational culture in moderating the influence of LMX on performance

2. Literature Review

2.1 Performance

Performance is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him (Mangkunegara A. P., 2009). Civil Servants (PNS) use the Government Regulation of the Republic of Indonesia Number 46 of 2011 where quality and quantity are contained in the Employee Performance Target (SKP) and Work Behavior consisting of elements:

- 1) Employee Performance Target (SKP) which covers aspects: quantity, quality, time and cost.
- 2) Work behavior includes aspects: service orientation, integrity, commitment, discipline, cooperation, and leadership.

2.2 Leader Member Exchange (LMX)

Leader member exchange is defined as a multidimensional relationship between superiors and subordinates consisting of four dimensions, namely contribution, loyalty, affection and respect for the profession (Liden & Maslyn, 1998).

2.3 Compensation

Compensation is something that employees get as their service contribution to the company, there are 2 (two) dimensions proposed by Rivai and Sagala (2010), namely:

- 1) Direct compensation is compensation that is directly felt by the recipient, namely in the form of salaries, wages, incentives are employees' rights and the company's obligation to pay it.
- 2) Indirect compensation is additional compensation given based on company policy towards all employees in an effort to improve the welfare of employees. Examples include facilities, such as: insurance, allowances, pensions, etc.

2.4 Organizational Culture

Organizational culture is a system of shared meanings adopted by its members that differentiates organizations from one another (Robbins, 1998). Measurement of Organizational Culture uses 2 dimensions (Pearce & M. Khalid, 1993), namely:

- 1) Bureaucratic practice consists of obedience to rules and clarity of purpose
- 2) Traditional practices consisting of work are private property, evaluation criteria (assessment) are based on not achievement and nepotism

2.5 The Relationship Between Variables and the Development of Hypotheses

2.5.1 The Relationship between LMX and Performance

The relationship between leader member exchange with employee performance is very big, because the boss has the task to lead directly and must have a good interaction with his subordinates. This is supported by a theory that explains Leader member exchange which is a dynamic two-way relationship between leaders and subordinates where a leader treats his subordinates differently according to the time and abilities possessed by superiors (Graen & Cashman, 1975). A good relationship between leaders and employees is expected to improve company performance. The results of the analysis of the relationship between variables have been presented in several research results where LMX has a positive and significant relationship as a work motivation factor to improve employee performance (Erdogan & Liden, 2006; Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016).

Other research that supports states that Leader Member Exchange has a significant influence on employee performance (Christian, 2012). From the above research, the following hypothesis is proposed:

Hypothesis 1: LMX has a positive effect on employee performance

2.5.2 The Relationship Between Compensation and Performance

Compensation is one way companies can provide in the form of rewards to employees. Compensation can increase or decrease employee performance. Compensation is all income in the form of money, direct or indirect goods received by employees in return for services provided to the company (Hasibuan, 2012). With another explanation, compensation is anything received by employees which is a form of appreciation and appreciation of the organization for the contribution of thought and energy in order to support employee performance. Analysis related to previous research states that compensation in the form of intrinsic reward has a positive and significant effect, both in relation to motivation and with employee performance (Shahzadi, Javed, Pirzada, Nasreen, & Khanam, 2014). This is reinforced in other studies which state that motivation and compensation have positive and significant effects on employee performance (Martinus & Budiyanto, 2016; Nurcahyani & Adnyani, 2016).

Based on this the hypotheses proposed in this study are:

Hypothesis 2: Compensation has a positive effect on performance

2.5.3 The Relation of LMX on Performance Moderates by Organizational Culture

Organizational culture provides exact standards of what employees can and cannot do. Through socialization by top management, organizational culture will influence performance (Robbins, 2013).

Research by Klaimer et al. (2006) shows that organizational culture is a moderating variable between fairness to LMX. The same thing was stated in a study by Ree et al. (2013) which stated that collectivism culture was a significant predictor of the four dimensions of LMX while individualism was not. On the other hand it is evident that organizational culture influences performance, Shabbir et al. (2012), Shafiq & Ahmed (2014) and Musiega (2014).

Based on this, it is formulated:

Hypothesis 3: Organizational culture moderates the influence of LMX on performance

2.5.4 The Relation of Compensation on Performance moderates by Organizational Culture

Parker (2002) states that the compensation system is influenced by two cultures namely organizational culture and local culture. The results of studies by Zhan Su and Yeganeh (2011) show that organizational culture is an important factor in human resource management and influences partially and moderately in the form of compensation.. On the other hand it is evident that organizational culture influences performance, Shabbir et al. (2012), Shafiq & Ahmed (2014) and Musiega (2014).

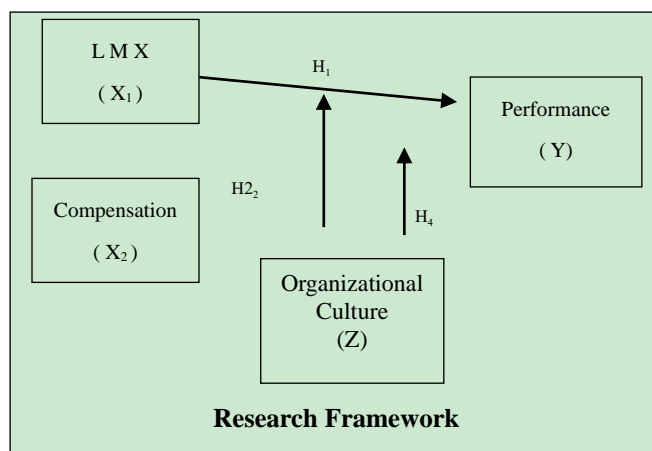
Based on this it is formulated:

Hypothesis 4: organizational culture moderates the effect of compensation on performance.

3. Research Framework

The relationship between variables and hypotheses is illustrated in the graphical model below:

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3.1 Methods

Primary data collection using a questionnaire, which was distributed to employees on the BKD and BPKAD Pemalang Regency as many as 116 respondents. To measure these perceptions, a Likert scale 1-7 is used. The population of this study were all employees of BKD and BPKAD Pemalang Regency as many as 116 respondents. The sampling technique used is the census, that is, all members of the population are used as samples, which are 116 respondents.

3.2 Definition of Operational Variables

Performance (Y) base on Civil Servants (PNS) use the Government Regulation of the Republic of Indonesia Number 46 of 2011 consist of Employee Performance Target (SKP) with indicators

quantity (Y1.1) , quality (Y1.2), time (Y1.4) and Fees (Y1.5) and Work behavior with indicators Service Orientation Y1.6 Integrity Y1.7 Commitment Y1.8 Discipline Y1.9 Cooperation.

LMX (X1) base on (Liden & Maslyn, 1998) consist of Affect, contribution and loyalty. Indicators of affect are: X1.1 Familiarity X1.2 Concern X1.3 Interpersonal relationships. Indicators of contribution are X1.4 Work beyond the duties and responsibilities X1.5 Trust X1.6 Will sacrifice Integrity and Loyalty with indicators are X1.7. Loyalty to superiors X1.8 Support each other in all situations X1.9. Stay in the organization X1.10 Respect for superiors X1.11 Amazed at the reputation of the boss X1.12. Mutual attention.

Compensation (X2) base on Rivai and Sagala (2010) consist of direct compensation and indirect compensation with indicators for direct compensation are: X2.1 Salary X2.2 Honor X2.3 Incentives and indicators of indirect compensation are X2.4 Insurance X2.5 Benefits X2.6 Pensions money.

Organizational Culture (Z). Measurement of Organizational Culture uses 2 dimensions (Pearce & M Khalid (1993), namely: Bureaucratic practice and Traditional practices.

Indicators of Bureaucratic practice are :Z.1 promotion based on work performance, Z.2 employees are very difficult to get out of the organization, Z.3 Carrying out low quality work exacerbates the possibility of being promoted, Z.4 Very good at carrying out easy work will receive a higher reward, Z.5 Clearly defined goals, Z.6 It's easy to explain the goals the organization wants to achieve, X.7 Carrying out good quality work makes developing abilities, while the indicators of traditional practises are Z.8 Assume that the work is private property, Z.9 Cross-cutting cooperation is lacking in this organization, Z.10 A lot of information that cannot or is very slowly disseminated between departments, Z.11 Easily obtain information from other fields, Z.12 There are clear limits

on employee actions, Z.13 Best employees who can occupy the top positions in the organization, Z.14 “Connection” or “know well” is more important than the achievement of good work in achieving progress in the organization, Z.15 “Good image”, Z.16 Pay increases are based on work performance, Z.17 Promotion is only based on work performance, Z.18 Use work to help acquaintances or their families, Z.19 Using one’s position to help a colleague or family, Z.20 Do not feel proud to be a member of the organization, Z.21 Nepotism exacerbates the achievements of this organization.

4. Results and Discussion

4.1 Results

4.1.1 Description of Respondents

There were male were 57.8% male and 42.2% female respondents. It shows that currently the number of respondents on the BKD and BPKAD in Pemalang Regency is dominated by male employees. The age profile shows that respondents are dominated by employees aged 41-50 years as many as 53 people or 45.7% of the total respondents. The group category reflect the highest number of respondents who belongs to the third group with 81 people or 69.8% of the total respondents, The largest working period is between 11-15 years with a total of 33 people or 28.4% of the total respondents. The last is education, most respondents are graduated from undergraduate (S1)/college (DIV) as many as 46 people or 39.7% of the total respondents.

4.1.2 Instrument Testing

(1) Test Validity

Based on the results of the validity test it is known that all the variables studied, namely LMX, compensation, performance and organizational culture have the required sample adequacy value, namely KMO greater than 0.5, and the value of loading factors for all items studied greater than 0.4 so that it is declared valid except Z16 and Z21 which were not included in the subsequent analysis.

(2) Reliability Test

The reliability test results showed that all the variables studied had Cronbach’s alpha value of more than 0.7 so that they were all reliable.

(3) Regression Analysis

The regression test results are shown in the Table 1.

Based on the table, it can be seen that the LMX regression coefficient has a positive and significant effect on performance, meaning that the better the boss’s relationship with subordinates (LMX), the performance will increase. Compensation has a positive and significant effect toward performance, it means that the higher compensation will improve the performance.

The results of the interaction of organizational culture variables with LMX, shows negative values means that organizational culture weaken the influence of LMX on performance (Table 1). Likewise the results of the interaction of organizational culture with compensation shows a negative value which means that organizational culture weaken the influence of compensation on performance.

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Tabel 1 The Result of Regression

Model	Adjusted RSquare	Uji F		Uji t		Keterangan
		F	Sig	B	Sig	
Equation • LMX on performance • Compensation on performance	0,781	206,330	0,000	0,610 0,323	0,000 0,000	First Hypothesis accepted Second Hypothesis accepted
Moderation • Interaction of organizational culture on LMX • Interaction of organizational culture on compensation				-1,114 -1,651	0,002 0,000	Third hypothesis accepted Fourth hypothesis accepted

Source: Primary data processed (2018).

(4) Model Test

Determination Test

Based on Table 1 it is known that Adjusted R Square 0, 781 means that the performance variable can be explained by LMX variables and compensation of 78.1% and the remainder is explained by other variables outside the model.

Test F

The results of the F test show that the calculated F value is 206.330 with a significant probability of 0.000 less than 0.05, which means that LMX and compensation variables simultaneously influence the performance of BKD employees and BPKAD in Pematang Rejang Regency.

Hypothesis testing

H1: LMX has a positive effect on performance

The regression results show that the LMX beta standardized coefficient on performance is 0.610 and the significance level of 0.000 is smaller than 0.05, it can be concluded that hypothesis 1 which states LMX has a positive effect on performance were accepted.

H2: Compensation has a positive effect on performance

The beta standard standardized coefficient on compensation for performance is 0.323 and the significance level of 0.000 is smaller than 0.05, it can be concluded that hypothesis 2 which states compensation has a positive effect on performance were accepted.

H3: Organizational Culture moderates the effect of LMX on Performance

The results of the interaction of organizational culture with LMX are indicated by the standard value of standardized beta coefficient of -1,114 and the significance level of 0.002 is smaller than 0.05, it can be concluded that hypothesis 3 states that organizational culture moderates the effect of LMX on a performance were accepted.

H4: Organizational Culture moderates the effect of Compensation on Performance

The results of the interaction of organizational culture with compensation are indicated by the standard value of the standardized beta coefficient of -1.651 and the level of significance of 0.000 is smaller than 0.05, it can be concluded that hypothesis 4 states that organizational culture moderates the effect of compensation on performance were accepted.

4.2 Discussion

4.2.1 Effect of LMX on Performance

The results of the LMX hypothesis test on performance indicate that LMX has a positive and significant effect on performance, with a standardized beta coefficient of 0.610 and sig. 0,000. To create good organizational conduciveness, LMX or the relationship between superiors and subordinates must be well established so as to improve employee performance. In accordance with the theory put forward by Erdogan & Liden (2006), which defines LMX as the quality of the relationship between superiors and subordinates, how they can give and need each other, so as to improve performance.

Growing a family atmosphere, mutual need, empathy while still respecting and obeying the rules that are set, so that it can create a good relationship between superiors and subordinates is a major need to improve performance. This is in line with the results of Berdicchia (2015), Martin et al (2016), and Yildiz & Duyan (2018).

Effect of Compensation on Employee Performance

Compensation is all income in the form of money, goods directly or indirectly received by employees in return for services provided to companies (Hasibuan, 2012). In this study, compensation has a positive and significant effect on employee performance, as evidenced by the value of beta standardized coefficient on compensation for performance of 0.323 and its significance level of $0.000 < 0.05$. Compensation greatly affects the increase or even decrease in employee performance if it is not in line with expectations.

With the compensation that is actualized in the form of salary, allowances, facilities or other things that can provide comfort and fulfill the needs of employees, the employee can focus more on improving his performance. It can also be a reference in improving employee performance so that the compensation obtained is not reduced, or can even be increased if the performance is increased. The results of this study support previous findings by Arslan et al. (2014), which states that compensation has a positive effect on employee performance. Similar results by Robert et al. (2017) state that employee incentives have a positive impact on employee performance.

4.2.2 Organizational Culture moderates the LMX Effect on Performance

Organizational culture is a guide to organizational members in solving problems of internal integration and external adaptation (Schein, 1985). In the government institution the guide behaves can be in the form of bureaucratic and traditional practices (Pearce & M. Khalid, 1993). One practice of bureaucracy is obedience to rules and clarity of purpose. This has been shown to moderate the influence of supervisor and subordinate relations on performance. the value of interaction between LMX and the performance of -1,114 with a significance of $0.002 < 0.005$. However, because the practice of nepotism is still thick at this institution, the organizational culture weakens the influence of LMX on performance, in accordance with the results of the research by Klaimer et al. (2006) weaken the influence of interactional and distributive justice on LMX.

Organizational culture moderates the effect of compensation on performance

Compensation through increasing Income Improvement Allowances (TPP) in early 2018, has a positive impact on employees in improving their performance. The results of the moderation test indicate that compensation has a positive effect on performance moderated organizational culture. Organizational culture in the object of research, especially the provision of incentives and promotions that are not based on work performance, weakens the effect of compensation on performance. This is shown in the results of the interaction between organizational culture and compensation of -1.651 significance $0.000 < 0.005$. This result is in line with Parker's (2002) writing which states that Japanese culture links between incentives and performance.

5. Conclusion

LMX has a positive and significant effect on performance, compensation has a positive and significant effect on performance, organizational culture moderates both the influence of LMX on performance and compensation for performance.

Implications:

1) Implications of Theory

Based on the results of research conducted shows that:

- (a) LMX has a positive and significant effect on performance
- (b) Compensation has a positive and significant effect on performance
- (c) Organizational culture moderates (weakens) the influence of LMX on performance
- (d) Organizational culture moderates (weakens) the effect of compensation on performance

2) Managerial Implications

(a) It is proven that organizational culture moderates both the influence of LMX on performance and compensation on performance, but the role of organizational culture weakens the influence of LMX on performance and compensation on performance. This implies managerial implications in BKD and BPKAD of Pematang Regency to improve organizational culture especially related to LMX's relationship to performance by eliminating nepotism practices, while the relationship of compensation to performance is done by providing incentives for prestigious work and practicing promotions based on performance appraisal .

(b) Improving employee performance is done by improving the relationship between superiors and subordinates in particular emphasizing the importance of carrying out tasks that although not their responsibilities but are important to do to better support organizational goals when the leader is able to set an example of this.

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Organizational Ambidexterity: A Corporate Contemporary Approach

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Abstract: The objective of this work is to review the last approaches that deal with strategic management, mainly in the organizational ambidexterity. Such interest is due to the multiplicity and divergence of roles in companies, to which individuals need to constantly innovate. Specifically, we point to the relevance of how individuals identify and enact this multiplicity of role demands with interaction with other organizational functions.

Key words: strategic management; organizational ambidexterity; performance

JEL codes: M1

1. Introduction

With the advance of globalization in the 21st century, business competition has increased substantially and the life cycle of products has decreased. As a consequence, organizations had to learn to deal with various internal and external demands on a daily basis, which, most of the time, simultaneously. Of these demands, the most frequent are efficiency and flexibility, customer service and prospecting for new customers, differentiation strategies and trade-offs. This combination of demands fosters the need to achieve organizational ambidexterity, which is the ability to gather competencies to innovate and to increase its efficiency, combining innovation with attention to products, services and processes already established (March, 1991).

Ambidexterity can change the strategic focus of the organization of the exploration of new competences (exploration) and the exploitation of current competences (exploitation) and vice versa over time; they can establish a specific organizational design with specialized units responsible for any innovation; or they can establish an organizational context that allows all members of the organization to oscillate on different occasions between exploration and exploitation. As such, the tensions and contradictions associated with exploration and exploitation are resolved over time, that is, over time; structurally, through specialized units or contextually, incorporated into the culture and daily behavior of all members of the organization (March, 1991).

However, according to Levinthal and March (1993) companies that focus only on exploration or exploitation, run the risk of being stuck in sub-optimal productivity, putting their long-term organizational survival at risk. And getting stuck is very easy, since consumption or exploitation are self-reinforcing processes that tend to complement each other. In particular, the detrimental effect of stagnation of skills or innovation is demonstrated by numerous studies in different fields that use notions such as the success trap, the capacity paradox versus rigidity, the passion paradox of discipline and the tyranny of success.

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Therefore, in the research conducted, he observed that the influence of strategic planning on organizational ambidexterity has been little investigated in the current literature. Given the fundamental importance of strategic planning in the management of the institution. as an enabler or coercive, he noticed that the innovative leaders, did not allow the strategic planning to create harmful effects on the current competences, restricting the employees' uneasiness or dissatisfaction, but, when the leadership has no aspect for innovation, the company's operationality makes it complex and unstructured.

In view of this, the following work seeks to search for strategic management practices reported in the researched literature. What innovations are companies making? What are the determining factors to achieve organizational ambidexterity?

In the next chapter, we describe the literature review based on the visit of the highlighted articles as a support base for the construction and explanation of the thematic content of this research.

In chapter 3, we find the research methodology and the bibliometric study used in the development of the theme.

Soon after, in chapter 4, we pointed out the conclusion of the theme in order to answer the questions presented and proposed contribution to the theme.

Then we bring in chapter 5 the references used in the set of work.

2. Literature Review

In view of the complexity of organizational relationships, where, all decisions made involve directly or indirectly the application of resources and strategy. For the management of these decisions to occur, proportionality in the application of resources is necessary, so that exploration and exploitation are carried out together, improving performance and ensuring continuity. Therefore, the organization must seek efficiency, effectiveness and compliance (exploitation) and, at the same time, implement creativity and the exploitation of its resources (exploration).

Organizational ambidexterity provides learning through internal knowledge, incorporated throughout the organization, bringing quicker returns when used for routine solutions, incremental innovations and search for less risky solutions. Learning from knowledge or external specialized information, due to its more unstructured nature, takes more time to be incorporated or socialized internally and especially, it presents a more uncertain return, with greater risk. In the long run, however, such knowledge may prove to have the greatest impact for more beneficial solutions for the organization.

Several scholars argue that successful organizations are ambidextrous: they generate competitive advantages through revolutionary and evolutionary changes, or exploitation and exploration innovation. They also believe that ambidextrous companies can compete in mature markets (where cost, efficiency and incremental innovation are critical) and develop new products and services for emerging markets (where experimentation, speed and flexibility are critical). Thus, they are likely to achieve better performance than companies, emphasizing one over the other (Diaz-Fernandez, Pasamar-Reyes & Valle-Cabrera, 2017).

The concept of ambidexterity is also implicit in the most recent conceptualization of dynamic capabilities that suggest that these capabilities require a mix of the strategic logics of exploitation and exploration (Eisenhardt and Martin, 2000). Therefore, organizational ambidexterity is considered as a dynamic capacity that goes beyond passing from one configuration of competencies to another, but, on the contrary, it addresses multiple inconsistent

demands simultaneously (Jansen et al., 2009). Second, exploiting existing capabilities is often necessary to explore new capabilities, in which, it improves a company's existing knowledge base (Katila & Ahuja, 2002).

For March (1991, p. 7), exploitation and exploration are “essentially different learning activities, among which, they compete with the company's attention and scarce resources”. Therefore, in order to implement organizational ambidexterity, companies must show skill in activities to take advantage of current capabilities (exploitation), as well as in activities for prospecting new skills and exploring new opportunities (exploration). Exploration is related to the managerial capacity of creation, innovation, experimentation, risk management, change, flexibility, research and discovery, and exploitation is related to improvement, flexibility associated with refinement, adaptability and efficiency of products or services. For the harmonious functioning of these two activities, an organizational engagement is necessary, mainly of the structures and strategies.

Therefore, even if there are sometimes conflicts between demands, in order to increase competitiveness and performance, a balance between exploitation and exploration is necessary, only then will longevity and success come. Focusing too much on exploiting current capabilities may lead the organization to a state of balance below ideal, while focusing only on gaining new capabilities may involve high costs of experimentation, many ideas to be developed and few distinctive skills. Thus, achieving a balance between such distinct activities that compete with each other for scarce resources is a primary factor for the organization's survival and prosperity (Levinthal & March, 1993).

However, due to the past success of a company with its current capabilities, it may happen that the company continues to exploit these strengths thinking that it does not need to innovate, which can lead to poor performance in the long run. In contrast, overexploitation of creation can lead to many underdeveloped innovations that may not contribute to the company's revenue. When revenue streams run dry, the resources needed to properly develop innovations will evaporate in a similar way, leading to a “failure trap” — a vicious cycle of searching for new ideas that will inevitably be immature and need to be replaced by even less developed ideas. How less resources are left. Given these self-reinforcing and potentially self-destructive trends in exploration and exploitation, simultaneous search is difficult for organizations and requires continuous and proactive management to avoid the “common pitfalls” that exploration drives out exploitation or vice versa (Posch & Garaus, 2019).

To find a balance between these two facets of ambidexterity, an organization needs to develop an ambidextrous culture aimed at performing repetitive tasks, while stimulating innovation and risk taking in the organization. As the ambidextrous organizational culture requires the integration of two distinct cultures (exploration and exploitation) in an organization, it is conceptualized as a synergistic effect of performance-oriented and innovation-oriented cultures that operate optimally. Performance orientation is the degree to which an organization encourages and rewards group members for improving performance and excellence. The orientation towards innovation is the extent to which creativity, risk-taking and the entrepreneurial mindset are supported in the organization. The performance-oriented culture focuses on completing tasks, improving organizations' ability to explore. On the other hand, innovation-oriented cultures promote critical thinking, the generation of ideas and the risky behavior necessary to exploit market opportunities. Production and innovation reinforce each other, constituting a higher order construction of the ambidextrous organizational culture, which, in turn, enables contextual ambidexterity through the integration of exploration and exploitation in a business unit (Khan & Mir, 2019).

2.1 The Roles in Organizational Ambidexterity

Organizations position individuals within organizational contexts by assigning roles (for example, functional or hierarchical roles). Individuals develop role identities to make sense of these roles, to generate an understanding of themselves, but also to position themselves in the broader organizational context. Role identities are the codification of values, beliefs, norms and behavioral assumptions assumed by the role. However, individuals charged with addressing the exploration and exploitation dilemma need to be able to fulfill multiple, possibly conflicting roles. In doing so, these individuals must deal with very different values, contextual knowledge and behavioral expectations that reflect the divergent demands of exploration and exploitation. Thus, role identities have a significant influence on the assessment of available information and on the decision alternatives considered (Tempelaar & Rosenkranz, 2019).

Individuals have innate, invariable, and deeply ingrained preferences in how they erect a "mental barrier" around different role identities. In the so-called role transition, individuals differ over a continuous segmentation of roles and integration of roles. The former adheres to a strict delineation of role identities, and the latter accommodates or actively seeks similarities between role domains. They cognitively isolate information to focus on demands in a unique way, which in turn helps them to protect themselves from conflicts and interruptions of roles. However, segmentation requires more effort (that is, cognitive investment) to move between paper identities, due to the robust limits between them. Identities also function as information filters, highlighting important issues and masking irrelevant issues (Tempelaar & Rosenkranz, 2019).

On the other hand, individuals with a preference for role integration tend to obscure roles, leading to congruence between activities of different role identities due to the active overlap of role characteristics. Therefore, integrators are more flexible, as they perceive less differences in terms of behavioral expectations, allowing them to change easily and frequently between functions. This flexibility also facilitates the synergistic use of information for possible positive externalities in different domains in the coordination of activities (Tempelaar & Rosenkranz, 2019).

The diversity of a cross-functional team will create a new context within which the segmenter is likely to experience a certain mismatch. In their need to accommodate, segmenters are driven to create new roles that meet the new demands of the cross-functional context and respect the values, beliefs and objectives of the multifunctional environment. As a consequence, information that previously needed to be collected within individual role limits between the role segmenter and other members of the organization can now be accessed through the unique role domain within which it resides (Tempelaar & Rosenkranz, 2019).

Another important factor, organizations will only be able to be ambidextrous if they have processes, systems and policies that allow and encourage employees or employees to have the autonomy to judge how to divide their time between simultaneous demands. With globalization, the market requires companies to have their representatives simultaneously engaged in two activities related to customers: the provision of services referring to the support provided by the frontline employee, helping him to solve his need, complaint or problem through customer service or a new solution and sales, specifically cross-selling or enhanced during service, seeking to further satisfy customer needs not met by the current product or service (Khan & Mir, 2019).

During the performance of services, the employee who is in contact with the customer, becomes the representative or personification of the company, therefore, he must look for opportunities to solve problems and, consequently, offer new products or services, creating opportunities for cross-sell. Offering an additional item to

the customer while providing a customer service, in addition to being an efficient practice of increasing the volume of revenues, can improve the customer's shopping experience with the new product. The results will be the achievement of corporate and individual goals, and in a degree of importance, customer satisfaction and loyalty.

However, it will be necessary to improve or implement new tools to control these activities and the actions of employees, and training to create and improve the employee's sense of self-regulation, marked by a high level of action orientation. Since there is a conflict between service provision and cross-selling it can be an obstacle for employees to develop ambidextrous behavior. Specifically, there may be a conflict between the efficiency objective, expected in service activities, and revenue objective, expected in sales activities. Employees must aim for goals such as customer satisfaction and billing, which require greater dedication to customer needs, while at the same time seeking efficiency in routine service activities. Therefore, organizations must create a context that minimizes the individual's difficulties in adopting ambidextrous behavior. This context refers to the combination of individual and organizational factors that allows the individual to better manage the way he will use resources in both activities, aiming to improve performance.

2.2 Psychological Ambidexterity

Regarding the psychological character, the evaluation needs to be carried out on the results and achievements, but also in relation to what was done to be achieved. This will create a know-how and expertise for the company. Enabling a standardization and institutionalization of processes and differentiation from the competition. This double analysis (means and ends) implies that the value of a decision is determined not only by the result generated (end), but also by the form (means) in which it was achieved. The adequacy between means and ends comprises part of the studies on the regulatory way to achieve goals.

The evaluation brings another significant bias, makes the employees direct part of their time to the preparation and the evaluation of the available means to perform a certain action, being concerned with the quality of the result of their actions, critically comparing alternatives, means and objectives before to do something. Employees with this profile frequently evaluate themselves in relation to the standards and expectations that third parties make about them and worry about how their performance will be perceived. Thus, people oriented to evaluation are more emotionally unstable when faced with great differences between their current state and the desired state. The examples from Google and 3M illustrate this point. At Google and 3M, employees can spend a certain amount of time on freely selected projects. Although this policy is put into practice by management, it is the members of the organization, located at all levels, who are faced with the issue of dealing with the tensions between exploration and exploitation activities. As such, this policy illustrates the organizational background and prerequisites for these achievements at the individual level (Martin, Keller & Fortwengel, 2019).

To manage ambidexterity, it is necessary to focus on individual knowledge structures that allow employees to conduct mental dialogues and help develop diverse perspectives on how to perceive and make sense of the world. The study of Toyota's production system shows how shop floor employees excel at both efficiency and creativity in their daily activities. The company's production system focuses on team organization, problem solving circles, mixed model production, job rotation and intensive training, as well as limited authority and participatory leadership. This dual nature allows workers to develop a broad understanding of the manufacturing process and assign them responsibility for quality, small maintenance tasks and maintaining the production line. As such, workers not only display a certain level of mindfulness in routine production, but also accumulate diverse structures of personal

knowledge through non-routine activities. In general, this organizational context qualifies production line workers to alternate between routine and non-routine tasks, that is, to behave in an ambidextrous manner (Martin, Keller & Fortwengel, 2019).

2.3 Research Framework

With regard to temporal ambidexterity, it implies that organizations can coordinate short- and long-term actions, demonstrating greater commitments, or strength of action, for each one. Organizations that demonstrate weak commitments to short- and long-term activities to minimize tensions between the two are playing a game in half that can lead to underperforming performance at any given time, and therefore are less temporally ambidextrous than those with greater strength of short- and long-term actions (Wang et al., 2019).

For Wang et al. (2019), in addition to making strong commitments to short- and long-term actions, temporally ambidextrous organizations also need to carry out these actions simultaneously. The temporal trade-off between the short and the long term is embedded in the idea of the short term, which refers to organizational actions that favor short-term results to the detriment of long-term results, but exclude those that are great in terms of the short term. In this line of reasoning, organizations are more likely to be inclined towards the short term than the long term.

2.4 Contextual Ambidexterity

In another flow, the researchers propose contextual ambidexterity, where members of the same unit can carry out conflicting activities. The challenge for managers in this type of ambidexterity is that they need to implement a complex repertoire of initiatives that feed a behavioral context, where these types of behaviors are possible. To achieve such ambidextrous behaviors, unit managers also need to nurture a supportive relational context and justify the importance of ambidexterity for senior managers through an emerging bottom-up process (Wang et al., 2019).

2.5 Sequential Ambidexterity

In the sequential approach, organizational ambidexterity is a function of a company's potential to initiate and manage central conflicts. In contrast to peripheral conflicts, central conflicts affect the company's founding principles and fundamental norms and values. These conflicts call into question the basic consensus and relate to the organization's identity. To that end, conflicts must deal with assumed premises (for example, a company's central technology) and the ways in which situations are labeled, framed and addressed throughout the course of cognitive redefinition or reframing and transcendence. This is similar to the notions of second-order change and double-cycle learning (Martin, Keller & Fortwengel, 2019).

In this approach, the main management task is to embrace the tension between the old and the new and foster a state of constant creative conflict that identified that CEOs need to keep the entire organization in a state of tension and maintain multiple and often conflicting strategic agendas. In order to create an ambidextrous organization. Contrary to frequent assumptions, the main challenge of management is not to reconcile conflicting demands and resolve conflicts, but to constantly balance conflicting demands (Martin, Keller & Fortwengel, 2019).

2.6 The Paradoxes That Affect Organizational Ambidexterity

For Cunha et al. (2019) there are four paradoxes that affect organizational ambidexterity. The first is the organization's paradox, due to a tension between the need to empower employees and the fear that empowerment

and delegation could be represented as a sign of the leader's weakness. A perception that emphasized the possible personal benefits of centralization, especially in scenarios where the leader's self-annulment is not necessarily seen as adequate. The possibility that leaders are respected when they are centralized and when they "have" power, and that they are perceived as weak when they give up centralizing power, limits the motivation to strengthen and influence the design of an organization. Structural strengthening, that is, the policies and processes managed by management, which aim to cascade power and authority, reducing organizational levels is seen as a double-edged sword.

This tension is conceptually supported by the distinction between the reified representation of power, something that powerful people "have" and the procedural view of power as a circulatory process. In the minds of some, the prevalence of the reified version of power contained in the hierarchy constitutes an obstacle against the desire to invest in training employees. This reinforces the performance of organizations as traditional hierarchies. There is an excess of hierarchical levels, a lot of bureaucracy, rules, internal regulations; rigidity that inhibits creativity; team members do not feel safe or secure to bring new ideas (Cunha et al., 2019).

The second is the learning paradox that relates to the need to qualify people and the risk of losing control over them. This paradox is observed when managers mentioned the need to contribute to the qualification of their subordinates. But they expressed fear that this qualification would expose their leadership limitations. This constitutes a learning paradox, in the sense that it influences the organization's ability to enrich its action repertoire through new knowledge acquired by members. Given the knowledge/power correlation, imparting knowledge can mean giving up power. We interpret this dimension as distinct from the tension "empowering vs tension" in the sense that empowerment refers to authority and distance from power, while this tension refers to development, more precisely to self-development and the development of others (Cunha et al., 2019).

The third is the paradox of the dynamic community. This dimension contrasts with the facet of the business community, described in the sense that people expect to be "cared for" by an organization, as a form of bland paternalism. On the other hand, managers mention the importance of the community view of management, that is, the fact that individual managers must be sensitive to the specific needs of their employees as members of the family and the community. Therefore, managers need to stay connected to community activities, and their relationship with employees must extend beyond the sphere of work, valuing the well-being of employees and the community where the organization operates (Cunha et al., 2019).

However, for the authors, it needs to promote a more professional and ethical attitude. The manager can be concerned with the welfare of his employees, which is clearly good, but he has to impose limits. There cannot be such a degree of familiarity that the employee takes a careless path towards work (Cunha et al., 2019).

The fourth and last is the adaptation paradox that aims to maintain the fit between an organization and its unpredictable and sometimes hostile environment. Managers are too focused on the type of day-to-day decisions for the organization to function. As a result of scarcity and the difficulties faced, there is a need for creativity and ingenuity (Cunha et al., 2019).

But if on the one hand it is good, on the other hand, this mode of operation has a disadvantage. Managers are generally confident that "confusion" environments increase flexibility, yet have several negative implications. There is a need for more ambidextrous leaders capable of managing the tension between improvisation and long-term planning, avoiding the management of the "fire-fighting" type (Cunha et al., 2019).

2.7 The Role of the Board of Directors in Organizational Ambidexterity

On a tool in gear for organizational ambidexterity, Oehmichen et al. (2017), mentions that the boards of directors function as a mechanism to align the organization with its environment at the highest level of strategy. The boards bring new and valuable tacit knowledge to the strategy through the functional experience of non-executive directors, as they inform the firm strategy with insights into opportunities and threats that reside in blind spots (for example, changes in consumer preferences), help to identify signs weak in the environment (for example, emerging technologies), function as an early warning system for impending changes (for example, regulatory) and provide assessments and judgments of best practices.

The knowledge resources of the board, derived from the specialization in organizational functions, can be classified into two dimensions of a higher order of task orientation. The “Output” guidelines derive from expertise in domains such as marketing, sales and product R & D that focus on growth, customer demands and emphasize the search for new market opportunities. Throughput guidance follows experience in functions such as production, process engineering and accounting where the emphasis is on internal organization and improving how the organization transforms inputs into output. An emphasis on production ensures that growth opportunities are taken into account (exploration), while the orientation of productivity ensures that efficiency is not disregarded (exploitation) (Oehmichen et al., 2017).

The heterogeneity of the functional knowledge of the board obliges members to undertake more in-depth discussions and more elaborate decisions. As a result, more heterogeneous groups tend to create several viable solutions to the same problem. Dealing with multiple problems simultaneously improves cognitive processing and allows the group to integrate a wider range of possible solutions. From the aforementioned interpretation, functionally heterogeneous panels can be expected to be more inclined to prioritize the simultaneous consideration of long and short term issues, in addition to being more adept at finding various solutions to creatively synthesize the contradictory demands of exploration and exploitation (Oehmichen et al., 2017).

2.8 Organizational Ambidexterity Restrictions

Dolz et al. (2019) raises theoretical doubts about the desirability of organizational ambidexterity in contexts characterized by external and internal restrictions. Regarding external restrictions, such as the context of the last economic crisis in which the munificence was very low, the research suggests that it can be dangerous to implement ambidextrous guidance, and that organizations are better served by focusing on exploitation, given the strong pressure on efficiency and prices.

On the other hand, they raise questions about the relevance of ambidexterity in contexts with certain internal restrictions, especially for companies with significant disadvantages in terms of management experience, access to capital, talent and limitations in the development of weak resources, such as small and medium-sized companies (SMEs). In this context, it seems less viable for SMEs to become ambidextrous than for larger companies, which have larger and more diversified resources, as well as more ways to become ambidextrous, for example, through structural ambidexterity. For these reasons, some researchers suggest that SMEs should focus all their efforts and resources on exploration or exploitation activities, rather than both, in order to survive a crisis (Dolz, Iborra & Safón, 2019).

In SMEs, in situations where their survival is at risk, the authors argue that a broader view of the upper echelons — that is, not only managers, but also owners — could play key roles in achieving organizational ambidexterity. The decision-making ability that allows SMEs to experience changes in the environment and take

advantage of exploration and exploitation alternatives depends on the diversity of top management teams (TMTs), while capacities that allow the reconfiguration of resources depend on the SME owners. Ownership diversity within the TMT affects the ability of the upper echelons to process information (that is, the ability to sense changes in the environment), seek alternatives and make strategic decisions associated with different levels of risk. In addition, it allows the organization to respond to change in the environment, combining exploration and exploitation in a balanced way (Dolz, Iborra & Safón, 2019).

The diversity of TMT ownership can improve detection and apprehension, but ambidexterity also requires transformation related to reconfiguring resources and changing priorities. Changes in business priorities will depend on their owners. In fact, as almost all SMEs are family owned, discretion is required to manage, assign, add or dispose of the company's resources for exploration and exploitation (Dolz, Iborra & Safón, 2019).

In view of the complexity of organizational relationships, where, all decisions made involve directly or indirectly the application of resources and strategy. For the management of these decisions to occur, proportionality in the application of resources is necessary, so that exploration and exploitation are carried out together, improving performance and ensuring continuity. Therefore, the organization must seek efficiency, effectiveness and compliance (exploitation) and, at the same time, implement creativity and the exploitation of its resources (exploration).

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3. Methodology

3.1 Methodology and Results of the Bibliometric Study

The methodology used in this work was a bibliographic review of articles selected in English academic journals with international circulation, indexed in SCI-Expanded, SSCI and ESCI, taken from the Web of Science database with the time interval from 2000 to 2019, through advanced search of the word:

3.1.1 Strategic management.

The search resulted in 7.202 articles. Later, using the VOSviewer application, he generated a bibliometric map (Figures 1 and 2).

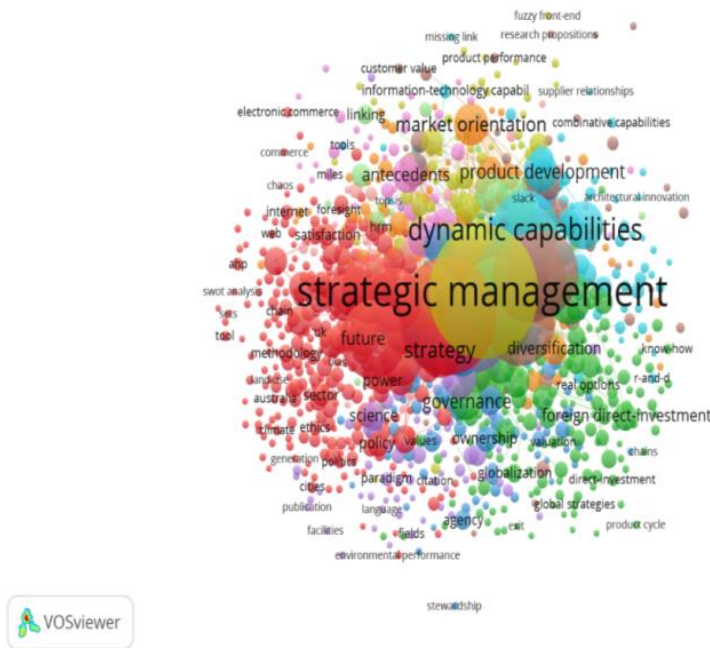


Figure 1 Network view
Source: VOSviewer

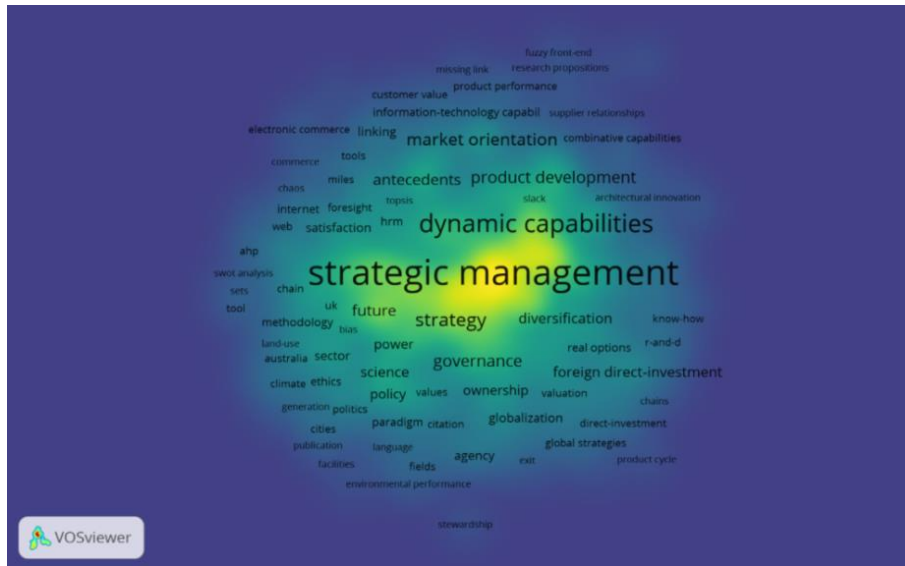


Figure 2 Density view (VOSviewer)
Source: VOSviewer

From the search result, there was a total of 97,135 strong connections of the 1024 most relevant terms with 11 clusters as listed below (cluster number, number of items, name and the top ten terms of each cluster).

- Cluster 1 (295 items) – Management Strategy = Performance, Management, Model Framework, Implementation, Leadership, System Business, Dynamics, Balanced Scorecard;
- Cluster 2 (167 items) – Business Model = Accelerated International, Agglomeration,

- Automobile-industry, Biotechnology industry, Business segment performance, Corporations, Governance, Infrastructure, Institutional Logics, Institutional theory;
- Cluster 3 (95 items) – Performance = Architecture, Capital Structure, Corporate Governance, Corporate Performance, Economic Performance, Financial Performance, Global Diversification, Innovations, Organizational Performance, Strategic Change;
 - Cluster 4 (90 items) – Decision Tools = Certification, Cognitive Perspective, Decision-making, Dominant Logic, Enterprise Performance, Environments, Flexibility, Fuzzy front-end, High-technology, Strategic Management;
 - Cluster 5 (80 items) – Organizational Research = Commercialization, Economic-theory, Management research, Marketing-research, Measurement systems, Network analysis, Open innovation, Operations management, Organizational-research, Patents;
 - Cluster 6 (71 items) - Organizational Collaboration = Alliance formation, Business networks, Business relationships, Business value, Collaboration, Competitive dynamics, Cooperation, Coopetition, Innovation, Innovation Performance;
 - Cluster 7 (69 items) – Organizational Comparison = **Ambidexterity**, Corporate acquisitions, Corporate-control, Employment, Fuzzy, Job-performance, Job-satisfaction, Quality management, Takeovers, Transactional leadership;
 - Cluster 8 (50 items) – Organizational Technology = Business Profitability, Capabilities, Causal ambiguity, Core competence, Dynamic-capabilities, Economic-organization, Information-technology, Managing, Knowledge, Sustainable competitive, Technological innovation;
 - Cluster 9 (46 items) – Decision Processes = Business strategy, Cluster-analysis, Control-systems, Corporate culture, Decision-processes, e-business, Manufacturing strategy, Organizational-structure, Supply-chain management, TDABC;
 - Cluster 10 (41 items) – Economical Tools = Commitment, Economic-action, Games, Group-performance, High-tech, High-velocity environments, Information-systems research, Investments, Strategic decision-making, Top-management;
 - Cluster 11 (20 items) – Entrepreneurship = Business performance, Capability, Corporate entrepreneurs, Entrepreneurial orientation, Innovativeness, International entrepreneurship, Learning orientation, Resources, Small firms, Social entrepreneurship.

3.2 Methodology Used in the Study of Recent Developments of the Theme

As a continuation of the development of the work, a new search was used in selected articles in English academic journals with international circulation, indexed in SCI-Expanded, SSCI and ESCI, taken from the Web of Science database with the time interval of 2016 to 2019, through advanced search of words:

Strategic Management and Organizational Ambidexterity.

The search resulted in 107 articles, where 22 articles were selected with open access and focus on management, business and economics reports. The full analysis was deepened in 20 articles with the theme in organizational ambidexterity.

- 1) Structural ambidexterity and competency traps: Insights from Xerox PARC.
- 2) Dynamic Balancing of Exploration and Exploitation: The Contingent Benefits of Ambidexterity.
- 3) Formal and Informal Control as Complement or Substitute? The Role of the Task Environment.

- 4) Cost-effective service excellence.
- 5) Combined Influence of Absorptive Capacity and Corporate Entrepreneurship on Performance.
- 6) Becoming Salient: The TMT Leader's Role in Shaping the Interpretive Context of Paradoxical Tensions.
- 7) Strategic Management Plan for Transnational Organizations.
- 8) Embracing Bewilderment: Responding to Technological Disruption in Heterogeneous Market Environments.
- 9) A Multilevel Integrated Framework of Firm HR Practices, Individual Ambidexterity and Organizational Ambidexterity.
- 10) Ambidextrous leadership, paradox and contingency: evidence from Angola.
- 11) Human capital and human resource management to achieve ambidextrous learning: A structural perspective.
- 12) Improving the likelihood of SME survival during financial and economic crises: The importance of TMTs and family ownership for ambidexterity.
- 13) Ambidextrous culture, contextual ambidexterity and new product innovations: The role of organizational slack and environmental factors.
- 14) Embracing Bewilderment: Responding to Technological Disruption in Heterogeneous Market Environments.
- 15) Disentangling the antecedents of ambidexterity: Exploration and exploitation.
- 16) Introducing conflict as the microfoundation of organizational ambidexterity.
- 17) Boards of directors and organizational ambidexterity in knowledge-intensive firms.
- 18) Boon or curse? A contingent view on the relationship between strategic planning and organizational ambidexterity.
- 19) Switching Hats: The Effect of Role Transition on Individual Ambidexterity.
- 20) Achieving Temporal Ambidexterity in New Ventures.

Based on this criterion, 2 articles are excluded:

- 1) Organizational Performance: Integration of the Value, Rarity, Imitability and Organization Framework in Project Management.
- 2) The Formation and Effects of Exploitative Dynamic Capabilities and Explorative Dynamic Capabilities: An Empirical Study.

4. Conclusion

Managing ambidexterity and engaging in the right combination of exploration and exploitation activities requires a dynamic change between the two practices, adopting an organizational paradox mentality. Adopting a mentality of organizational paradox based on the constant readjustment between the extremes that generate tension requires a better understanding of the background of the components of ambidexterity. More specifically, identifying which antecedents are integrating and which are differentiating would help companies develop better strategies to deal with ambidexterity (Koryak et al., 2018).

In comparison with large companies, the interaction in SMEs between managers and owners is close and frequent; more so in the case of family businesses in which the roles of managers and owners are intertwined. SMEs, both management and ownership characteristics, could offer unique insights into how the upper echelons

can detect, harness and reconfigure resources to become ambidextrous. In addition, SMEs in a restricted environment with financial difficulties face decisions related to survival or not, bankruptcy or solvency. In this critical environment, SMEs have to make important decisions about their financial structure, that is, in relation to temporary liquidity shocks or reduced access to bank financing, about the divestment of important assets to recover or about the level and scope of reductions in labor.

Consequently, this work has shown that ambidexterity can be achieved through a combination of differentiation and integration approaches to manage ambidexterity. In which, it was discovered that the capacity for continuous improvement is integrative, while the written vision, the heterogeneity and size of the TMT and the intensity of R & D differ. Second, it examined the impact of managerial attention on exploration and exploitation. Third, it contributed to the discussion of how the team's composition and vision affect organizational ambidexterity.

Regarding future research, although the agreed vision has received academic attention, it has not been systematically examined in relation to organizational ambidexterity and its components. Conceptualizing vision as a mechanism that shapes the way a company responds to its changing context facilitates a better understanding of a company's efforts to achieve ambidexterity. Another need is to realize an enlarged view of the upper echelons, which includes managers and owners, better explaining the decision-making and the ambidextrous behavior of SMEs in deep external crises. And also, analyzing ambidexterity in educational organizations both public and private.

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Analysis of Effectiveness and Efficiency Machinery Book on Making Packaging Drink Box 350ML

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Abstract: The research objective is to measure the level of efficiency and efficiency of the machine in the process of making 350ml beverage packaging and the use of its causes. Identify and analyze the causes of problems. Low value and efficiency of the manufacturing process on production. Give advice to help companies increase production capacity on 350ml beverage packaging. The results of the analysis obtained an average value of OEE boots of 23% with an average value of 34% availability, an average value of 49% performance value, and an average value of 98% quality value. From these data the value of OEE is still far from the standard of manufacturing industries in the world by 85%. Factors that influence the low OEE value are a decrease in engine speed (reduce speed) on the engine boots with a percentage of 18%, while other factors that cause losses are equipment failure by 14%, adjustments and adjustments by 10%, and stopping minor idle by 6%. From the analysis using the Ishikawa diagram it can be seen that determining the decrease in the speed of the engine boots is the machine itself which engine parts have been stopped.

Key words: box packaging; overall equipment effectiveness; six big losses

JEL codes: D2, D240

1. Introduction

PT. Surya Rengo Containers is a company engaged in the production of cardboard boxes made of paper and has 4 company units spread across Indonesia. PT Surya Rengo Containers is one of the companies included in the printing and packaging industry. PT. Surya Rengo Container manufactures various kinds of packaging boxes such as food/beverages, electronic goods, textile fibers, and others. In the development of the growing packaging industry in Indonesia, PT Surya Rengo Kontainer has developed a special strategy to increase product productivity, quality, and environmentally friendly products. One example is the application of the 3R concept (Recycling, Reuse and Reducing) the use of raw materials and energy in each process. To produce maximum production output, it is necessary to evaluate the production machines that have been carried out effectively, in the sense of being able to improve the effectiveness and efficiency of machines. One tool that has been widely used to measure the level of effectiveness and efficiency of overall plant equipment in the manufacturing industry, is Overall Equipment Effectiveness (OEE). The use of OEE methods in this studio asks for help determining the

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effectiveness and efficiency of the Boobts engine in the production process.

2. Literature Review

2.1 Overall Equipment Effectiveness

According to Hansen R. (2001), states the measurement of OEE as following: “The key in TPM. Simple OEE is measurement. Measurements are important to determine the efficiency of process effectiveness. With the cessation of the OEE engine, it integrates with three key metrics of availability, performance and quality, through OEE you can measure and analyze problems with the engine and provide improvements to improve your manufacturing process and benchmark your progress.”

Overall Equipment Effectiveness (OEE) is a product of operating activities with six big losses in machinery/equipment. The six factors in six big losses can be grouped into three main components in OEE to be used. In measuring machine/equipment performance, namely, downtime losses, speed losses and defect losses. According to Stamatis D. H. (2010).

2.2 Six Big Losses

Activities and actions taken in TPM not only focus on preventing damage to the machine/equipment and minimizing machine/equipment downtime. However, many factors can cause losses due to low efficiency of the machine/equipment only. The low productivity of machinery / equipment that causes losses for companies is often caused by the use of ineffective and inefficient machines / equipment, there are six factors called six big losses. As for the six losses, namely losses due to equipment damage (equipment failure losses), losses due to installation and adjustment (setup and adjustment losses), losses due to operating without a load or due to stop for a moment (idling and minor stoppages losses), losses due to a decrease in operating speed (reduce speed losses), losses due to defective products (defect in process losses), and losses at the beginning of production (reduce yield losses). This OEE measures whether the production equipment can work normally or not. OEE highlights 6 major losses (the six big losses) cause of production equipment not operating normally (Denso, 2006, p. 6), namely: cause and effect diagrams are often called fishbone diagrams because they are shaped like a fish frame, or Ishikawa diagram because it was first introduced by Prof. Kaoru Ishikawa from the University of Tokyo in 1953 (Gasperz, 2012).

2.3 Research Methods

Quantitative methods are methods that emphasize aspects of measuring objectively the social phenomena. To be able to take measurements, every social phenomenon is translated into components of problems, variables, indicators. Each variable that is determined is measured by using different numerical symbols in accordance with the categories of information associated with these variables. By using these numerical symbols, a quantitative mathematical calculation technique can be performed so as to produce a generally accepted conclusion within a parameter. The main purpose of the method is to explain a problem but produce a generalization. Generalization is a reality that occurs in a reality about a problem. Population is the totality of all possible values, the results of calculations or measurements, quantitatively and qualitatively regarding certain characteristics of all members of a collection that is complete and clearly wants to learn its properties. In this study the population taken is the cause of the instability of the Overall Equipment Effectiveness (OEE) value on the boobts machine. Data collection methods both Primary Data and Secondary Data, and data analysis techniques.

3. Data Processing and Data Analysis

3.1 Data Processing As Follows:

Table 1 Data on Engine Boobts Downtime

NO	Code	REMARKS	FREQ.	DURATION
	Down Time		(TIMES)	(MIN)
1	201	Tidak Ada Order / Beban Kosong	6	1245
2	204	Shalat Jumat	1	45
3	304	Problem Counter	1	40
4	309	Problem Mekanik	5	765
5	401	Cutter Blower Macet	1	10
6	402	Dies Backing	39	355
7	403	Tunggu Forklift	3	40
8	407	Pisau Patah, Ganti	8	175
9	408	Creasing Problem	6	85
10	409	Cari Sheet	1	10
11	410	Sortir Sheet Lengkung/Ngelotok	19	250
12	415	Persiapan	1	15
13	416	Die Cut Problem	8	165
14	421	Jump Up	5	230
			104	3430

3.1.1 Setup Time

Setup time is the timeframe calculated from the last time the machine produced quality finished goods to be able to re-produce quality goods at normal speed. Below this is the setup time table at PT. SRC.

Table 2 Boobts Engine Setup Time

No	Tanggal	Setup time		Total setup time	No	Tanggal	Setup time		Total setup time
		Setting	Cleaning				setting	cleaning	
1	03 juni	20	10	30	10	19	20	10	30
2	05	15	15	30	11	20	0	25	25
3	06	20	10	30	12	21	8	10	18
4	09	20	15	35	13	22	20	10	20
5	10	0	20	20	14	24	0	20	20
6	12	8	15	23	15	25	25	10	35
7	13	10	20	30	16	26	6	15	21
8	15	25	15	40	17	28	0	25	25
9	17	0	25	25	18	29	20	10	30

3.1.2 OEE Calculation

After the availability, performance and quality values are obtained, the OEE value will then be calculated by multiplying these three factors. The formula used to use the average OEE is: $OEE = 74\% \times 32\% \times 100\% = 23\%$. Furthermore, the calculation of OEE values, it is known that the average OEE value on boobts is still far below the manufacturing industry standard of 85%. And the most significant elements that influence the low OEE value of the boobt machine are the availability value of 34%. Then the next step is to count the 6 biggest losses (Six Big Losses) on the boobts engine. On the OEE value, it can be seen that the lowest value is the availability rate of 34%, therefore tracing elements at the availability rate based on the value of each loss value.

3.1.3 Calculation of losses

The calculation of the value of losses is based on the category of six big losses, each of which has a loss in the three OEE elements. The six losses include equipment failure, setup and adjustment, reduced speed, idle and minor stoppage, scrap, and rework.

Calculation of Equipment failure Losses are calculated from the ratio of damage to engine repair to total time.

Breakdown Time = 35 minutes; Total Time = 370 minutes

Equipment Failure = (35 minutes) / (370 minutes) \times 100% = 9%

Calculation of Setup and Adjustment

Setup and Adjustment losses are calculated from the ratio of preparation time and machine adjustment to total time. Setup time = 30 minutes; Total Time = 370 minutes Setup and Adjustment = (30 minutes) / 370 minutes \times 100% = 8%

3.1.4 Reduced Speed Calculation

Reduced speed is a loss due to low operating speed or the actual engine speed below the ideal engine speed. Reduce speed losses are calculated from the ratio of performance losses or speed losses to total time.

Actual available time = 185; Net Production Time = 58;

Total time = 370 = 185 - 58 = 127

Reduced speed = 127/370 \times 100% = 34%

3.1.5 Calculation of Idle Minor Stoppage

Idle & minor stoppage are losses that occur while waiting in connection with cleaning due to scrap. Idle & minor stoppage tagal 3 June 2017 is calculated from the comparison of non productive value time with total time.

Non productive value = 10; Total time = 370

Idle and minor stoppage = 10 minutes / 370 minutes \times 100% = 0.03 or 3%

3.1.6 Scrap calculation

Scrap is the time used in product adjustment. Scrap is a loss that results from a decrease in output quality. Scrap is calculated from the ratio of rejection to total time.

Data reject = 55 units; Actual Run rate = (28000 units) / (185 minutes) = 151 units / minute

Scrap = (55 units) / 151 minutes = 0.4 minutes; Scrap Losses = (0.4 minutes) / (370 minutes) = 0,00010

3.1.7 Rework Calculation

Rework is a time loss due to product defects and rework. Rework is calculated from the ratio of rework time to total time.

Rework = (10.0 minutes) / (370 minutes) \times 100% = 3%

So it can be concluded that of the six losses that have the main problem is the low value of OEE that is due to the problem at reduced speed. Therefore to find the root cause of the reduced speed, the authors analyze using Ishikawa diagram analysis.

The low speed of the engine boots from the ideal speed makes the engine performance down (performance loss), this happens because the decline in engine speed due to several factors, one of which is the age of the engine that has long caused frequent breakdowns and no longer standard engine boots. The average value of reduced speed is 18%.

3.2 Discussion and Analysis

Then the analysis in this study is divided into 2 parts, namely the analysis of each loss value and identifying

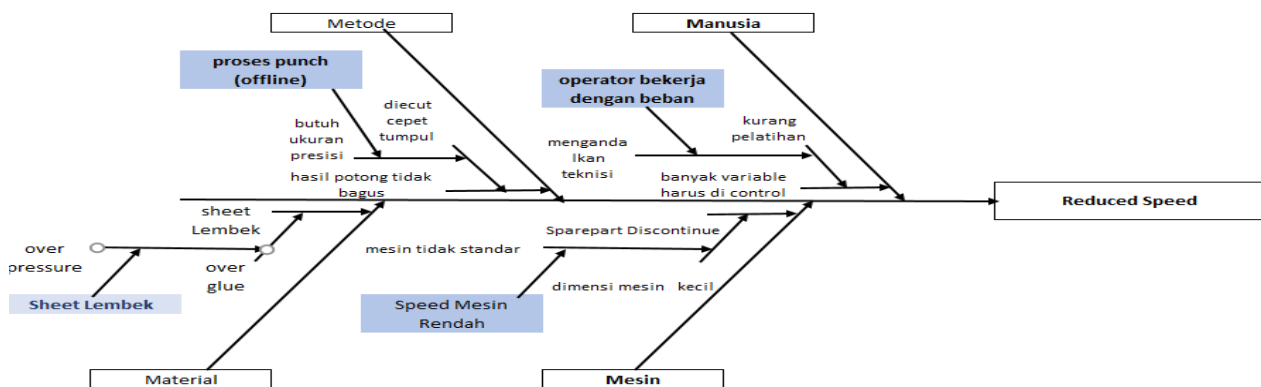
the root cause of the problem from the value of losses that most significantly affects the low OEE element by using the Ishikawa diagram.

3.2.1 Analysis of the Value of Losses

In calculating OEE values in data processing it is known that the three elements are still far below the standard. To deepen the main problem or the main problem of the three elements, the smallest performance rate value will be discussed at the stage of data analysis two losses consisting of reduced speed and minor idle and stoppage. Reduce speed is associated with low actual speed of the ideal engine speed and idle & minor stoppage losses due to clearing scrap products so that production time is interrupted.

3.2.2 Ishikawa Diagram Analysis

The low speed of the engine boots from the ideal speed makes the engine performance down (performace loss), this happens because of the decline in engine speed due to several factors, one of which is the age of the engine that has long caused frequent brakdowns and no longer standard engine boots. The average value of reduced speed is 18%.



3.2.3 Corrective Action Plan Based on Problem Root

Then an alternative repair solution can be done is by removing the boots engine in the production process of making 350ml beverage boxes and changing the offline process method to be inline by modifying the TCY engine. The TCY engine modification is by changing the Die cut and Rubber component tools so that it can run in the TCY engine inline process, intallall die cut lock on the TCY engine, and modifying the die cut into 3 outputs because the dimensions on the TCY engine are greater than the boots engine.

4. Conclusion

After discussing and calculating the Overall Equipment Effectiveness (OEE) value for the boots machine at PT. Surya Rengo Containers can be concluded as follows:

- a) From the discussion and analysis obtained the average value of OEE boots is 23% with an average availability value of 34%, an average performance value of 49%, and an average quality value of 98%. From these data the value of OEE is still far from the standard of manufacturing industries in the world by 85%.
- b) Factors that influence the low OEE value are the reduction in engine speed (reduced speed) on boots with a percentage of 18%, while other factors that cause losses are equipment failure by 14%, setup and adjustment by 10%, and idle minor stoppage by 6%. From the analysis using the Ishikawa diagram, it

can be seen that the problem that affects the decrease in the speed of the engine boobts is the engine itself which has discontinued engine parts.

Then an alternative repair solution can be done is by removing the boobts engine in the production process of making 350 ml beverage boxes and changing the offline process method to be inline by modifying the TCY engine. The TCY engine modification is by changing the Die cut and Rubber component tools so that it can run in the TCY engine inline process, intallall die cut lock on the TCY engine, and modifying the die cut into 3 outputs because the dimensions on the TCY engine are greater than the boobts engine.

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