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Araştırma Makalesi

DETERMINATION OF CORPORATE RISK MANAGEMENT APPLICATION LEVEL: A SURVEY IN MANISA PROVINCE[1]

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Abstract

In this study, it was aimed to research the levels of corporate risk management application in businesses operating in Manisa. For this purpose, a survey was conducted to investigate the awareness of corporate risk management of businesses in Manisa Organized Industrial Zone. The survey results were evaluated by multidimensional scaling and correspondence analysis. Corporate risk management managers of 56 businesses participated in the survey. According to findings, it is found that the corporate risk management practices of businesses are at Level 4, but there is a lack in which guidance or standard is adapted. Also, while corporate risk management can be mentioned as a formal and rules-based risk management process in businesses carried out by internal auditors, it is observed that there is no specific risk management process in businesses where other (board of directors, CEO, human resources, occupational health, and safety specialist, external support) are responsible. Besides, it is determined that there are no businesses with the COSO corporate risk management guidance published by the United States that could be adapted to large businesses among the businesses that responded to the survey.

Keywords: *Corporate Risk Management, Multidimensional Scaling, Correspondence Analysis, Categorical Data Analysis.*

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KURUMSAL RİSK YÖNETİMİ UYGULAMA DÜZEYİNİN BELİRLENMESİ: MANİSA İLİNDE BİR UYGULAMA

Öz

Bu çalışmada, Manisa'da faaliyet gösteren işletmelerde kurumsal risk yönetimi uygulama düzeylerinin araştırılması amaçlanmıştır. Bu doğrultuda, Manisa Organize Sanayi Bölgesi'ndeki işletmelerin kurumsal risk yönetimi farkındalığını araştırmak amacıyla anket uygulanmıştır. Ankete 56 işletmenin kurumsal risk yönetimi yöneticileri katılmıştır. Anket sonuçları çok boyutlu ölçekleme ve uyum analizi yapılarak değerlendirilmiştir. Çalışmada elde edilen bulgulara göre, işletmelerin kurumsal risk yönetimi uygulamalarının Düzey 4 seviyesinde olduğu; ancak bu sürecin bir rehber ya da standarda uyarlanması konusunda bir eksiklik olduğu tespit edilmiştir. Ayrıca, kurumsal risk yönetimi süreci, iç denetçiler tarafından yürütülen işletmelerde resmi ve kurallara dayalı bir risk yönetim süreci olup diğer sorumluların (yönetim kurulu, CEO, insan kaynakları, iş sağlığı ve güvenliği uzmanı, dış destek) olduğu işletmelerde özel bir risk yönetim süreci uygulaması olduğu belirlenmiştir. Ayrıca, ABD tarafından yayınlanan COSO kurumsal risk yönetimi rehberine ankete katılan büyük işletmelerden hiçbirinin sahip olmadığı tespit edilmiştir.

Anahtar Kelimeler: *Kurumsal Risk Yönetimi, Çok Boyutlu Ölçekleme, Uyum Analizi, Kategorik Veri Analizi.*

INTRODUCTION

The concept of risk is defined as "the danger of suffering a loss" in the Dictionary of the Turkish Language Association. Collier (2007) defined the risk concept as the probability of the companies losing their assets or their assets being suffered. The concept of the risk is generally identified as the possibility of the emergence of the events that might create loss in assets and the potential size of this loss (Manab et. Al., 2010). According to these definitions, the risk is the probability of the occurence of a decline in assets of management and, when the degree of this probability increases, the degree of the risk might be higher.

In another definition of the risk made by Derici et. Al., (2007), it is expressed as threats (negativities) which may be faced with in the future and that may prevent the realization of goals or the opportunities that may ease to reach the achievement of the goals. This definiton illustrates the fact that the risk entails the danger as well as opportunities. Therefore, risk has both danger and opportunity features.

Even though risk and uncertainty are two terms confused with each other, they are mostly used changeably, as well. However, in the risk, the probability of occurance of an event that may ocur in the future can be predicted, but in the uncertainty the probability of occurance of an event cannot be predicted (Zaif, 2017). In this context, in any situation it is not possible to express uncertainty mathematically.

After World War II, risk management had the opportunity to be applied scientifically. After World War II, the studies to measure the potential affordable losses of managements by statistical methods gathered speed. The phenomenon of

risk management, which has emerged with different sub-disciplines in time, has developed substantially to direct these activities within distinctive organisational units (Altaş and Yakut, 2018). In this period, risk management was addressed individually by each organisational unit in the management.

The increment of the risk of the businesses caused by operational or strategical causes from both internal and external environment has given rise to have changed in the understanding of risk management (Crockford, 2015). Therefore, developments in the management mentality of the businesses might be evaluated as an important factor to affect risk management. Especially, it can be accepted that the fact that managements become an open system interacting with an external environment from a closed management understanding has also been effective in the change of the understanding of risk management.

Business bankruptcies, which occur as a result of the increment of risk types involving businesses and the phenomenon of the risk management being gradually left to the initiative of certain managers, increase international pressures to approach risks from a different point of view.

The importance of managing risks in terms of powerful institution management has been increasingly understood and accepted. Institutions have been under pressure to define all types of risks (social, ethical, and environmental risks and financial and operational risks) which they face and explain how they manage to keep these risks at an acceptable level (TİDE, 2009).

Corporate risk management is an integrated system in which operating risks have been managed in a body. This system differs from traditional in which each risk has been managed by separate units (supply chain, credit, marketing, human resources etc.) and financial risk management (Monda and Giorgino, 2013). Detailed information about corporate risk management is given below.

In times when risk management was traditionally addressed, every unit in the business took its own precautions against risks that their units may encounter, and this situation prevented to address risks at the institution level. It can be said that this situation caused to lack of common awareness in face of risks.

Corporate risk management addresses risks with a holistic view, unlike traditional risk management. With corporate risk management, senior staff are allowed to examine all risks and to prepare for risks in advance (Kanu, 2020). Corporate risk management attributes joint responsibility to whole employees in the business to provide long term competitive advantage (Viscelli et. Al., 2017). In this sense, it can be accepted that business employees act with the principle of joint responsibility against risk management with corporate risk management instead of traditional ones.

It is been indicated that corporate risk management is going to take an important place in the future in the area of business administration (Buchanan, 2004).

In this area, institutions like professional associations, rating bureaus, consulting companies, international standard-setting institutions has lead by preparing guides for businesses about how corporate risk managements are applied (Şener, 2017). In the countries such as the United States of America, Britain, Canada and Australia guides for applying corporate risk management are in force and at the same ISO 31000 Corporate Risk Management Guide which is created rallingly by experts from 28 different countries is also present (Purdy, 2010).

CONCEPTUAL FRAMEWORK

Application of corporate risk management is a phenomenon that brings with important changes in terms of administrative and requires to use of more resources in human resources and financial. Thus, businesses can provide efficiency in the process of decision – making (Görmen and Korkmaz, 2017). Corporate risk management decreases uncertainty and instability by making it easier to reach organisational goals and increasing the value of the institution (Beasley et. al., 2018). Therefore, it can be indicated that in passing to corporate risk management for businesses it is necessary to revolutionize, besides important acquirements can be gainable.

Determining the level of corporate risk management in the businesses have been evaluated as maturity level studies in the literature (Griffiths, 2006). According to the study held by AON (2010), as the level of corporate risk management application (maturity level) increases, it is concluded that the operating value also increases.

According to the study by Hillson (1997), it can be accepted that the first model towards corporate risk management maturity level has been developed. This model presents a guide in terms of determining the current status of corporate risk management of businesses and presenting the deficiencies. Businesses that want to develop application level should take overhead precautions such as education, process development, employee assignment, etc. (Görmen and Korkmaz, 2017).

In this study, 4 maturity levels about corporate risk management application levels which are determined by Hillson (1997) are going to be used. This is because of the expectation that fewer measurement as maturity level will decrease the uncertainty. In the literature, there are some studies that uses 5 different maturity levels, as well (AON, 2010). In this study, four levels will be used to decrease the uncertainty about maturity level. These are Level 1, Level 2, Level 3, and Level 4. All explanations about each level are below (Görmen and Korkmaz, 2018).

Level – 1: At this level, corporate risk management is considered unnecessary and risk management is seen as a waste of time. The support of executives and risk communication do not exist; risks are not managed in any area. There is no integration of risk management with other areas of management and there

is no budget assigned for risk management. Also, neither qualitative nor quantitative measurement, archiving and risk monitoring are done.

Level – 2: In this level, the reliance on risk management is moderate an deven if it is believed that risk management has some advantages, they are questioned. The integration of risk management with other areas of management are restricted, the budget assigned for risk management is not constant.

Level – 3: The reliance on contribution provided by risk management and awareness are high level. Even though it cannot be benefitted from all the advantages being offered by risk management, the support of executives are high level. The information sharing in the business about risk is high and risk management are applied in so many projects. The extent of risk management applications take place in the entire business.

Level – 4: The awareness about/regarding the value and importance of risk management are high level. Risk management is seen as a critical success factor and the support of executives are high. Information about risk in the business is shared in all reaches and risk management are applied in all projects. Nonoperating stakeholders also attend to the process of risk management. Integration of other project management duties and risk management is high level. A budget has been allocated for all projects and for the development of risk management.

Olivia (2015), has presented a model to determine the corporate risk management application levels in the supply chain of Brazillian businesses. Benekos et. al., (2019) indicated in the study held in the USA that corporate risk management maturity level can be applied to all businesses which carry on a business in the transportation industry.

Tjahjono (2017) has stated in the maturity level study carried out for real sector businesses in Indonesia Stock Exchange that corporate risk application level is low. According to that, it has been concluded that as the operating assets increase, corporate risk management maturity level also increases. In the study, it is stated that real sector businesses are vulnerable to risks and managers carry out their risk management activities in order to assort with legal regulations.

Mahama (2020) has presented "corporate risk management maturity model" for the institutions took place in the public sector. Marnick (2016) conducted a study to investigate the corporate risk management applications of an airline company operating in Europe and to develop a corporate risk management maturity index for this business.

Görmen and Korkmaz (2017) carried out a study to reveal a framework which will be helpful to understand the corporate risk management application level in organizations and to develop current corporate risk management applications. In the study, a survey is applied to 100 people who work in the public and private sector

and it is indicated that this applied survey can be used to determine corporate risk management maturity level.

METHODOLOGY

Continuity of business activities depends on the correct identification and effective management of the risks encountered. Risk is a phenomenon that businesses can constantly face. Corporate risk management has been developed to address risks in holistically and proactively unlike traditional risk management. In this context, it can be accepted that corporate risk management has important advantages in ensuring the continuity of business activities.

This study aims is to determine the level of corporate risk management practices of large businesses operating in Manisa Organized Industrial Zone. The reason for the selection of big businesses within the scope of the study is that corporate risk management practices are mostly aimed at big businesses; In other words, it is thought that the costs of implementing this management model can be covered by big businesses. In this sense, a total of 56 businesses located in the Manisa Organized Industrial Zone and ranked first and second in the ISO (Istanbul Chamber of Industry) list; however, a total of foreign businesses operating in this region constitute the sample space. In the study, the survey method was used as a data collection tool, and as a result of the survey, data of the Likert scale (1 = strongly disagree – 5 = strongly agree) and categorical scale type were obtained. IBM SPSS 25 was used for analysis.

Multidimensional Scaling Method

Multidimensional Scaling is a graphical method used to represent the relationships between phenomena or units in a smaller-sized space with the help of calculated distances. In this method, units defined in k variable and k dimensional space are represented in a new space by reducing the number of dimensions without moving away from their real positions. In the meantime, inter-relational mapping is made in this space that provides conceptual significance. In the Multidimensional Scaling Method, there is no assumption about the distribution of data (Kalaycı, 2014).

Multidimensional Scaling is used as a metric and non-metric, that is, ordered or categorical scaling, depending on the data type. Ordered scaling is used when it comes to distance matrices obtained from subjective judgments within the ordering relationship. For this purpose, the solution is obtained by ordering distances, that is, dissimilarities or similarities (Alpar, 2013; Özdamar, 2013). In other words, in non-metric multidimensional scaling, it is aimed to form a perceptual map that is perceived by those who answer the questions and is relative. In this way, detailed information about the conceptual perception structure that can be reduced to two or three dimensions is obtained. This type of analysis is used to measure perceptions, behaviors, attitudes and preferences in many fields, especially in social sciences.

Coordinates

Assuming that the distance between phenomena or units can be ordered, in the non-metric multidimensional scaling method, the ordinal numbers of the distance values are taken into account. The steps of the algorithm for scaling the ordered dissimilarity values (Shepard-Kruskal) are as follows (Alpar, 2013):

D(δij) distance matrix excluding the diagonal elements m = n(n-1)/2 number distances are ordered in ascending. (n: number of units)

$$d_{r_1 s_1} < d_{r_2 s_2} < \ldots < d_{r_m s_m}$$

The stress value expressing the difference between the real values in the multi (p) dimensional space and the values obtained in the reduced space is obtained. The shape with the smallest stress value is determined as the most compatible shape for that size. The number of appropriate dimensions is determined as the dimension with the smallest stress value (Kalaycı, 2014).

$$Stress = \sqrt{\frac{\sum(d_{ij} - \hat{d}_{ij})^2}{\sum {d_{ij}}^2}}$$

Table 1: Stress Value and Correspondence Table

Stress value	Correspondence Measure
0.00- < 0.025	Perfect Fit
0.025- < 0.05	Best Fit
0.05- < 0.10	Good Fit
0.10- < 0.20	Low Fit
≥0.20	Discordance

Correspondence Analysis

In the Correspondence Analysis, which is one of the nonlinear multivariate analysis techniques, the correspondence of the categories of categorical variables or objects, in other words, how similar they exhibit and the relationship of homogeneity between them are researched. In this method, it is aimed to explain the similarity relationship graphically by reducing the data matrix, that can be multi-dimensional depending on the number of categories of the components so that it can be represented in a simpler structure with cross-table analysis (Gifi, 1990). There is no assumption about the distribution of data due to the use of categorical data.

In the first stage of applying the Correspondence Analysis, the analysis is done based on the categories of one of the variables. First, row profiles and their

distances to each other are obtained. In the second step, column profiles and their distances to each other are obtained based on the categories of the other variable. Finally, the result graphs obtained since the first stage are combined and evaluated together for the row and column components (Giray, 2011; Van de Geer, 1993).

Correspondence Analysis is called simple if it has two variables, and multiple if it has more variables. In the chi-square analysis, the part responsible for the dependency structure between categories cannot be determined, therefore, simple correspondence analysis is used as a descriptive data analysis method that eliminates this deficiency. Two dimensions are generally used due to the ease of graphical interpretation.

Profile Points, Weights and Distances

The crosstab frequency values are converted into proportional values so that the total value of the k components is equal to 1 for each row or each column profile. Through the representations of these profile points (minimum number of categories - 1), all relationships in a dimensionally constrained subspace can be explained. If each row or column profile is expressed as points in space, if the weights of the points are equal, the centroid (weighted average) will be located in the geometric center of the point cluster. In the case of categorical data, the distance between rows and columns can be calculated by Euclidean distance (Sharma, 1996).

Euclidean distance between two units,

x_{im}: m. variable value of i. observation unit,

x_{jm}: m. variable value of j. observation unit, are on the point of being,

is the form of $d(i,j)=\sqrt{((x_{im}-x_{jm})^2)}$, i=1,2,…k, j=1,2,…p.

Inertia, Coordinates and Eigenvalues

The term "inertia" is used instead of the term variability (variance) and it is measured by the weighted average of the squares of the chi-square distances between row or column profiles in the data table. It is calculated as

Inertia = $\sum_i w_i d_i^2$

including wi, the weight of i. point; di, the distance of the i. point to the center (Alpar, 2013).

Coordinates express the discretization state of the square (d2) of the chi-square distance to the center. For this purpose, the singular value discretization approach is used. The squares of the singular values give the eigenvalues of the new dimensions. Eigenvalues are calculated as much as the number of dimensions and

the sum of the eigenvalues shows the compliance of the solution (Altaş and Yorulmaz, 2018).

FINDINGS

In this study, ‘‘Global Enterprise Risk Management Survey’’ that published by AON (2010) was used. Accordingly, the degree of reliability of Likert-scale survey questions in the study was found to be approximately 0.80 for 8 groups. Alpar (2013) states the test or scale used has high reliability if the Cronbach Alpha coefficient is greater than 0.80.

There are a total of 111 businesses operating in Manisa Organized Industrial Zone, 56 of which are in the category of large businesses. In the study, 33 of the 56 large businesses operating in Manisa Organized Industrial Zone were reached. It is thought that the Covid-19 pandemic, which affected the world at the time of the study and caused the disruption of commercial activities, was effective in this situation. During the pandemic, some businesses may suspend their activities for health, safety, etc. reasons. Out of the remaining 55 businesses, 23 (medium-sized) respondents were received. Table 2 involves data regarding the professional experience of the survey participants in risk management. Accordingly, it is seen that 55.4% of the supervisors have 4 years or more experience. This situation can be interpreted as the majority of the respondents are experienced in risk management.

Table 2: What is Your Professional Experience with Risk Management?

	Frequency	Percentage	Cum. Percentage
Less than 1 year	6	10.7	10.7
1-3 years	19	33.9	44.6
4-6 years	20	35.7	80.3
7-9 years	6	10.8	91.1
10 years and more	5	8.9	100.0
Total	56	100.0	

In the study, the eight components (internal environment, goal setting, event identification, risk assessment, response to risk, control activities, information-communication and monitoring) included in the corporate risk management guide published by COSO in 2014 were directed to large and medium-sized businesses operating in Manisa Organized Industrial Zone. In the first part of the study, a total of 40 questions were asked, 5 for each component. Responses were measured on a 5-point Likert scale (strongly disagree, disagree, undecided, agree, strongly agree). Analyzes were carried out on the score/point values calculated for the components.

Table 3: Is There an Existing Corporate Risk Management Process in the Business?

	Frequency	Percentage	Cum. Percentage
Yes	43	76.8	76.8
No	13	23.2	100.0
Total	56	100.0	

According to Table 3, 43 supervisors have answered that there is an existing corporate risk management in the business and 13 supervisors that there is not. In this case, it can be accepted that 76.8% of the supervisors participating in the survey work in businesses with corporate risk management practices.

Table 4: Is There a Risk Manager Assigned for Risk Management within the Business?

	Frequency	Percentage	Cum. Percentage
Yes	37	66.1	66.1
No	19	33.9	100.0
Total	56	100.0	

According to Table 4, it is seen that 66.1% of supervisors within their business have a manager assigned for corporate risk management. On the other hand, when this result is correlated with Table 3, it can be assumed that some businesses have corporate risk management, but 6 businesses do not have a risk management manager.

Table 5: Who is Responsible for Implementing Risk Management within the Business?

	Frequency	Percentage	Cum. Percentage
Internal Auditor	38	67.9	67.9
Board of Directors	11	19.6	87.5
CEO	3	5.4	92.9
Others (human resources specialist, occupational health and safety expert, external support etc.)	4	7.1	100.0
Total	56	100.0	

In Table 5, it is observed that the responsibility of applying corporate risk management is predominantly (67.9%) on internal auditors; the board of directors follows this with 19.6%.

Table 6: Is There a Formal Risk Management Process to Identify Potential Risks?

	Frequency	Percentage	Cum. Percentage
Yes	32	57.1	57.1
No	4	7.1	64.3
Not yet, under process	20	35.7	100.0
Total	56	100.0	

According to Table 6, it is seen that 57.1% of the respondents have a corporate risk management process in the businesses, nevertheless, 35.7% of them have corporate risk management, but the process has not been completed. In this case, it can be said that 92.8% of the businesses participating in the survey have corporate risk management awareness.

Table 7: Are the Roles and Responsibilities of Everyone Involved in Risk Management Formally Established?

	Frequency	Percentage	Cum. Percentage
Yes	37	66.1	66.1
No	4	7.1	73.2
Only in one dept.	15	26.8	100.0
Total	56	100.0	

According to Table 7, it can be stated that approximately 66% of the supervisors participating in the survey stated that there is a formal application process regarding corporate risk management in their businesses, in other words, it can be stated that this process is carried out on a rules-based basis. On the other hand, it has been observed that there are responses to the fact that corporate risk management is applied in only one unit of the business, this situation is considered that some supervisors don’t have a clear understanding of the phenomenon of corporate risk management.

In the answers given about whether the corporate risk management process is carried out, and if so, according to which standard (guideline) (Table 8), it was observed that England in 6 businesses, ISO 31000 in 6 businesses and the Canadian Risk Management Model in 1 business. However, it is seen that the majority of the

supervisors (53.6%) do not have information about the guides and 23.2% of them stated that they are not a guide adopted. It can be said that this situation brings with it question marks about which guideline the corporate risk management processes are organized and carried out in the businesses participating in the survey in Manisa Organized Industrial Zone.

Table 8: Which Risk Management Standard has been Adopted within the Business?

	Frequency	Percentage	Cum. Percentage
ISO 31000	6	10.7	10.7
England Corporate Risk Management St.	6	10.7	21.4
Canada Corporate Risk Management St.	1	1.8	23.2
There is no standard adopted	13	23.2	46.4
I do not know about this	30	53.6	100.0
Total	56	100	

RESULTS

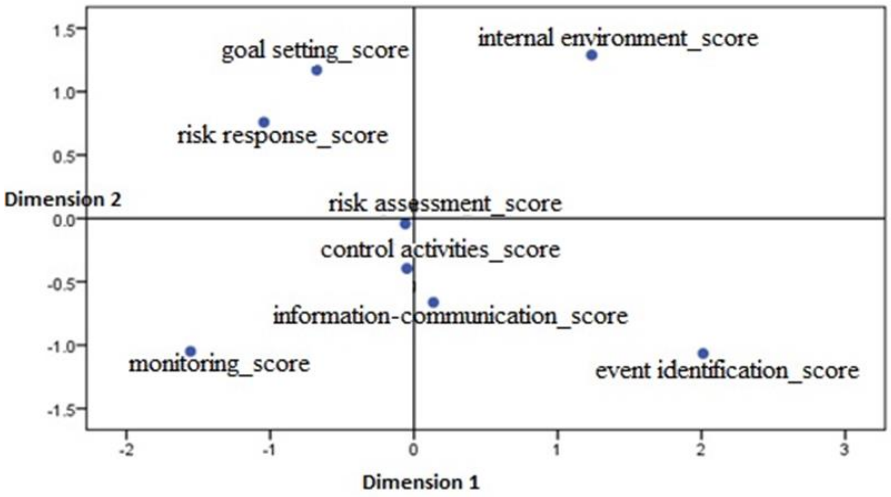
Multidimensional Scaling Analysis Results

Non-Metric Multidimensional Scaling Analysis was applied to eight components measured in Likert scale type. Ratings of 56 participants were taken into account in evaluating the relationship between these components. It is obtained as when the number of dimensions is determined as 3, Stress = 0.07 and $R^2 = 0.99$; when the number of dimensions is determined as 2, Stress = 0.10 and $R^2 = 0.92$; when the number of dimensions is determined as 1, Stress = 0.24 and $R^2 = 0.80$.

The fact that the stress value is in the range of 0.05 - 0.10 means that the real distances and the distances obtained as a result of multidimensional scaling show "good correspondence" with each other. Since the stress value is the smallest and the R^2 value is the highest, the relationship structure between the eight components can be represented by reducing it to three dimensions (99%). Also, representation seems possible with both dimensions (92%).

Figure 1 shows two dimensional reduced graphics within the framework of the interconnection of eight components in the COSO Corporate Risk Management Framework. According to the figure, components with similar proportions are located closely.

Figure 1: Two-Dimensional Euclidean Distance Model of Eight Components



According to the results of the Multidimensional Scaling Analysis, similar points among these eight components are located close to each other. In this case, it can be said that the variables of "risk assessment", "control activities" and "information-communication" have interrelated and similar practices due to their clustering together by positioning close to each other and to the center. Accordingly, "monitoring", "event identification" and "internal environment" components differ by positioning them away from other components. In the meantime, "monitoring" is mostly (98%) located far away as the "participating" component. To a lesser extent (85%), the ''participating'' component is "event identification" and this component is also located separately from the group.

Correspondence Analysis Results

In this section, according to the information obtained from the literature, correspondence analysis was performed for two different groups whose relations with each other might be important. Thus, the homogeneity of the answers given to the questions that are thought to be related, in other words, how similar they exhibit, and the relationship between them were evaluated.

Firstly, results of the correspondence analysis performed to measure the correspondence between "Who is responsible for applying corporate risk management within the business?" (4 categories) and "Is the roles and responsibilities of everyone involved in risk management formally established?" (3 categories) categorical variables are given below.

Table 9: Correspondence Table

Who is responsible for implementing corporate risk management within the business?	Are the roles and responsibilities of everyone involved in risk management formally established?			
	Yes	Only in one department	No	**Total**
Board of Directors	7	3	1	**11**
CEO	0	1	1	**2**
Internal Auditors	29	10	0	**39**
Others	1	1	2	**4**
Total	**37**	**15**	**4**	**56**

In Table 9, a correspondence analysis was done between two questions measuring the role and responsibilities in corporate risk management and risk management application responsibility. 29 out of 39 people who stated that the responsibility of applying corporate risk management was carried out by internal auditors; state that the roles and responsibilities of everyone involved in risk management are formally established.

Table 10: Summary of Dimensions

					Proportion of Inertia	
Dimension	Sing.Value	Inertia	Chi-Square	Sig	Accounted for	Cum.
1	.613	.375			.98	.98
2	.085	.007			.02	.02
Total		.383	21.458	.002	1.000	1.000

The dimension of the coordinate system, due to the minimum number of components that row and column profiles have min (4,3) = 3, it will be one less than this value. Therefore, according to the information obtained in Table 10 for the newly acquired 2 dimensions, Inertia (variability) was obtained as 0.383. The fact that this value is different from zero indicates that there is a relationship between "who has the responsibility of applying corporate risk management within the business?" and "whether the roles and responsibilities of those involved in risk management have been formally established".

In other words, preliminary information about whether the roles and responsibilities of everyone involved in risk management should be formally established depending on who is responsible for applying corporate risk management within the business ($p\_value<0.05$). "Inertia Ratio" shows how much of the

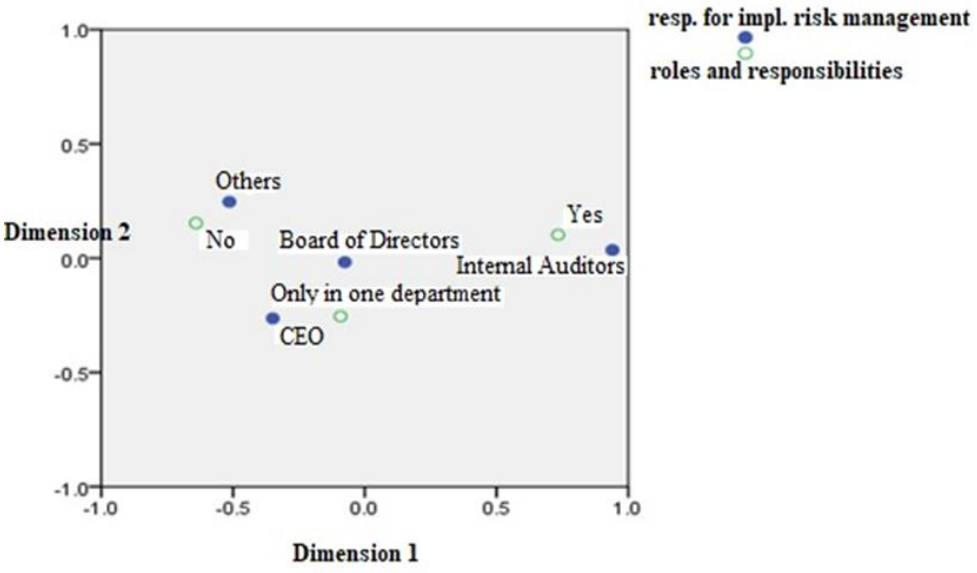
variability is explained by which dimension, and according to results, first dimension variability explains 98% and second dimension only 2%.

Figure 2: Profiles

Who is responsible for implementing risk management within the business?	Mass	Score in Dimension 1	Score in Dimension 2	Inertia	Contribution Of Point to inertia of Dimension 1	Contribution Of Point to inertia of Dimension 2	Contribution Of Dimension to inertia of Point 1	Contribution Of Dimension to inertia of Point 2	Total
Board of Directors	.250	-.076	-.018	.000	.005	.002	.994	.006	1.00
CEO	.250	-.350	-.264	.010	.096	.528	.944	.056	1.00
Internal Auditors	.250	.940	.035	.070	.692	.009	.990	.010	1.00
Others	.250	-.514	.246	.022	.207	.460	.977	.023	1.00
Total	1.000			.103	1.000	1.000			

According to Figure 2, being an internal auditor in the first dimension and a CEO (General Manager) in the second dimension has the highest score. 69.2% of the variability in the first dimension is explained by the internal auditor, and 52.8% of the variability in the second dimension is explained by the CEO category; these categories make the greatest contribution to dimensions. At the same time, the contribution of dimensions to the profile points is an indicator of how much that point is explained by the dimension. Thus, while the internal auditor category is explained by the first dimension with a rate of 99%, it is explained by only 1% by the second dimension.

Figure 3: Row and Column Profiles



As a result, when Figure 3 is analyzed, those who said "yes" to the question of whether the risks and responsibilities of everyone involved in risk management are formally established; it states that the responsibility in risk management lies with the internal auditors. Accordingly, it can be said that corporate risk management is carried out officially in businesses with internal auditors.

If should be stated generally; while corporate risk management is mentioned in a formal and rules-based risk management process in businesses carried out by internal auditors, it has been found that there is no specific risk management process in businesses where others (board of directors, CEO, human resources, occupational health and safety expert, external support) are responsible.

Table 12: Correspondence Table

Is the risk tolerance of the business determined in accordance with each organizational goal?	Which corporate risk management standard within the business is adopted?					
	ISO 31000	England	Canada	There is no standard	I do not know about this	**Total**
Yes, compatible with each organizational goal	5	6	1	8	13	**33**
No, it is only compatible with the most important organizational goals	1	0	0	4	17	**22**
No, it is not compatible with any organizational goals	0	0	0	1	0	**1**
Total	**6**	**6**	**1**	**13**	**30**	**56**

Secondly the results of the correspondence analysis performed to measure the correspondence between "Is the company's risk tolerance determined in accordance with the target with each organization?" (3 categories) * "Which corporate risk management standard has been adopted within the business?" (5 categories) categorical variables are given below.

Table 13 gives preliminary information (*p_value<0.05*) about the relationship between which corporate risk management standard is adopted within the business and whether the risk tolerance of the business is determined by the target with each organization. The first dimension explains 75.6% of the variability and the second dimension explains 24.4%.

Table 13: Summary of Dimensions

					Proportion of Inertia	
Dimension	Sing.Value	Inertia	Chi-Square	Sig	Accounted for	Cum.
1	.423	.179			.756	.756
2	.240	.058			.244	1.000
Total		.237	13.24	.004	1.000	1.000

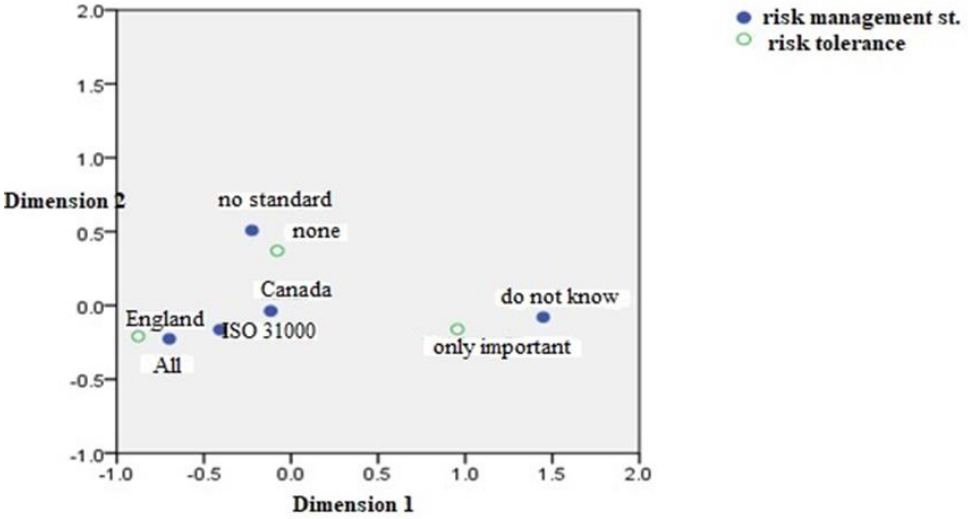
As if in Figure 4, in the first dimension, the England, ISO 31000 corporate risk management standards and the categories of not having information on this subject; not being a standard adopted in the second dimension have the highest scores. 74.5% of the variability in the first dimension is explained by the lack of knowledge and 75% of the variability in the second dimension is explained by the absence of an adopted standard.

Figure 4: Profiles

Which corporate risk management standard within the enterprise is adopted?	Score in Dimension			Contribution					
					Of Point to inertia of Dimension		Of Dimension to inertia of Points		
	Mass	1	2	Inertia	1	2	1	2	Total
ISO 31000	.200	-.408	-.164	.019	.059	.079	.981	.019	1.00
England	.200	-.699	-.226	.056	.173	.149	.987	.013	1.00
Canada	.200	-.116	-.038	.002	.005	.004	.987	.013	1.00
There is no standard adopted	.200	-.225	.508	.009	.018	.750	.615	.385	1.00
I do not know about this	.200	1.448	-.080	.236	.745	.018	0.990	.010	1.00
Total	1.000			.322	1.000	1.000			

As a result, when Figure 5 is examined, ISO 31000 guideline and England corporate risk management adopters state that the risks are handled by considering the entire business. Those who do not have information about whether there is any guide in their business state that the risks are compatible with the most important goals. It should be stated generally, it has been revealed that all processes performed in businesses that follow a certain guideline in corporate risk management (ISO 31000, England and Canada risk management guidelines) are related to organizational goals.

Figure 5: Row and Column Profiles



DISCUSSION AND CONCLUSION

Corporate risk management provides a structure that allows businesses to handle all risks together and by considering corporate goals. The purpose of corporate risk management is to achieve business goals in a sustainable and value-creating manner.

As a result of the study, it has been concluded that the corporate risk management application levels are high in the businesses participating in the survey in Manisa Organized Industrial Zone. In other words, this indicates that there is an awareness of corporate risk management. In the basic obtained findings of the businesses included in the questionnaire, the businesses under eight sub-titles: "internal environment", "goal setting", "event identification", "risk assessment", "risk response", "control activities", "information-communication" and "monitoring" is seen that the application levels are high. It can be said that the mode of the answers given for these eight components is "4" and corresponds to the result of ''agree'' supports this situation. In this case, according to the participants it can be accepted that businesses' risk management awareness levels are high. In other words, it can be said to be at Level 4. However, it is observed that corporate risk management processes in these businesses are mostly carried out without a risk management guide (23%) and the respondents of the survey have relatively less knowledge of these guidelines (54%).

According to the results of the Multidimensional Scaling Analysis, which got similar points and values among these eight components are located close to each

other. Accordingly, "monitoring", "event identification" and "internal environment" components differ by positioning them away from other components. At the same time, it can be said that the variables of "risk assessment", "control activities" and "information-communication" have similar applications due to their positioning close to each other and to the center. Since event identification, internal environment and monitoring processes specific to businesses differ, these components can be considered to be located separately. However, it can be stated that information and communication, risk assessment and control activities are similar at the enterprise level according to the responses given. Lai (2014), in his study investigating the corporate risk management intensity of publicly traded businesses in Malaysia, reveals that the process (information and communication), structure (internal environment) and process (risk assessment) are at a good level.

According to the results of the Correspondence Analysis, another analysis conducted in the study, it was evaluated whether there was correspondence between the answers given to the questions thought to be related to each other. According to the results of the Correspondence Analysis, while corporate risk management is a formal and rules-based risk management process in businesses carried out by internal auditors, it has been reached to the finding that there is no specific risk management process in the businesses others (board, CEO, human resources, occupational health and safety expert, external support) are responsible. Also, it has been revealed that all processes performed in businesses that follow a certain guideline in corporate risk management (ISO 31000, UK and Canada risk management guidelines) are related to organizational goals. The results obtained are similar to the results of the survey study conducted by KPMG (2017) and applied to 105 businesses in Belgium.

Covid-19, which took place during the study period, is the limitation of the study. In the meantime, it is thought that the study conducted is an important study that contributes to the relevant literature in terms of measuring the perception of corporate risk management in businesses located in the Manisa Organized Industrial Zone and can raise awareness on the deficiencies in corporate risk management.

By the findings obtained from the research, providing informative training about corporate risk management guides to businesses in Manisa Organized Industrial Zone in line with their requirements and at this point, a collaboration between university and industry is recommended. It is thought that more comprehensive and different results can be obtained by including the businesses located in different regions in subsequent studies. Thus, it will be possible to reach findings on whether the perception of corporate risk management differs by regions, and if there is a difference, what may be the factors that lead to this difference.

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