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Hellenic *Open University*

***Master's join degree/post graduate Programme
Enterprises Risk Management (ERM)***

MASTER THESIS



Risk Profile of a secondary school unit

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**Supervisor
Nikitas Koutsoukis**

May 2017

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This thesis submitted for partial fulfillment of the requirements
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ΛΕΥΚΗ ΣΕΛΙΔΑ

Summary

The purpose of this thesis is to identify, analyze and assess the risk events taking place at a secondary school unit, aiming to create a thorough risk profile.

This research consists of two parts, a thorough literature review and a survey. At the first part is studied the structure of the Greek educational system, the school's manager responsibilities, the applied school leadership styles, the association between school managing approach and school effectiveness and finally factors that complicate school crisis management. At the second part of this master thesis follows a qualitative and quantitative analysis of the collected data. At the survey participated school managers and educators of Greek secondary educational institutions. The purpose of this survey is to identify the risk factors as perceived from the participants and assess them in terms of likelihood to happen and potential impact. The assessment of the risk factors is achieved through risk matrices. Another objective of the survey is to define risk events as perceived from educators and school leaders. The analysis of the complicating factors of effective school crisis management constitutes an objective of the study. Finally, at the last chapter follows a comparison of the opinions of the participants regarding risk factors and features complicating effective school crisis management.

The results of this research show that school leaders and educators have an overall similar approach regarding risk events. School managers demonstrate higher sensitivity to certain risk factors (such as usage of prohibited substances and technology and educators non collaboration) compared to educators. Concerning risk perception are recorded common risk indicators. Statistically significant differences were found with regards to attraction of Medias' attention and events that exceed school managers' capabilities and skills. Comparing the perception of risk management complicating factors, convergence of views is recorder, regarding the role of lack of knowledge and management skills, the insufficient organization and the absence of a predesigned plan and guidance.

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Chapter 1

Introduction

Scope of the first chapter is to introduce the readers to the philosophy and the orientation of this thesis. Initially, the motivation for this research and the risk profile concept is featured. Subsequently, the scope and the objectives are analyzed, introducing the key ideas and views. At the conclusion of this chapter a brief description of the material covered per section is included.

1.1 Motivation

Education constitutes a vital pillar of a sophisticated and developed country. An advanced education level promotes and cultivates high knowledge level, enhances critical and creative thinking and contributes towards achieving a high standard of living. Within the last 50 years has been noticed an exceptional evolution in the field of education. Improvements and innovative ideas have been recorded in numerous and diverse sectors. Technology has invaded the last two decades at the teaching processes, contributing with a variety of applications, offering easy accessible resources to both educators and students. Apart from the essential part of providing access to educational material, technology promotes personal development and activates the participation feeling and interest. (Psacharopoulos & Woodhall, 1985)

A remarkably developed field in education is school management. Changes in the approach of educational procedure both for school managers and educators have contributed in a positive way to the overall education development. School management seeks for attention and thorough studies are focusing on that field. The evolution of the school system and the changes in the traditional structure of school units effectuate changes at the processes and the events taking place in the school environment.

Risk profile is an evaluation of an organization's willingness to take risks and to handle threats to which an organization is exposed to. A thorough risk profile may be used as a way to mitigate potential risks, threats and their consequences. Concerning Greece's secondary educational system, risk profiling is not economically oriented. Risk analysis is associated to the educational institute's reputation and the smooth operation of the organization. Education in Greece is primarily public and free of charge for citizens. Private educational institutions do exist but have the smallest part of the education pie of Greece.

In order to present a significance rate for each risk and prioritize them we create a risk profile that includes:

1. A summary of the key strategic and operational educational and safety risks of a secondary school.
2. Quantification of these risks in terms of likelihood and potential impact to the school's routine and the educators' efficiency.
3. Identification of the existing managing controls, their effectiveness and any improvement potentials.
4. A framework for monitoring and assurance, including a prioritized action plan.
(Fraser & Simkins, 2010)

1.2 Problem Statement

Several studies have been conducted regarding school management procedures and leadership styles being applied in secondary school units. Regardless the applied management methods, problems arise consisting difficult or even interrupting

secondary school unit's routine. Inextricable and vital part of the risk management procedure is the creation of a thorough risk profile that includes a detailed record and evaluation of the associated risks. This master thesis will demonstrate a thorough and integrated risk profile of a secondary level school unit in Greece.

1.3 Scope

The main objectives of this master thesis are:

- a compilation of the risks events that disrupt the smooth running of a secondary school unit
- the evaluation of the risks in terms of frequency of appearance and their potential impact
- the assessment of risk events using risk matrices for both school leadership and teaching staff
- to introduce a comparative study of risk events for the school leadership and educators based on the risk matrices
- the compilation of the aspects that outline the definition of risk as perceived from both teachers and school managers
- a comparative study regarding the risk perception on a school unit between educators and school leadership

1.4 Thesis outline

At chapter 1, the topic, are presented the motivation and the scopes of the research. At the following chapter, the results of an extended literature review is included aiming to provide the reader with necessary definitions, basic concepts and critical information in order to proceed to a critical assessment. The methodologies being applied and the relevant software is described and thoroughly explained in chapter 3. At chapter 4 follows an overview of the collected data. The analysis of the data collected and the presentation of the results of the preformed tests using matrices and tables takes place at chapter 5. Finally, at chapter 6 is included the conclusion of the research and a review of the achieved objectives and scopes of this research.

Chapter 2

Literature review

In this chapter a theoretical background will be provided to facilitate the reader to keep up with definitions, main theories that have been applied and basic concepts used in this thesis. By the end of this section an integrated image of the issue in study and the past research founding will be configured.

2.1 Structure of the Greek secondary educational system

The Greek education system comprises a wide range of education models. More specifically, the secondary education is divided in two circles: compulsory and non-compulsory secondary education. The existence of technological/vocational schools in conjunction with the presence of general education school units offers a more complicated but fruitful educational system.

Every school unit, primary or secondary is supervised centrally by the Ministry of Education, Research and Religious Affairs. At the Ministry's jurisdiction are included the design curriculum, the recruitment procedures and the training of teaching staff. Regionally schools belong at the Regional Education Directorates' jurisdiction and finally locally are being controlled and guided by the Directorates of Education (Prefectures). (Euridice, 2016)

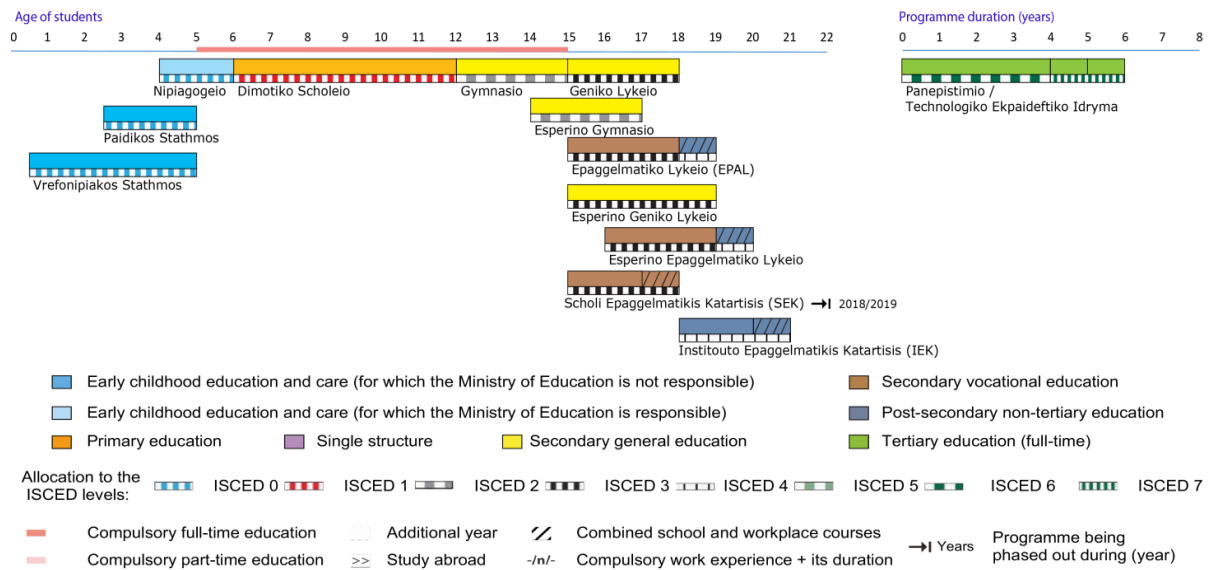


Figure 1. The Greek educational system (Euridice, 2016)

The hierarchy of the Greek educational system is demonstrated in figure 2. The Minister of Education and the Deputy Minister are assigned from the Prime Minister of Greece. The process of elections or a reshuffle may lead to replacement of the existing designated ministers. Regional directors and directors of secondary education are being assigned to positions according to their qualifications. Finally, School Directors are being assigned to their positions every four years based on their qualifications, former experience and an interview. (I. Giannakos, 2008)

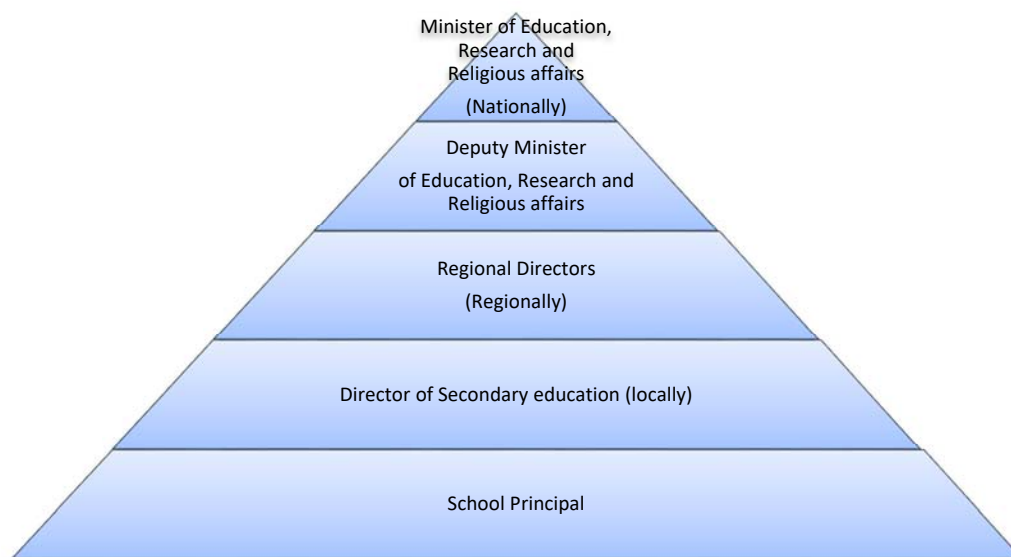


Figure 2. Education administration in Greece (Euridice, 2016)

The structure of administration body of secondary schools is organized in two levels, local and national. At local level, responsible for the school unit is the school principal, who is assigned to his position after an election procedure by the Director of secondary education. Depending on the size of the school, the board of staff through elections assigns to one or two members of the staff to act as vice principals. The responsibilities of the vice principals are assigned by the School principal. (Euridice, 2016)

2.2 School leaders' responsibilities.

School leadership constitutes a highly demanding and multitasking position. The diversity of the people that are subjected to school director's authority results to multiple mechanisms and procedures conducted on regular bases. The coexistence of conflicting groups, such as educators and pupils, requires highly effective managing skills. The implementation of regulations, as assigned from the Ministry of Education, Research and Religious affairs, constitutes the keystone of schools' regular operation. Valuable asset for a productive and fruitful teaching procedure is for the school's leadership team to acquire knowledge regarding school management in regular intervals.

In the school environment the concepts of leadership, management and administration may overlap and diverse importance has been attached to the school principal's role depending on the country and the professional background. A distinguish between leading and managing duties has been recorded by Christopher Day and Pamela Sammons in 2016. Leaders main responsibilities have been documented as follows: the provision of goals, handling strategic issues, developing a common purpose, being able to response to diverse needs of staff and students and finally providing educational entrepreneurship. Managing duties are focused on the implementation of the designed plans, settling arisen operational issues, assuring smooth transaction between diverse groups of stakeholders and finally implementation and normal execution of systems. (Day & Sammons , 2016)

School units are vital organizations that evolve and alter continuously due to the nature of the services that they provide and the stakeholders involved. The responsibilities of schools' leaders are categorized by Alvesa in 2015 as follows:

1. Teachers
2. Students and family background
3. School Conditions
4. Classroom conditions
5. Distinct leadership policies and practices
6. Other stakeholders. (Alvesa, 2015)

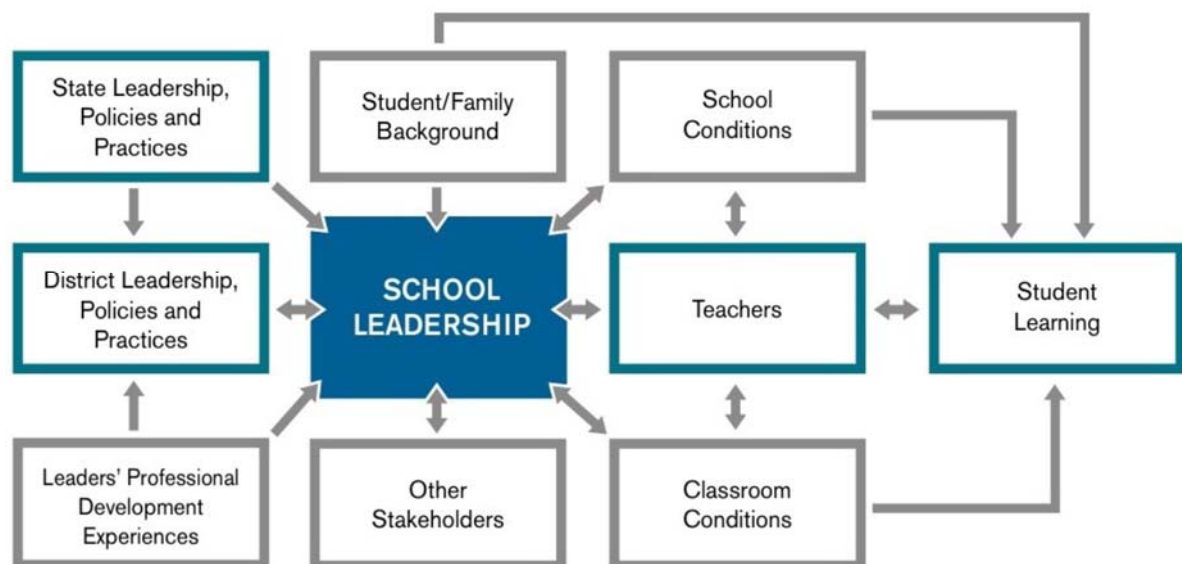


Figure 3. School leader's responsibilities. (Alvesa, 2015)

The Ministry of Education, Research and Religious affairs has documented the legislation and the regulations associated with the Greek educational system in "The Government's Newspaper". Principals', vice principals' and teachers' duties are distinctly and elaborately recoded regarding the daily and yearly routine. According to regulations, school's leadership main role is to reinsure the existence of a democratic and open to community school. Directors owe to be an example to school's population and to assist and guide the educators to their duties and responsibilities. School should constitute an essential unit that promotes teachers' training in administrative, pedagogical and scientific subjects. A constant and effective collaboration among educators should be promoted and cultivated from the leadership. Finally, implementing

controlling and assessing procedures, assigned duties and goals constitutes an essential measure for every school unit. (Gkesoulis, 2002)

2.3 School leadership styles.

Greek educational system and in particular, the leadership of secondary schools lacks of a cohesive and compelling leadership style. Applying premeditated and suitable leadership models accommodates principals and educators to resolve any arisen issue in school's daily routine. Additionally, applying with consistency a structured leadership model contributes in precautionary way, enabling administrators to predict events and avoid any unpleasant consequences. (Park, 2012) The school director is considered as the school leader. The school leadership styles being applied internationally have been recorded in the bibliography as follows:

Hierarchical leadership is based on the traditional method of education, giving emphasis in a top-down approach with formal authority and little scope for participatory analysis. The administrative head, the principal and the vice principals gather the majority of the duties under their jurisdiction. The main features of this leadership style are the efficiency, the implementation of regular controls and the continuation of school's routine. Hierarchical leadership style coincides with authoritative style. Authoritative leadership style is applied when clear direction is needed. Leaders following this pattern, mobilize, encourage and motivate the team, inspiring confidence. Authoritative is the strongest leading style where the leader leads the team towards one direction. (Grace, 1995)

Transformational leadership is aiming to achieve optimum performance of individuals in an organization. More specifically, school managers inspire the teaching staff to commit and follow one common vision and goal. This is achieved by challenging educators to be actively involved in the decision processes , giving them space to develop and express ideas and become integral part of the decision making process. (Bernard M. Bass, 1994). Transformational leadership is highly recommended for school units that are in the process of reconstruction and reorganization. (Leithwood,

Chapman, Corson , Hallinger , & Hart, 1996) This model constitutes an efficient leadership model for school management. Furthermore, is highly correlated with increased levels of job satisfaction among school teachers. Is crucial for the school leadership to create an environment where employees are encouraged to participate in the decisions. Inspirational motivation and intellectual stimulation increases the feeling of appreciation among teachers and consequently thrives to commit to a shared vision and action towards students' and school's prosperity (Anantha Raj A. Arokiasamy, 2016).

Supportive leadership is a collaborative leadership style where leader's managing approach steps away from the dictator style where the manager issues orders. Final decisions are taken by principals as a result of a contractive dialogue between manager and employees. School's leader role is to encourage, support, considerate and understand team's members. Trust and respect are the basic pillars of this model. Those principals coexist with the role of the manager aiming to help followers to develop their abilities and careers. Supportive leadership is highly correlated to teachers' effectiveness since it enables teachers to overcome any arisen working issues, to improve their teaching and management skills and inspire and guide their students in the best possible way. (Saowanee Sirisookslipa, 2015)

Directive leadership is an instructional school management style where the school headmaster rules by giving instructions to the teachers of how to perform their duties and defines the expected outcomes. In the economic and enterprise world this leadership model is effective for the manager but lacks of inspiration, motivation and guidance towards business's success. The cultivation of self-improvement, teachers' empowerment, participation in the decision making and collaborative effort are not values of primary importance at this model. (Somech, 2005) Directive leadership is considered as one of the most unsuitable leadership styles being applied. An authoritative style of management is highly associated with employees' dissatisfaction and low performance levels. More particularly, directive leadership has the weakest association with teacher effectiveness. (Saowanee Sirisookslipa, 2015)

Participative leadership. According to Contreras, participative leadership constitutes one of the most successful and suitable models for effective school management. This leadership style is also known as pedagogical leadership style. Leaders promote decision making to be implemented by the group of educators. Cultivating conditions that promote learning and school improvement is the philosophy of this style. The role of the school principal at this case is catalytic. School managing is considered to be a group of functions that may be implemented by many members of the school unit and not performed by an individual. (Contreras, 2016) .Participative leadership promotes teachers' active participation to school's management processes, inspiring and motivating them to have an active role at school's procedures. The level of individual's participation depends on their interest and abilities. (Lawson, Soutar , & Dyson , 1992)

2.4 Leadership and school effectiveness

Educators' effectiveness and the overall school performance is influenced by the applied leadership style. The immediate resolution of rising issues mitigates the impact of expected or unexpected events at the smooth operation of the school unit. School leaders have a key role in setting direction and creating a positive school culture including promoting a proactive school mindset, and supporting and enhancing teachers' motivation and dedication.

In a research of 2014, Chuang and Chin studied the relationship between school based budgeting, innovative management and school effectiveness. The study recorded that school budgeting promotes innovative school management. Investing in enhancing directors management skills through educational seminars or supplementary electronic and technical support succeeds towards optimization of the existing school management processes. In fact, investing in innovative management methods and procedures constitutes a significant and positive predictor of the overall school effectiveness. (Chuang & Chin, 2015)

In 2016, Osmuzul Mustafa drew the attention on the impact of leadership style to teachers' effectiveness and more specifically on their ability to handle and overcome

upcoming obstacles. Educators are called to perform their teaching duties, managing simultaneously unexpected crisis events that distract or disrupts the teaching procedures. According to this master thesis unblocking leaders constitutes the most preferable leadership approach since it promote innovation and autonomy to teachers, creating continually teaching and learning culture, focusing on teaching quality. (Ozmusul, 2015)

Randomized experiments performed at public School in Madagascar have reported that interventions at school levels have a great impact at schools directors' approach towards performing improved management skills. An interesting aspect of this master thesis deduces that more intensive and direct interventions to school's directors, district and sub-districted administrators contribute to ameliorate principals' and educators' effectiveness. (Lassibille, 2016)

2.5 Factors that complicate school crisis management

According to the book of Cheng, New paradigm for re-engineering education, has been created a comprehended list with categories of incidents taking place at school units. This master thesis focuses on the managing role that educators and school administration play, and not at the students and guardians role and reactions.

Natural catastrophes. Crisis caused due to natural phenomena such as earthquakes, floods etc. Unexpected phenomena may cause damages at school's infrastructure and injuries or even death at members of school's population. The prediction of such events is not fissile and measures need to be taken at the moment of occurrence. Precautionary measures and training constitute important factors that mitigate the possibility of injuries and reassure safety.

Physical injuries caused by human factor. Traumas caused by inappropriate and aggressive behavior of the people involved. Life threatening incidents due to health issues (for example epilepsy and diabetes) are also included at this category.

Physical injuries caused by dysfunctional infrastructure or external causes. In this category are subjected accidents that are caused due to infrastructure inefficiency or shortages. In many cases the cause is malfunctions in school facilities and inadequate infrastructure maintenance.

Events related to the personnel's attendance and collaboration among teachers, students and administration. The majority events of this category are related to relationships between students, educators and school administration. Disagreements, conflicts and non-cooperation constitute the most common incidents that request for immediate and effectual control management. (Cheng, 2005)

Chapter 3

Methodology

The empirical section of this research discusses two objectives, the assessment of risks taking place in secondary school units and the features of risks as perceived from school's population. At the first part of the study are analyzed the likelihood and the impact of the recorded risks. At the second part of this section is studied the perception of risk in secondary education, as perceived by educators and school's leadership. Finally, is examined the role of factors that complicate the effective school crisis management. The above study has been conducted for both educators and school directors.

The assessment tool used at the first section of the empirical study is the risk matrix. A two dimensional diagram illustrating the distribution of risk across an enterprise's activities composes a risk matrix. Elements of this representation are a list of the risk factors, including the likelihood and impact score for each factor. The risk matrix constitutes a valuable tool to comprehend the severity of a risk. (Olson & Wu, 2017)

At table 1 is presented the rating of a risk in terms of probability of occurrence and its potential impact.

Risk Rating Matrix						
		Impact of Risk				
		Insignificant	Minor	Moderate	Major	Severe
Likelihood of Risk	Almost Certain	Medium	Medium	Extreme	Extreme	Extreme
	Likely	Medium	Medium	Medium	Extreme	Extreme
	Possible	Low	Medium	Medium	Medium	Extreme
	Unlikely	Low	Low	Medium	Medium	Medium
	Rare	Low	Low	Low	Medium	Medium

Table 1. Risk rating matrix

A risk level scale combined with the acceptability level and recommended actions to be taken follows at table 2.

Risk Acceptability Chart		
Risk Level	Acceptability	Recommended actions
Extreme Risk	Extremely Intolerable	Immediate risk management measures need to be taken. Comprehensive analysis and a detailed risk treatment plan are required upon incident. Ongoing review to follow until lower risk level is succeeded. Exposure to this risk disrupts the normal school procedures.
Medium Risk	Moderately Acceptable	The continuity of this action should be considered. Actions need to be taken .Risk need to be reviewed in order to lower its risk level. Exposure to this risk affects school procedures but interrupts briefly the normal routine.
Low Risk	Acceptable	Incidents of this rate do not interrupt the normal ongoing school procedures. No immediate risk control measures need to be taken. Periodic review is recommended to ensure risk does not escalate to higher level.

Table 2. Risk acceptability matrix

In order to record, analyze and assess the risk factors of a secondary school unit, two questionnaires were designed addressing to both educators and school directors. Scope of the conducted survey is to collect and assess the risk factors observed in a secondary school unit. Simultaneously locating differences in the degree of impact or the possibility of occurrence of the same risk factors as perceived from the two groups is a topic of great interest. A comparison study of the distribution of risks between educators, school leaders and the population constitutes a main aspect of this master thesis. Therefore, three risk matrices are constructed assessing the same risk factors.

The second part of the empirical analysis of this master thesis focuses on the perception of risk in the school environment and the factors that complicate effective management of upcoming risks. Based on the collected answers from the questionnaires, is performed a statistical analysis comparing the perception of risk features among teachers and head masters. The factors that contribute towards the mishandling of unpleasant situations at schools are also analyzed in order to comprehend differences.

Aiming to perform a statistical analysis regarding differences between risk comprehensions, a comparison of the means for each feature for both groups is required. In order to choose the most appropriate statistical tool we take into consideration the size of the samples and the known features. Since the size of the population for both groups is greater than 30 and the variance can be calculated from the collected data the most suitable analysis tool is the z-test.

Chapter 4

Overview of Collected Data

In order to assess school units with regard to the likelihood and the impact of potential risk factors, the main source plugged was a survey. Two questionnaires were created based on the findings of literature review. In order to attain a comprehensive figure of the subject studied, the questionnaires were addressed both to leadership and faculty of secondary school units. Aiming to document the likelihood and the impact that risks effectuate on the institute's smooth operation, recording the angles of two stakeholders enriches the outcomes.

In the total number of 3012 Greek high schools (gymnasia and eniaia likeia) the survey was conducted electronically. The total number of teaching staff is estimated in 60000. The answers collected from school directors reached 140 and the number of answers collected from teachers is 454. The questionnaires were designed through limesurvey software and were distributed nationally only electronically. Participants did not receive any benefits from the survey. The survey was filled in anonymously. The two questionnaires were distributed both to public and private Greek schools. Vocational institutes were not included in this research since the structure, the teaching approach and the studying material deviates from the typical educational high school model. The survey was accessible from 20/12/2016 until 20/2/2017.

Statistical information regarding the total number of schools and a contact list regarding the participants school units were provided from the Ministry of Education, Research and Religious Affairs. The distribution of the questionnaire to the faculty was conducted from the schools' principals, due to the fact that a list of faculty's' personal email does not exist. An overview of the data collected is presented at table 3.

Collected Data Overview						
	Male		Female		Total	
Position	Count	Percentage	Count	Percentage	Count	Percentage
School Manager	82	58.57	58	41.43	140	23.5
Educator	169	37.22	285	62.78	454	76.5
Total	251		343		594	

Table 3. Collected Data Overview

Chapter 5

Results and Analysis

At chapter 5 are included the results of the collected data, analyzed, organized and presented using tables and risk matrices. A qualitative analysis of the data collected regarding risk perception and the contributing factors to effective school management is presented with the usage of statistical analysis tools.

5.1 Risk Matrices

A risk profile requires a risk factor list in order to assess them in terms of probability to occurrence and potential impact. Quantitative analysis of the risks in terms of likelihood and potential impact is conducted based on their impact and likelihood rates. A summary of the key strategic and operational educational and safety risks is included at table 4.

Risk factors	
Category	Events
1. Problematic relations and incidents between students	<ul style="list-style-type: none"> • Violence / physical between students • Verbal abuse • Incidents of discrimination(racism , sexism etc) • Bullying
2. Use of substances and misuse of electronic devices	<ul style="list-style-type: none"> • Cigarettes • Alcohol • Drugs • Leak material from school environment including • Using social media and watching irrelevant to material
3. Student's interfamilial issues	<ul style="list-style-type: none"> • Interfamilial violence • Divorced parents • Deceased family member
4. Students' health issues that may be life-threatening	<ul style="list-style-type: none"> • Injury during sports • High Risk chronic disease (epilepsy, diabetes etc.)
5. Injury due to unsuitability of infrastructures	<ul style="list-style-type: none"> • Broken bone, cuts etc
6. Complaints from parents and guardians regarding the services offered	<ul style="list-style-type: none"> • Teacher's performance • Inadequate teaching material
7. Problematic relations between students and educators	<ul style="list-style-type: none"> • Disrespectful, disobeying student to teacher • Mishandling teacher to student
8. Problematic relations between educators	<ul style="list-style-type: none"> • Insufficient collaboration
9. Problematic relations between educators and school leadership	<ul style="list-style-type: none"> • Disrespectful and inappropriate behavior •
10 Absence of teaching staff	<ul style="list-style-type: none"> • Sick Leave • Strike • Unjustified absence
11 Absence of supporting services staff (cleaning , maintenance, food services)	<ul style="list-style-type: none"> • Sick Leave • Strike • Unjustified absence
12 Unsuitability of infrastructure and shortages	<ul style="list-style-type: none"> • Shortages in teaching material • Unsuitable classrooms • Heating and watering issues
13 Natural catastrophes	<ul style="list-style-type: none"> • Earthquakes • Floods • Unexpected and severe weather conditions

Table 4. Risk factors list

The groups participated at the survey are the school leaders (Risk Matrix I), the educators (Risk Matrix II) and the population (Risk Matrix III). Each risk matrix is accompanied by a table of the risk factors, their probability of occurrence, their impact and their risk level. Risk level is calculated by the product of impact core and probability score.

5.1.1 School leadership's risk matrix

Risk factors and probability of occurrence and impact – School leadership			
Risk factors	Impact score (X/5.0)	Probability score(Y/4.0)	Risk level (R= XxY)
1. Problematic relations and incidents between students	3,23	3,17	10,24
2. Use of substances and misuse of electronic devices	2,51	3,26	8,19
3. Student's interfamilial issues	2,25	2,66	5,99
4. Students' health issues that may be life-threatening	2,00	2,71	5,41
5. Injury due to unsuitability of infrastructures	1,39	1,33	1,85
6. Complaints from parents and guardians	1,56	1,58	2,46
7. Problematic relations between students and educators	4,02	2,95	11,86
8. Problematic relations between educators	3,74	2,06	7,70
9. Problematic relations between educators and school leadership	2,12	1,34	2,83
10. Absence of teaching staff	3,02	2,66	8,03
11. Abstinance of supporting services staff (cleaning , maintenance, food services)	1,87	1,36	2,54
12. Unsuitability of infrastructure and shortages	3,69	2,54	9,36
13. Natural catastrophes	2,01	1,25	2,51

Table 5. Risk factors. Probability of occurrence and impact. School leadership.

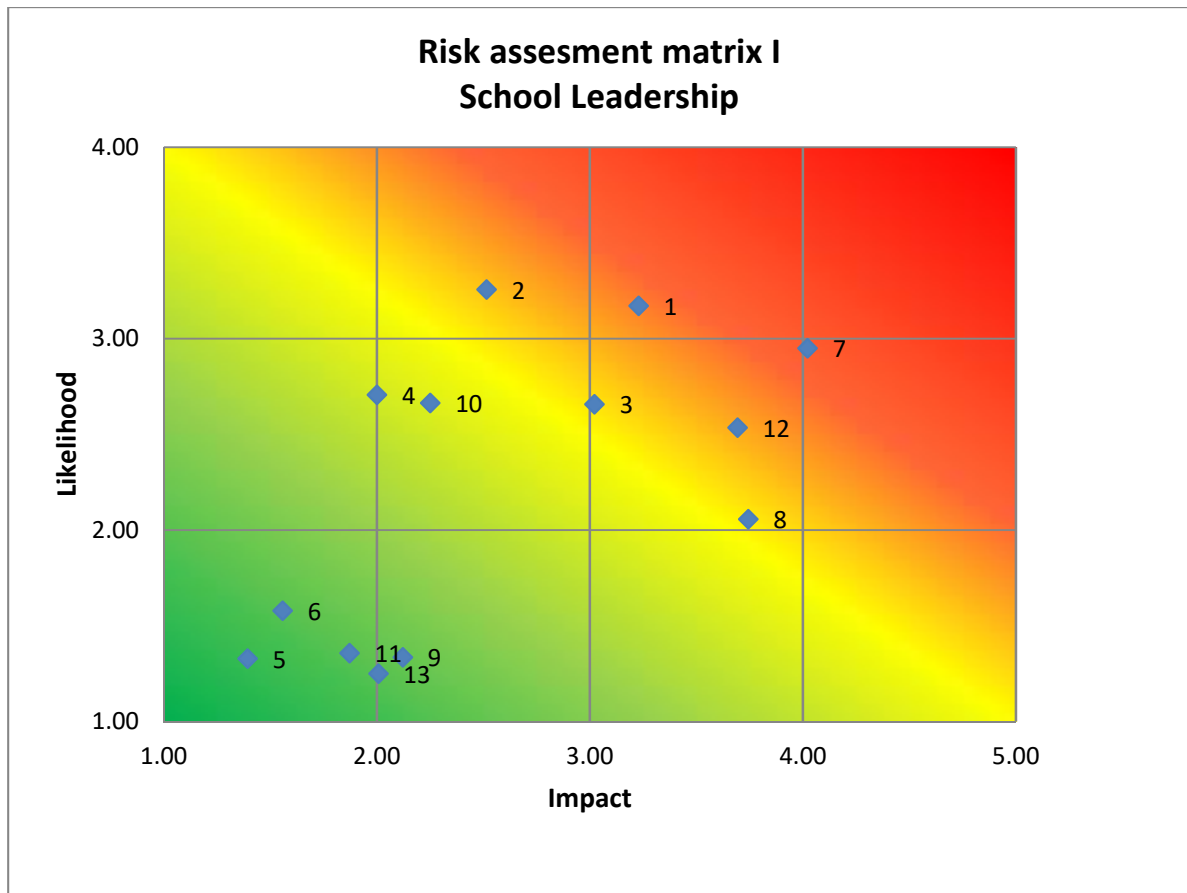


Figure 4. Risk matrix I. School leadership

School leaders: Based on the findings of Table 5 and Risk Matrix I (figure 4), we may proceed at the following conclusions:

- Problematic relations among students and between students and teachers appear to be the risks with the higher risk level. Being placed in the red area indicates that attention and immediate treatment is required.
- Unsuitability of infrastructure and shortages on educating material do constitute an important risk that interrupts schools routine and seeks for immediate treatment.
- Usage of prohibited substances, student’s interfamilial problems and problems at educators’ collaboration are common but don’t affect school’s ongoing procedures. Attention should be paid in order to mitigate the existence of such issues to the lowest possible level.
- The rest of the risk factors as mentioned at Table 5 are not characterized as high risk factors. Immediate actions are not required but monitoring should be

implemented in order to avoid further increase on the appearance of the phenomenon.

5.1.2 Educators' risk matrix

Risk factors and probability of occurrence and impact - Educators			
Risk factors	Impact score (X/5.0)	Probability score(Y/4.0)	Risk level (R= XxY)
1. Problematic relations and incidents between students	2,90	2,91	8,44
2. Use of substances and misuse of electronic devices	2,48	2,25	5,58
3. Student's interfamilial issues	3,01	2,67	8,02
4. Students' health issues that may be life-threatening	2,33	2,67	6,21
5. Injury due to unsuitability of infrastructures	2,25	1,37	3,08
6. Complaints from parents and guardians regarding the services offered	2,42	1,67	4,05
7. Problematic relations between students and educators	3,12	2,80	8,75
8. Problematic relations between educators	2,84	2,07	5,89
9. Problematic relations between educators and leadership	2,85	1,99	5,66
10. Absence of teaching staff	2,26	2,77	6,27
11. Abstinance of supporting services staff (cleaning , maintenand, food services)	2,06	1,52	3,14
12. Unsuitability of infrastructure and shortages	2,89	1,99	5,76
13. Natural catastrophes	2,50	1,43	3,56

Table 6. Risk factors. Probability of occurrence and impact. Educators

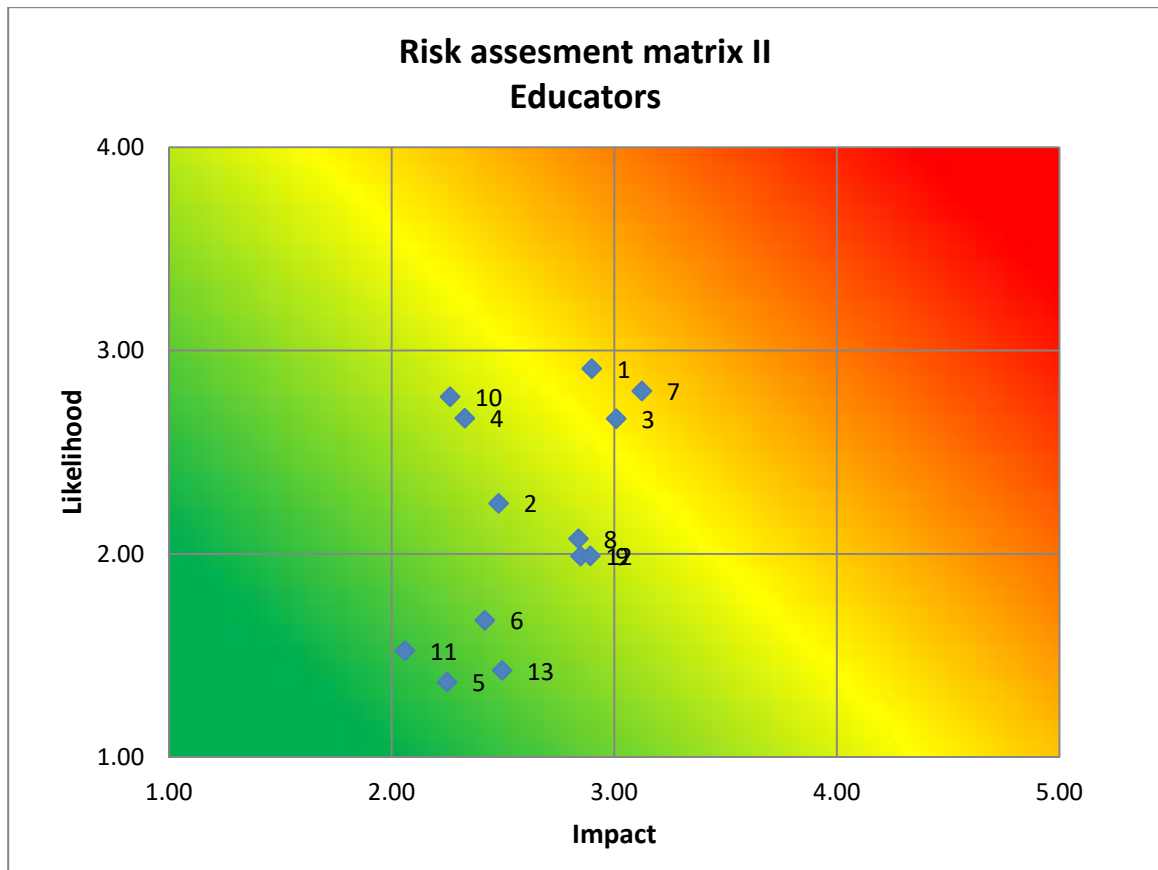


Figure 5. Risk assessment matrix II. Educators

Educators: Based on the findings of Table 6 and Risk Assessment Matrix II we may proceed to the following conclusion regarding educators:

- According to teachers the risk event with greatest importance that disrupts school's routine and teaching procedures is the problematic relations among teachers and students. Risk factor number 7 is placed on the borders of yellow and red area indicating a medium risk factor. Actions do need to be taken and controlling mechanisms need to be triggered in order to prevent the acceleration of the appearance.
- The rest of the risk factors are characterized from the teachers as low risk and tolerable. Monitoring from the leadership is recommended in order to maintain low the risk level and prevent any acceleration.

5.1.3 Population's risk matrix

Risk factors and probability of occurrence and impact - Population			
Risk factors	Impact score (X/5.0)	Probability score(Y/4.0)	Risk level (R= XxY)
1. Problematic relations and incidents between students	2,98	2,97	8,85
2. Use of substances and misuse of electronic devises	2,49	2,49	6,19
3. Student's interfamilial issues	2,83	2,66	7,54
4. Students' health issues that may be life-threatening	2,25	2,68	6,02
5. Injury due to unsuitability of infrastructures	2,05	1,36	2,78
6. Complaints from parents and guardians	2,22	1,65	3,66
7. Problematic relations between students and educators	3,34	2,84	9,46
8. Problematic relations between educators	3,05	2,07	6,32
9. Problematic relations between educators school leadership	2,68	1,84	4,91
10. Absence of teaching staff	2,44	2,75	6,70
11. Abstinance of supporting services staff (cleaning , maintenance, food services)	2,02	1,48	2,99
12. Unsuitability of infrastructure and shortages	3,08	2,12	6,53
13. Natural catastrophes	2,38	1,39	3,30

Table 7. Risk factors. Probability of occurrence and impact. Population

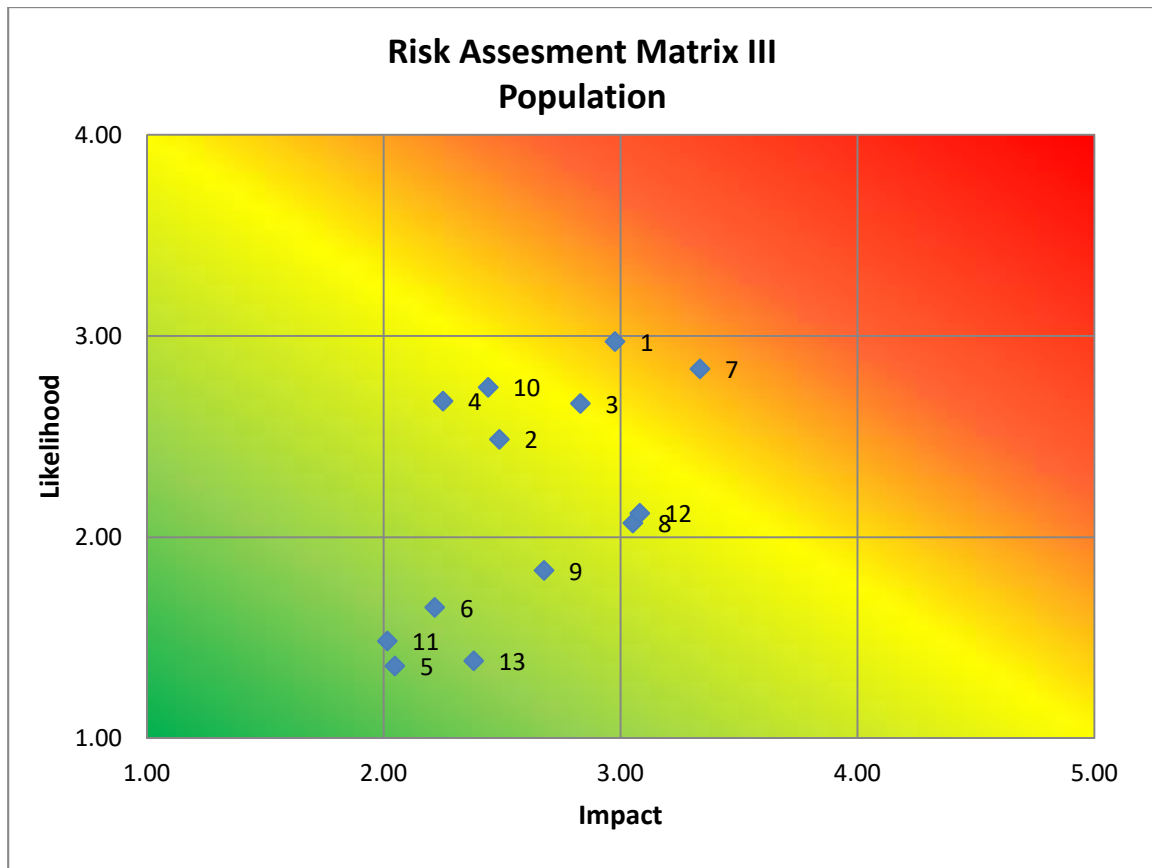


Figure 6. Risk assessment Matrix III. Population

Population: Based on the findings of Table 7 and Risk Matrix III we reach to the following conclusions:

- Problematic relations and incidents among students and between students and teachers (risk factors 1 and 7) appear to be the risks entering the red zone at matrix 3. The presence of those risks requires immediate attention from the school manager. Monitoring is highly recommended until the lower risk level is achieved.
- Interfamilial students' problems, absence of teaching staff, poor infrastructure and shortages are lying on the yellow area indicating the need of attention. Monitoring and reviewing are essential to mitigate the frequency and the impact of the risks.
- Injury caused from unsuitability of infrastructures, complaints from parents , abstinance of supporting services staff and severe natural phenomena are ranked as low risk events and acceptable. Ongoing monitoring is necessary in order to maintain lower risk level.

5.2 Risk perception analysis

An objective of this research is to identify and record the differences in the risk perception among educators and school leadership. In order to acquire an image of the dissimilitude in risk comprehension concept between the two groups, a hypothesis test has been performed based on the collected data.

Part of the questionnaire was focused in the differences in perception. The options the participants had to choose from (with the option of choosing more than one answers) follow below:

Features of a risk in a school unit :

1. A predictable event
 2. An unpredictable event
 3. An event that interrupts the smooth operation of the school
 4. An event that affects but not interrupts the normal school routine
 5. An event that happens one time per academic year
 6. An event that happens more than once per academic year
 7. An event related to the infrastructure
 8. An event related to students safety
 9. An event that has unpleasant consequences
 10. An event that has unpredictable consequences
 11. An event that affects school's image in a negative way
 12. An event that attracts Media's interest
 13. An event that causes anxiety and stress to school's population
 14. An event that exceeds your knowledge and capability and skills
-

Table 8. Risk features

As described at chapter 3, the most appropriate statistical analysis test in order to perform hypothesis testing is the z-test. The z-test performed for the choices of the question has given the following results:

Hypothesis test for equality of means

H_0 : the mean of school leaders is equal to the mean of educators.

$$\mu_1 = \mu_2 \text{ or } \mu_1 - \mu_2 = 0$$

H_1 : The mean of school leaders is not equal to the mean of educators $\mu_1 \neq \mu_2$

The level of significance is 0.05. Since, the examined measure is the equality of means, a two-tailed z-test is the most suitable statistical analysis tool. To achieve an accurate interpretation of the results follows a comparison of the critical value of z and the z value of the samples. If the z-statistic < -z critical or z-statistic > z critical we reject the null hypothesis. The critical value for our samples is 1.96.

Risk features for secondary school units					
Answer	School leadership		Educators		Z
	Mean	Variance	Mean	Variance	
1. A predictable event	0.14	0.12	0.09	0.08	1.69
2. An unpredictable event	0.73	0.2	0.75	0.19	-0.58
3. An event that interrupts the smooth operation of the school	0.67	0.22	0.66	0.22	0.29
4. An event that affects but not interrupts normal school routine	0.21	0.17	0.14	0.12	1.85
5. An event that happens once per academic year	0.11	0.10	0.06	0.06	1.88
6. An event that happens more than once per academic year	0.32	0.22	0.41	0.24	-2.03
7. An event related to the infrastructure	0.42	0.24	0.37	0.23	1.08
8. An event related to students safety	0.87	0.12	0.83	0.14	1.13
9. An event that has unpleasant consequences	0.52	0.25	0.57	0.25	-0.92
10. An event that has unpredictable consequences	0.60	0.24	0.61	0.22	-0.12
11. An event that affects school's image in a negative	0.44	0.25	0.48	0.25	-0.92
12. An event that attracts Media's interest	0.14	0.12	0.22	0.17	-2.31
13. An event that causes anxiety and stress to school's population	0.36	0.23	0.32	0.22	0.82
14. An event that exceeds your knowledge and capability and skills	0.15	0.13	0.44	0.25	-7.73

Table 9. Risk features for secondary school units

At table 9 are included the values of means and the variances for both groups and the z values of features used to describe risks and crisis events of secondary school institutes. Based on the findings of the last column, the z value of factors 6, 12 and 14 indicate divergence between the opinions of educators and school leaders.

5.3 Risk management complicating factors

Another aspect of this master thesis is to identify the reasons that contribute in the school crisis management in a negative way according to the participants of the survey.

Factors that complicate school crisis management.					
Answer	School leadership		Educators		Z
	Mean	Variance	Mean	Variance	
1. Insufficient infrastructure	0.46	0.25	0.44	0.25	0.40
2. Lack of knowledge and management skills	0.62	0.23	0.78	0.17	-3.38
3. Insufficient organization	0.55	0.25	0.66	0.22	-2.37
4. Inadequate management training	0.54	0.25	0.57	0.24	-0.67
5. Lack of specialized trained personnel	0.67	0.22	0.63	0.23	0.89
6. Overestimation of potentials	0.23	0.18	0.30	0.21	-1.82
7. Lack of time	0.29	0.21	0.31	0.21	-0.50
8. Lack of a predesigned plan and guidance	0.52	0.25	0.64	0.23	-2.63

Table 10. Factors that complicate school crisis management

At table 10 are included the mean, the variances and the z values of the factors that affect in a negative way the effective management of school crisis events both for educators and school managers . Based on the findings of the last column the z value of factors 2 , 3 and 8 indicate divergence between the opinions of educators and school leaders.

Chapter 6

Conclusion

6.1 Risk matrices conclusions

One of the main objectives of this master thesis is to identify and assess risk factors of secondary school units. The comparison of the risk factors for school leaders and educators lead to the following conclusions:

- Risk factors with the lowest risk impact for both school leaders and educators are events such as injury due to unsuitability of infrastructure and natural catastrophes. Even though they are associated with school's population safety, due to low possibility of occurrence they do not constitute high level risk factors. The abstinence of supporting services staff is recorded as a low level risk that does not interfere with school unit's routine. Finally, complaints from parents and guardians constitute also a risk of low importance.
- Identical risk perception school leaders and educators have regarding life threatening students' medical condition and absence of teaching staff. Lying on the borderline between high risk and low risk factors those two risk indicators are concerning and affecting identically the members of the two groups.
- School leaders appear to be more concerned and influenced from incidents involving usage of prohibited substances or electronic devises and shortages on educating material. Issues related to collaboration among educators and between educators and leadership is evaluated as more crucial from the school managers than the teachers. Finally, we may conclude that school leaders are called upon to manage these events that do not fall within the jurisdiction of teachers.

- Educators' overall approach indicates a higher adaptability in risks. Risk matrix II presents higher tolerance in certain risks compared to school leaders. Finally, overall image of the population inclines to educators' profile.

6.2 School risk perception and crisis management complicating factors

Educators and school managers appear to have a similar approximation about risk events taking place at secondary school unit. Statistically significant differences are noticed regarding the role of an incident's frequency of appearance. In particular, teachers perceive as risk feature an event that happens more than once per academic year. On the contrary, school leaders do not apprehend the frequency of occurrence a risk element. Chasm between teachers 'and school managers' views is also noticed concerning events that may attract Media's attention. In particular, teachers demonstrate higher levels of sensitivity for this indicator. Finally, an event that exceeds teachers' knowledge and capability skills constitute a characteristic of a risk event for the group of educators. School managers do not empathize for the specific risk feature with educators.

Studying the factors that have a negative impact at school crisis management, statistically significant differences have been noticed among teachers 'and managers' perceptions. In particular, a divergence of opinion is incited regarding the impact of lack of knowledge and skills. Furthermore, the two groups of respondents appear to comprehend with different sensitivity the importance of inadequate organization in successful risk management. An additional factor for which has recorded dissemination of views is the role of absence or insufficiency of a predesigned plan and guidance. Convergence of views is recorded regarding factors related to school manager's abilities such as inadequate management training and overestimation of his potentials. Both educators and managers believe that insufficient infrastructure and lack of specialized trained personnel also contributes in a non-effective crisis management.

6.3 Recommended school management framework

According to a research conducted in 2012 by C. Sarrico, M.Rosa and M.Manatos, schools' controlling mechanisms are mainly oriented in monitoring exam results and students succeeding rates in highest education institutions. The absence of a systematic self-evaluating and performing tool not only for students but mainly for educators and leadership will contribute to improved evaluation procedures and acceleration of school's performance. (Sarrico, Rosa, & Manatos, 2012)

Training of teachers, learners and parents is considered to be essential in order to succeed effective school crisis management. A case study conducted in 2015 in two schools in Africa presents that democratic school governance, leadership and management may be achieved when students, parents and teachers are involved in the decision making processes. The involvement in school's community promotes school effectiveness. Finally, based on the findings of the research collaborating in a democratic working environment is a key essential in school management procedures. (Mncube , Lynn, & Naidoo, 2015)

A research about management four Singapore schools focuses on the value of investing in professional development. According to the study, the professional development of teaching and non-teaching staff improved teachers' effectiveness. Professional development programs, investment in future leaders and establishment of meaningful collaborations inside and outside the school unit contributed towards the improvement of school's performance. (Wang, Gurr, & Drysdale, 2016)

An issue with increased frequency levels occurrence is the internal conflicts among educators or educators and students. Those incidents are mainly attributed to both impersonal and organizational reasons. Inspiring collaboration, coherence to the teachers and cultivating the feeling of respect to colleagues and to the existing procedures promotes and enhances the undistracted dedication to school's basics principals, objectives and ideals. (Saiti Anna, 2015)

The interesting views as mentioned above in combination with the guidelines of Ministry of Education, Research and Religious affairs (subsection 2.2) enables us to reach the following school crisis management framework:

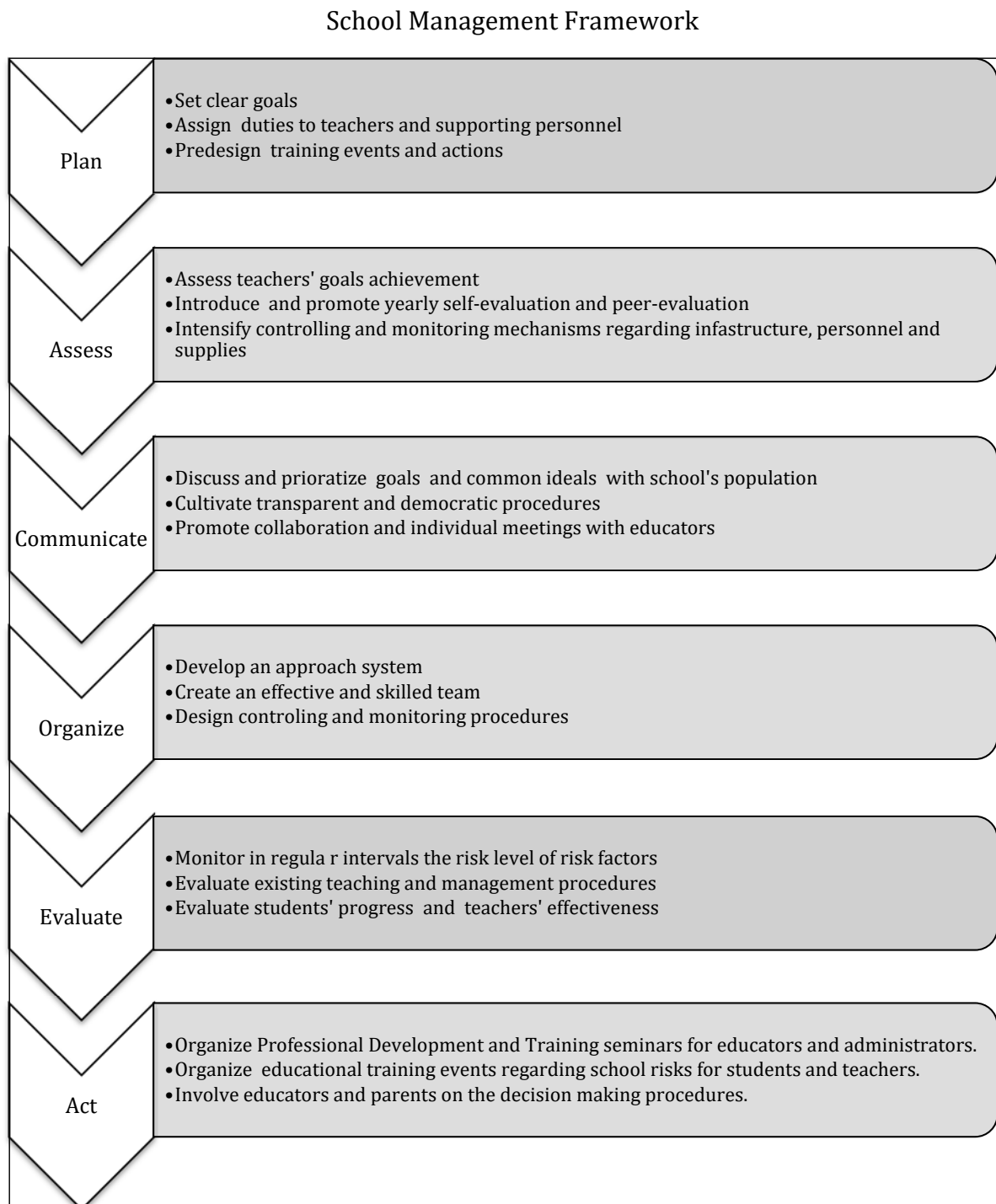


Figure 7. School Management Framework

Appendices

1. A predictable event			2. An unpredictable event			3. An event that interrupts the smooth operation of the school		
	<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>
Mean	0,141843972	0,087527352	Mean	0,730496454	0,7549234	Mean	0,673758865	0,660832
Variance	0,1217246	0,07986631	Variance	0,19687138	0,1850141	Variance	0,21980786	0,224133
Sample size	141	457	Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0		Difference of means	0	
z	1,685862261		z	-0,57557381		z	0,285561699	
P(Z<=z) one-tail	0,045911166		P(Z<=z) one-tail	0,282451644		P(Z<=z) one-tail	0,387606921	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,091822332		P(Z<=z) two-tailed	0,564903288		P(Z<=z) two-tailed	0,775213842	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	

4. An event that affects but not interrupts the normal school routine			5. An event that happens one time per academic year			6. An event that happens more than once per academic year		
	<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>
Mean	0,212765957	0,1422319	Mean	0,113475177	0,059081	Mean	0,319148936	0,411379
Variance	0,1674966	0,122002	Variance	0,10059856	0,0555904	Variance	0,2172989	0,242146
Sample size	141	457	Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0		Difference of means	0	
z	1,84920343		z	1,882268843		z	-2,026663686	
P(Z<=z) one-tail	0,032214222		P(Z<=z) one-tail	0,029899761		P(Z<=z) one-tail	0,021348409	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,064428444		P(Z<=z) two-tailed	0,059799523		P(Z<=z) two-tailed	0,042696819	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	

7. An event related to the infrastructure			8. An event related to students safety			9. An event that has unpleasant consequences		
	<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>
Mean	0,418439716	0,36761488	Mean	0,865248227	0,8271335	Mean	0,524822695	0,568928
Variance	0,24334792	0,23247418	Variance	0,11659373	0,1429837	Variance	0,24938383	0,245249
Sample size	141	457	Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0		Difference of means	0	
z	1,075175113		z	1,128970105		z	-0,91859116	
P(Z<=z) one-tail	0,141148168		P(Z<=z) one-tail	0,129455223		P(Z<=z) one-tail	0,179154729	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,282296336		P(Z<=z) two-tailed	0,258910445		P(Z<=z) two-tailed	0,358309457	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	

10. An event that has unpredictable consequences			11. An event that affects school's image in a negative way			12. An event that attracts Media's interest		
	<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>		<i>School Managers</i>	<i>Educators</i>
Mean	0,602836879	0,6083151	Mean	0,439716312	0,4835886	Mean	0,141843972	0,223195
Variance	0,23942458	0,2238268	Variance	0,24636588	0,2497307	Variance	0,12172426	0,173379
Sample size	141	457	Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0		Difference of means	0	
z	-0,117120662		z	-0,916049887		z	-2,307716743	
P(Z<=z) one-tail	0,453382218		P(Z<=z) one-tail	0,179820365		P(Z<=z) one-tail	0,010507448	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,906764437		P(Z<=z) two-tailed	0,35964073		P(Z<=z) two-tailed	0,021014896	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	

13. An event that causes anxiety and stress to school's population			14. An event that exceeds your knowledge and capability and skills		
	School Managers	Educators		School Managers	Educators
Mean	0,361702128	0,323851204	Mean	0,14893617	0,4420131
Variance	0,2308737	0,2189716	Variance	0,12675419	0,2466375
Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0	
z	0,822738825		z	-7,726867774	
P(Z<=z) one-tail	0,205328266		P(Z<=z) one-tail	5,55112E-15	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,410656532		P(Z<=z) two-tailed	1,11022E-14	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	

Appendix 1. Excel analysis of risk features

1. Insufficient infrastructure			2. Lack of knowledge and management skills			3. Insufficient organization		
	School Managers	Educators		School Managers	Educators		School Managers	Educators
Mean	0,460992908	0,442013129	Mean	0,624113475	0,776805252	Mean	0,546099291	0,658643326
Variance	0,248478	0,246638	Variance	0,234596	0,173379	Variance	0,247875	0,224832
Sample size	141	457	Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0		Difference of means	0	
z	0,395588548		z	-3,378015504		z	-2,372661653	
P(Z<=z) one-tail	0,346204293		P(Z<=z) one-tail	0,000365055		P(Z<=z) one-tail	0,008830217	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,692408587		P(Z<=z) two-tailed	0,00073011		P(Z<=z) two-tailed	0,017660433	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	
4. Inadequate management training			5. Lack of specialized trained personnel			6. Overestimation of potentials		
	School Managers	Educators		School Managers	Educators		School Managers	Educators
Mean	0,539007092	0,571115974	Mean	0,666666667	0,625820569	Mean	0,226950355	0,301969365
Variance	0,248478	0,244943	Variance	0,222222	0,234169	Variance	0,175444	0,210784
Sample size	141	457	Sample size	141	457	Sample size	141	457
Difference of means	0		Difference of means	0		Difference of means	0	
z	-0,669773409		z	0,893796819		z	-1,816532625	
P(Z<=z) one-tail	0,251501123		P(Z<=z) one-tail	0,185715306		P(Z<=z) one-tail	0,034644354	
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627	
P(Z<=z) two-tailed	0,503002247		P(Z<=z) two-tailed	0,371430611		P(Z<=z) two-tailed	0,069288708	
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985	
7. Lack of time			8. Lack of a predesigned plan and guidance					
	School Managers	Educators		School Managers	Educators		School Managers	Educators
Mean	0,290780142	0,312910284	Mean	0,517730496	0,643326039			
Variance	0,206227	0,214997	Variance	0,249686	0,229458			
Sample size	141	457	Sample size	141	457			
Difference of means	0		Difference of means	0				
z	-0,503340665		z	-2,634403232				
P(Z<=z) one-tail	0,30736239		P(Z<=z) one-tail	0,004214266				
z critical, one-tailed	1,644853627		z critical, one-tailed	1,644853627				
P(Z<=z) two-tailed	0,614724781		P(Z<=z) two-tailed	0,008428533				
z critical,two-tailed	1,959963985		z critical,two-tailed	1,959963985				

Appendix 2. Excel analysis of risk management complicating factors

		Risk Perception					
		School Leadership			Educators		
			Total number of answers	Total number of participants		Total number of answers	Total number of participants
Answer	Count	Out of 796	Out of 140	Count	Out of 2700	Out of 454	
1	A predictable event	20	2,51%	14,29%	39	1,44%	8,59%
2	An unpredictable event	103	12,94%	73,57%	342	12,65%	75,33%
3	An event that interrupts the smooth operation of the school	94	11,81%	67,14%	300	11,09%	66,08%
4	An event that affects but not interrupts the normal school routine	29	3,64%	20,71%	65	2,40%	14,32%
5	An event that happens one time per academic year	16	2,01%	11,43%	27	1,00%	5,95%
6	An event that happens more than once per academic year	44	5,53%	31,43%	187	6,92%	41,19%
7	An event related to the infrastructure	58	7,29%	41,43%	167	6,18%	36,78%
8	An event related to students safety	121	15,20%	86,43%	375	13,87%	82,60%
9	An event that has unpleasant consequences	73	9,17%	52,14%	257	9,50%	56,61%
10	An event that has unpredictable consequences	85	10,68%	60,71%	276	10,21%	60,79%
11	An event that affects school's image in a negative way	61	7,66%	43,57%	219	8,10%	48,24%
12	An event that attracts Media's interest	20	2,51%	14,29%	101	3,74%	22,25%
13	An event that causes anxiety and stress to school's population	51	6,41%	36,43%	146	5,40%	32,16%
14	An event that exceeds your knowledge and capability and skills	21	2,64%	15,00%	199	7,36%	43,83%
SUM		796			2700		

Appendix 3. Risk features statistics

		Risk Management Obstacles					
		School Leadership			Educators		
			Total number of answers	Total number of participants		Total number of answers	Total number of participants
Answer	Count	Out of 545	Out of 140	Count	Out of 1962	Out of 454	
1	Insufficient infrastructure	65	11,93%	46,43%	200	10,19%	44,05%
2	Lack of knowledge and management skills	88	16,15%	62,86%	352	17,94%	77,53%
3	Insufficient organization	77	14,13%	55,00%	298	15,19%	65,64%
4	Inadequate management training	76	13,94%	54,29%	259	13,20%	57,05%
5	Lack of specialized trained personnel	93	17,06%	66,43%	283	14,42%	62,33%
6	Overestimation of potentials	32	5,87%	22,86%	137	6,98%	30,18%
7	Lack of time	41	7,52%	29,29%	141	7,19%	31,06%
8	Lack of a predesigned plan and guidance	73	13,39%	52,14%	292	14,88%	64,32%
Summary		545			1962		

Appendix 4. Risk Management Obstacles statistics

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