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MEASURING THE CRISIS PREPAREDNESS IN THE PHARMACEUTICAL SECTOR: THE CASE OF GREECE

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This paper performs an overview of the essential components in crisis management and an empirical analysis of the crisis management preparedness of the pharmaceutical companies in Greece. It also presents a best practice model for the business leaders in the Greek pharmaceutical market to help them to assess their level of preparedness and create their own crisis management plans, through adapting the current study findings. The results, obtained from an original questionnaire survey, confirm that the pharmaceutical industry is especially vulnerable to crisis situations and that the Greek economic crisis had a severe adverse impact on that industry. Nonetheless, the survey findings suggest that the pharmaceutical companies in Greece have a respectable level of crisis management adoption, although there is still room for improvements to address various types of future market risks.

Keywords: *crisis preparedness, risk management adoption, pharmaceutical sector, Greece.*

1. Introduction

Crises are regarded to be inevitable and they can be hardly predicted or avoided. In the modern economic environment, the issue of crisis management is increasingly involved in business life and leadership. Some industries are evidently more vulnerable to crises than others, as a result of their nature, the complexity of regulations wherein they operate and their internal procedures. The pharmaceutical industry is undoubtedly quite vulnerable to crises, as its companies play a vital role in improving people's life, treating patients and finding new medicines for uncured diseases. Thus, the potential socio-economic impact of a crisis situation in such an industry is expected to be significant. Moreover, crises have no geo-

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graphical boundaries and they typically cause international cascading effects, depending on the type of organization and the operational model of each industry. Despite their inability to predict crises, organizations do know that crises will happen and the better they are prepared the sooner will come out of this unfavorable situation.

The present study constitutes an effort to enrich the crisis management research in Greece, which is particularly limited in the pharmaceutical sector (Priporas and Vangelinos, 2008) as well as the other types of industrial activity. It additionally suggests a comprehensive framework of crisis management and a best practice model, in the form of a guideline for the business leaders in the Greek pharmaceutical market. The proposed model, its findings and the relevant recommendations can support crisis management plans and corresponding organizational changes of the given industry. The original research conducted in the course of this study encompasses 35 pharmaceutical companies. By and large, the results demonstrate that the Greek pharmaceutical sector possesses a considerable level of adoption in crisis management; however, there is room for improving its crisis preparedness, on the basis of the proposed toolkit. Specifically, it is shown that each company should be proactive and not reactive, through planning and taking a series of certain actions to improve its crisis management capacity.

2. Families of crisis management strategies

Although it is considered that there are no boundaries for the range of potential crises, it is important to recognize the different groups or “families” of crises in order to be prepared (Pearson and Mitroff, 1993). Several typologies of crises have been defined and examined during the last two decades. Pauchant and Mitroff (1992) grouped crises according to their shared characteristics, referred to as crisis portfolio or “families”. The families consist of the external information attacks, external economic attacks, mega damages, breaks, psychological and occupational health diseases. Coombs (2007) identified the following types of crises: natural disasters, malevolence, technical breakdowns, human breakdowns, challenges, mega damages, organizational misdeeds, and that of the workplace. In addition, crisis management has been examined as a process of an organization dealing with negative events. Especially, Pauchant and Mitroff, (1992) define crisis management as the organizational efforts related to crisis prevention and crisis response. Crisis management incorporates all strategies that an organization implements in order to prepare and respond effectively to an unpredictable negative event. It seeks to minimize the impact of this event and the time of recovery.

Crisis management components have been clustered into 5 families by Pauchant et al. (1991), based on previous studies and knowledge. This is a sum-up toolkit of all strategies that deal with crisis management. These strategies can be advantageous for the pharmaceutical companies, through helping them to focus in one place using a “quick guide”, where all crisis management components have been incorporated. As it is shown in Table 1, the five families consist of (a) strategic efforts and strategies that companies should apply apart from the regular strategies in order to be prepared for an effective crisis management, (b) structural and technical efforts, (c) evaluation and diagnostic efforts, (d) communications efforts, and (e) psychological and cultural efforts.

Table 1 Families of crisis management strategies.

Strategic Efforts
1. Drastic changes in corporate philosophy
2. Integration of crisis management (CM) into corporate excellence
3. Integration of CM into the strategic planning process
4. Inclusion of outsiders on board, crisis management unit (CMU), etc.
5. Training and workshops in CM
6. Crises simulations
7. Diversification and portfolio strategies
Technical and structural efforts
8. Creation of a CMU
9. Creation of dedicated budget for CM
10. Developing and changing emergency policies and manuals
11. Computerized inventories of plants' employees, products and capabilities
12. Creation of an emergency room or facility
13. Reduction of hazardous products, services and productions
14. Improved overall design and safety of products and production
15. Technological redundancy, such as computer backup
16. Use of outside expert and services in CM
Evaluation and diagnosis efforts
17. Legal and financial audit of threats and liabilities
18. Modifications in insurance coverage
19. Environmental impact audit and respect of security norms
20. Ranking of most critical activities necessary for daily operation
21. Early warning signals detection, scanning, Issues management
22. Dedicated research on potential hidden dangers
23. Critical follow-up of past crises
Communication efforts
24. Media training for CM
25. Major efforts in public relations
26. Increased information to local communities
27. Increased relationships with intervening groups (police, media, etc.)
28. Increased collaboration or lobbying among stakeholders
29. Use of new communication technologies
Psychological and cultural efforts
30. Strong top management commitment to CM
31. Increased relationships with activist groups
32. Improved acceptance of whistleblowers
33. Increased knowledge of criminal behavior
34. Increased visibility of crises' human impact on employees
35. Psychological support to employees
36. Stress management and management of anxiety
37. Symbolic reminding of past crises and dangers

Source: Pauchant, et al. (1991).

According to Fink (1986), it is essential to establish a crisis management team (CMT) before developing a preparation plan. The CMT may be composed of different members, with distinct roles and responsibilities, depending on the type of crisis. The core team to handle a crisis should include, at least, the CEO or the CFO and the crisis communication executive, which, in the pharmaceutical industry, is typically the external affairs executive. The CMT members should meet regularly to assess and review the crisis plans. Managing a crisis requires cooperation and contribution by numerous individuals aiming in the diversity of functions. The CMT should also provide the guidelines for managing a crisis (Coombs, 2006). It is the “heart” of crisis management, responsible to treat all aspects of a crisis from the basics to the end (Stotka and Miller, 2002).

In a nutshell, the existing literature has provided a clear view of the efforts and strategies that an organization should apply to be prepared when a crisis hits. A best practice model incorporates efforts, processes and strategies that will be included in the crisis management plan. More specifically, crisis management should be part of the culture of each organization and should be incorporated in the planning process. The corporate excellence should focus on reducing the potential crises by changing the mentality of how organizations operate and produce products. Crisis scenarios should be created using external resources and third parties, based on previous or future crises. A crisis management team should be established including all appropriate people with clear roles, responsibilities, and expected results. Contingency plans including facilities, backups of systems processes and operations should be ready in case of a crisis, so as to operate in the most efficient and proper way. The organizations should have pre-arranged conference and backup rooms to provide updates and relevant information to the media. Appointed spokespersons and clear communication plan and channels should be established so as to reach people inside and outside with the most appropriate way.

3. The research in the Greek pharmaceutical sector

The empirical research about crisis management in Greece is very limited, both for the pharmaceutical sector as well as the whole industry. The outbreak of global economic crisis in 2008, the fiscal debt crisis in Eurozone, the withdrawal of Greece from international bond markets and its inclusion in the three-party (EU, ECB, IMF) fiscal support mechanism in 2010, as a result of its high debt and public deficit, underline the need for deploying effective crisis management plans. Nevertheless, most companies do not usually examine the possibilities of crisis and they are not adequately prepared to handle them.

Regarding the health sector, the Greek government has already completed the largest part of the Economic Adjustment Programme 2011-2014, including the changes in primary health care services, the reduction of pharmaceutical expenses and the penetration of generics. According to SFEE (2013), the per-capita public expenditure for pharmaceutical products is declined since 2009, as it was reduced from 456€ to 214€ in 2013, while further reduction is expected in 2014 (183€). The business leaders of the pharmaceutical industry should actively participate in this adjustment effort and be prepared to manage future crises, through developing suitable skills, plans and strategies. The proposed model can support

this process, by helping pharmaceutical companies to understand and assess sources of risk, potential problems and management practices.

As far as the current research characteristics are concerned, credibility with the respondents was established by using an introductory letter, which clearly defined the purpose of research and potential usage of the responses. Furthermore, it was clarified that confidentiality and anonymity of respondents would be granted. A pre-research communication informed the respondents about the questionnaire structure and provided insight about its completion, to avoid misunderstanding and save time. The structured questionnaire was designed to identify the level of readiness of the pharmaceutical companies in Greece, in relation to the 5 families of crisis management.

The questionnaire involved 7 sections, starting from the demographic section, with questions based on predefined selections to capture the demographic data. The second section aimed to capture the crises that each company may have faced, including the perception of the level of preparedness, to allow the comparison with the actual efforts of preparedness, as described in the following 5 sections. The rest 5 sections included questions based on the 5 families of crisis management, in accordance with the research objectives. The questionnaire consisted of only closed-ended simple questions, specific and adapted to strategies exclusively.

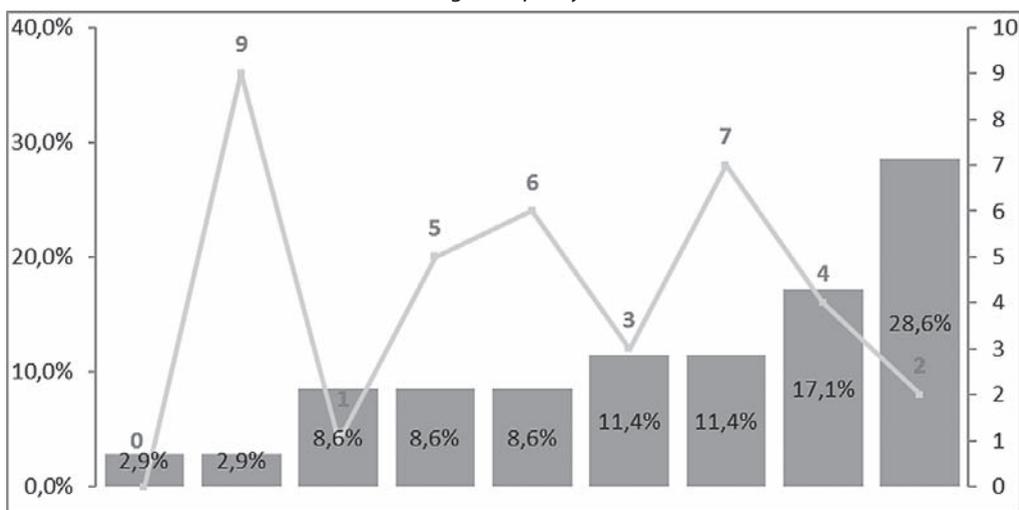
It is also noted that the questionnaire incorporated questions from already established surveys developed by Pauchant and Mitroff (1992), Guimaraes (1997), Dinkin (2007), and the Institute of Certified Professional Managers (2010). This approach contributed to the enhanced quality and time saving, as there was no need for pilot study. The survey population refers to the total number (about 100) of pharmaceutical companies operating in Greece, based on SFEE (2013). Based on the number of responses to the questionnaire within the set timeframe, the research was limited to 35 companies. Nonetheless, 35% of the total population is regarded as an adequately representative and satisfactory sample size for the validity and reliability of the research, and the generalization of conclusions.

4. Research results

The analysis of collected data reveals that 71% of the pharmaceutical companies are foreign / multinational. The majority of them (57%) has more than 99 employees. Among the respondents, 68% are in a managerial level, 6% supervisors, 20% executives and 6% managing directors. Besides, 60% work for the sales & marketing departments, while 68% are in the same pharmaceutical company during, at least, the last 5 years. This is another factor which adds to the overall confidence for high-accuracy responses about the crisis management. The educational level of pharmaceutical business leaders is very high, as 71% has MBA and 14% PhD. Almost 97% of the respondents has experienced at least one crisis in the past 5 years. This outcome verifies the hypothesis that the pharmaceutical companies are highly vulnerable to crises. *Figure 1* presents the proportion and the number of companies which faced a crisis situation during the 5 past years.

A deeper analysis regarding the types of crisis faced by pharmaceutical firms in Greece (*Figure 2*), it shows that the market crash is the number 1 type of crisis, as it was indicated by 18

Figure 1 Proportion (%) and number of companies within the sample that faced a crisis situation during the 5 past years.



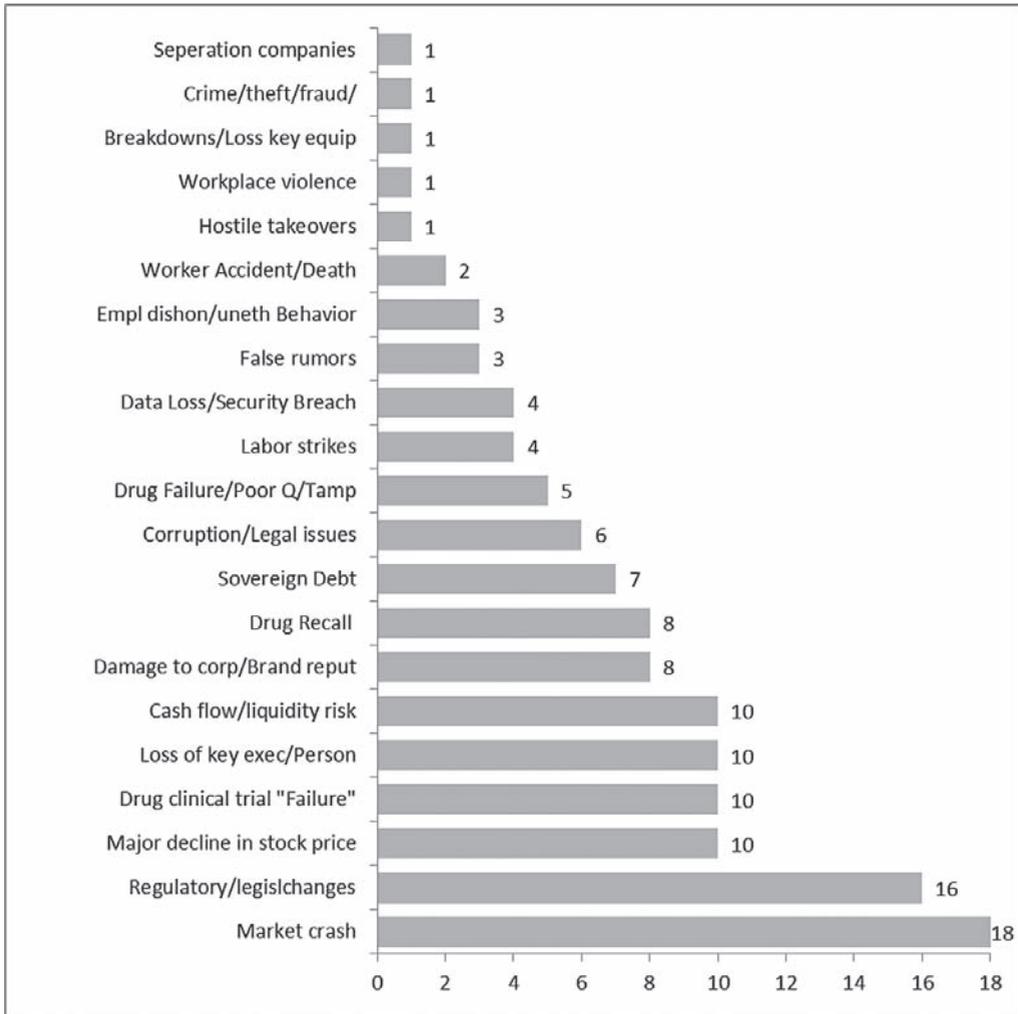
Source: Authors' work.

firms. The second most usual type of crisis refers to the regulatory and legislation crisis, which was indicated by 16 firms. These results can be justified by the fact that Greece experiences a severe economic crisis since 2008 and, during all these years, the market is collapsing. Next in the order of importance, a crisis situation corresponding to a major decline in stock price, a failed drug clinical trial, a loss of key executive/person, and cash flow/liquidity problem was identified by an equal number of (ten) firms. By and large, pharmaceutical business leaders believe that they are highly prepared for the top three types of crisis, i.e. cash flow, corruption and legal issues, and drug recall. Crisis readiness is their first priority topic and they believe that pharmaceutical companies should focus on how to manage crisis. They also consider that pharmaceutical companies have a high possibility to face an adverse event and that they are in the position to face a crisis with use of proactive strategies rather than reactive ones.

More detailed results concerning the questions, answers and scores for the various families of crisis management strategies adopted by the Greek pharmaceutical companies are presented in *Table 2*. More specifically, regarding the strategic efforts, the overall score is 17.38, which is above the medium level (16), but not higher than 20, in order to be classified to the high level of preparedness. Hence, taking into account the overall score and based on the suggested model, the Greek pharmaceutical sector has medium-level preparedness in the strategic efforts. Regarding the level of preparedness for technical & structural efforts, the analysis of the responses from all efforts of this family reveals that the overall score is 30.97, which is above the high level (30), but not higher than 36, in order to be considered as very high. Taking into account the overall score and based on the suggested model, the Greek pharmaceutical sector has a high level of preparedness in the family of technical and structural efforts.

As far as the level of preparedness for evaluation and diagnosis efforts is concerned, the analysis of the responses from all efforts of this family indicates that the overall score for the

Figure 2 Number of crisis types faced by pharmaceutical firms in Greece during the 5 past years.



Source: Authors' work.

pharmaceutical companies is 20.05, which is above the high level (20). Therefore, taking into account the overall score and based on the suggested model, the pharmaceutical sector has a high level of preparedness in the family of evaluation and diagnosis efforts. Regarding the level of preparedness for communicational efforts, the analysis of the responses from all efforts of this family suggests that the overall score is 23.7, which is above the medium level (20), but not higher than 25, so as to be considered as high level of preparedness. Taking into account the overall score and the suggested model, the pharmaceutical sector has medium-level preparedness in the communicational efforts.

In relation to the level of preparedness for psychological and cultural efforts, the analysis of the responses from all efforts of this family suggests that the overall score is 20.69, which is marginally above the medium level (20) and for sure not higher than 25, so as to be consid-

ered as high level of preparedness. Taking into account the overall score and based on suggested model, the pharmaceutical sector has medium-level preparedness in the psychological and cultural efforts. At this stage, it should be highlighted that the score of the pharmaceutical sector is marginally on medium level.

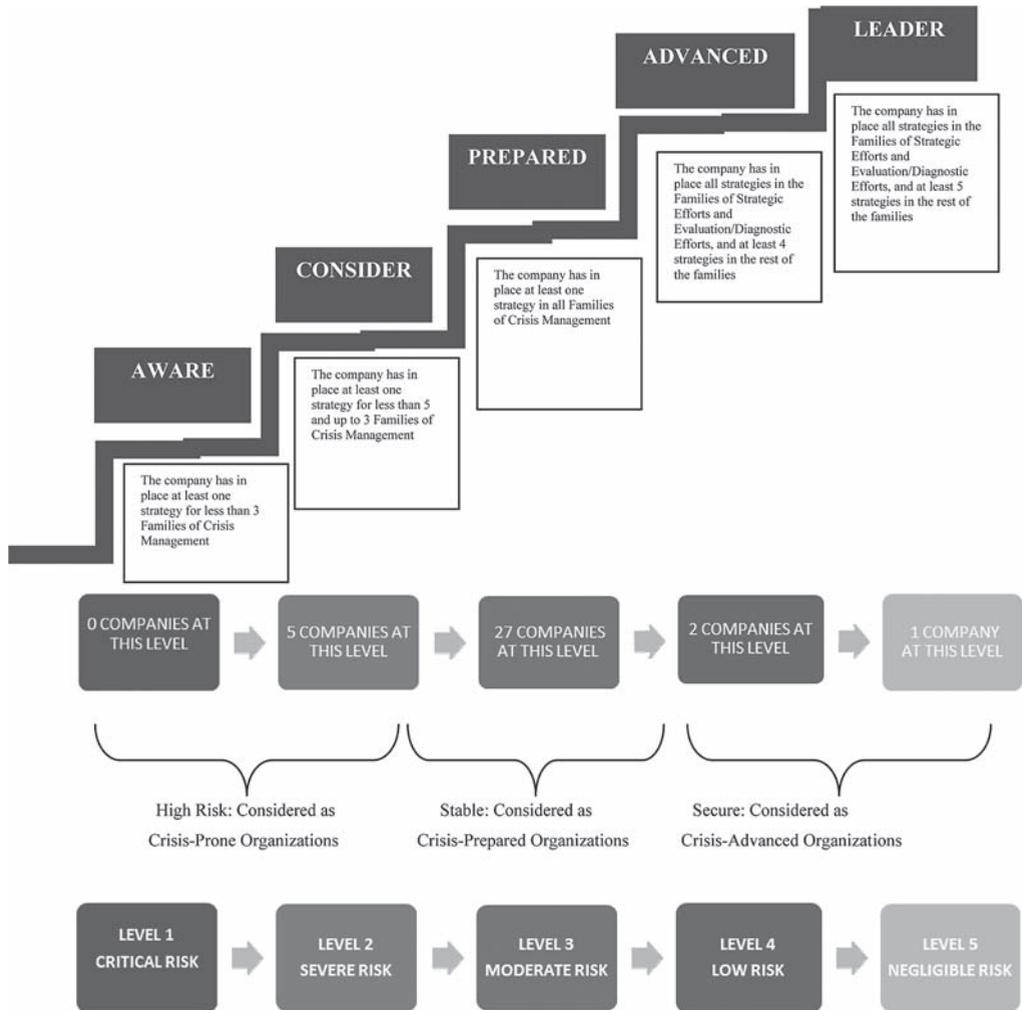
Table 2 Questions, answers and scores of the sample companies for the various families of crisis management strategies.

Family	Question	Very Low	Low	Medium	High	Very High	Score
Strategic Efforts	Is crisis management (CM) integrated into planning	2	3	4	5	6	4.89
	Outside Experts	2	3	4	5	6	3.89
	Provide trainings, workshops in CM	2	3	4	5	6	4.66
	CM simulations	2	3	4	5	6	3.94
Total		8	12	16	20	24	17.38
Technical and structural efforts	CMU Team in Place	2	3	4	5	6	5.00
	Budget for crisis management	2	3	4	5	6	3.69
	Policies/emergencies manuals	2	3	4	5	6	5.11
	Computerized inventories	2	3	4	5	6	4.94
	Improving Drug or Production	2	3	4	5	6	5.86
	Backup systems for computer	2	3	4	5	6	6.37
Total		12	18	24	30	36	30.97
Evaluation and diagnosis efforts	Internal Audits, Finance	2	3	4	5	6	6.43
	Early signs for an upcoming crisis	2	3	4	5	6	5.23
	Research for potential crises	2	3	4	5	6	3.74
	Rank activities ensure operation	2	3	4	5	6	5.11
Total		8	12	16	20	24	20.5
Communicational efforts	Is a spokesperson appointed	2	3	4	5	6	5.14
	Training with the media	2	3	4	5	6	4.57
	Health communities relationships	2	3	4	5	6	5.66
	Cooperation with them	2	3	4	5	6	4.66
	Plan include Twitter, Facebook	2	3	4	5	6	3.69
Total		10	15	20	25	30	23.7
Psychological and cultural efforts	CEO Commitments in CM	2	3	4	5	6	5.43
	Top Management communication	2	3	4	5	6	4.83
	Relationships with Activists	2	3	4	5	6	2.91
	Psychological support services	2	3	4	5	6	3.29
	Are people rewarded	2	3	4	5	6	4.23
Total		10	15	20	25	30	20.69

Source: Authors' work.

Next, a number of 5 steps are created to illustrate and characterize the level of usage of the crisis management families, starting from the "Aware" companies, and then to the "Consider" companies, the "Prepared" companies, the "Advanced" companies and the crisis management "Leader" companies. Each of these steps has specific attributes and cutoffs, as presented in *Figure 1*. For instance, a company is ranked as "Advanced" in crisis management

Figure 3 Classification of pharmaceutical firms in Greece according to their crisis preparedness level.



Source: Authors' work.

when it has in place all the strategic efforts and evaluation/diagnostic efforts and, at least, 4 efforts in the rest of the families. In addition, a simplified best-practice model, referred to as Crisis Management Adoption Ladder, is designed to evaluate and rank the firms' efforts when dealing with crisis, based on the clusters of readiness. Subsequently, risk levels are created so as to alert the companies and not just inform them about the crisis management adoption level (Figure 3). Companies who are placed in Level 1 and 2 are in high risk and are considered as crisis-prone organizations. Pharmaceutical companies ranked at Level 3 are regarded as prepared and to be stable from a risk perspective. However, this ranking does not imply that they do not face any risk. Organizations which belong to Level 4 and Level 5 are considered as secured and crisis-advanced organizations.

In general, pharmaceutical organizations in Greece use a significant number of strategies from the 5 families. They mainly focus on technical and structural efforts, as these strategies

are the simplest to implement and most common across the industries. Pharmaceutical companies also deploy a significant number of evaluation and diagnostic efforts (*Table 2*). On the other hand, there are strategies from the rest of the families, such as that of psychological and cultural efforts, which clearly require additional sources to enhance their implementation. More specifically, the analysis and clustering of firms reveal that 77.1% of them are perceived as crisis-prepared with a stable risk factor, one company (2.9%) is the leader in crisis management adoption, as it applies almost all efforts and strategies from all families of crisis management, 5.7% are in the advanced level of crisis management adoption, and 14.3% are in the "Consider" level of crisis management adoption, facing a severe risk in a future crisis.

5. Conclusion

The objective of the present study is twofold. First, it performs the measurement of the crisis preparedness level of pharmaceutical companies operating in Greece, based on the 5 families of crisis management, as described by Pauchant et al. (1991). It should be noted here that, although the specific method provides a satisfactory approach for classifying companies according to their crisis readiness, some updates that incorporate recent (technological and organizational) advances in handling crisis at the firm level would promote the proposed model. Second, it creates a simplified toolkit for immediate use, based on the crisis management model, to provide all pharmaceuticals companies with comprehensive scoring and a clear guidance for the level of risk they probably have, depending on their step in the crisis management adoption ladder.

The processing of the original survey data from 35 pharmaceuticals companies demonstrate that the business leaders of this industry are highly educated with long experience and they operate proactively, being confident that they will face a crisis. This outcome reflects the relatively high level of crisis readiness of pharmaceuticals companies in evaluation/diagnostic efforts as well as in technical/structural efforts of crisis management. The essential contribution of these two strategies to the overall crisis management in the given sector can be attributed to the fact that those families are the easiest to implement initially. The medium level of preparedness in relation to the families of strategic efforts, communication efforts and psychological/cultural efforts highlights the importance of taking actions in these crisis management fields.

The study reveals that a high percentage ($\approx 86\%$) of pharmaceuticals organizations operating in Greece is in the "Prepared" or a higher level of the crisis management adoption ladder. The latter outcome does not mean that pharmaceutical companies are not at risk, but it depicts the actual effort of this industry to survive in a volatile economic environment and operate smoothly. The sectoral average level of risk is moderate, while 14% of companies are found at a high risk and, hence, they should take immediate actions to become crisis-prepared organizations. The present modeling/evaluation framework is applicable and potentially useful for managing crisis in several other industries of the Greek economy.

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Sažetak

MJERENJE KRIZNE PRIPRAVNOSTI U FARMACEUTSKOM SEKTORU: SLUČAJ GRČKE

Ovaj rad donosi pregled bitnih komponenti u upravljanju kriznim situacijama i empirijsku analizu pripravnosti za upravljanje kriznim situacijama farmaceutskih tvrtki u Grčkoj. Također, rad predstavlja model najbolje prakse za vodeće tvrtke na grčkom farmaceutskom tržištu kako bi im pomogao da procijene njihovu razinu pripremljenosti i da kreiraju vlastite planove upravljanja krizama, prilagođavajući trenutne rezultate istraživanja. Rezultati dobiveni iz izvorne ankete odnosno upitnika, potvrđuju da je farmaceutska industrija posebno osjetljiva na krizne situacije i da je grčka gospodarska kriza imala ozbiljan nepovoljan utjecaj na tu industriju. Ipak, rezultati istraživanja ukazuju na to da farmaceutske tvrtke u Grčkoj imaju respektabilnu razinu usvajanja upravljanja kriznim situacijama, iako još uvijek postoji prostor za poboljšanja u rješavanju različitih vrsta budućih tržišnih rizika.

Ključne riječi: *krizna pripravnost, usvajanje upravljanja rizicima, farmaceutski sektor, Grčka.*