

Research on the Enterprise Crisis Management System Basic on Knowledge Demand

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Abstract—Crisis management is a comprehensive inspection of enterprise management ability in special situation. his paper researches on how to deal with enterprise crisis from the perspective of knowledge management. According to the life cycle theory, enterprise crisis is divided into six periods, then the knowledge which is required in each period of life cycle crisis management is analyzed. A crisis management system model architecture is put forward based on three layers: knowledge resources layer, management process layer and organizing layer, in the purpose of supplying a new management mechanism for enterprise on dealing with enterprise crisis effectively.

Index Terms—enterprise crisis, crisis management, knowledge management, crisis management system, crisis life cycle

I. INTRODUCTION

At present, information management has become main trend in current management. Crisis which affects the subsistence and development of an enterprise is the worst enemy of enterprise. Under the uncertain situation of market environment, crisis may break out anytime and anywhere. In recent years, some famous enterprises went belly up swiftly for wrong crisis management, such as: SanZhu Group collapsed after “ChangDe lawsuit”, NanJing GuanShengYuan declared bankruptcy for “old stuffing” event, JuNeng Company disappeared from people’ line of sight for H₂O₂ event. However, other companies grow up in crisis, just like KFC “Sudan” event, P&G “SK” event, boycotting Carrefour and so on. Crisis gives managers a painful lesson. Crisis management is put on the dairy management agenda of managers.

Meanwhile, effective method and theory of crisis management attracts the attention of many scholars. On literatures [1, 2, 3, 4, 5] authors research on crisis management from multi-perspectives. Adding Knowledge into crisis management is another advancement of researching. However, the research on knowledge management in crisis management is still in its start level, and needs more scholars research on it. Applying knowledge management to crisis management is significant to both enterprise and theoretical studies.

II. ENTERPRISE CRISIS AND KNOWLEDGE DEMAND

A. Enterprise Crisis and its Life Cycle

Enterprise crisis is an event which has threatened or

will threat the organization ^[6]. It may threaten to the employee security, or bring unfavorable propaganda of product reputation and corporate image, then send the enterprise into a tailspin ^[7]. The generation mechanism of crisis sometimes is similar to “butterfly effect” in dynamic system. Carrefour never has thought about that the post on the internet will bring so much trouble. All of these demonstrate the characteristics of enterprise crisis, this is abruptness, harmfulness, complexity and dynamic tendency. These especial characteristics turn crisis into disaster and focus on how to cope with crisis.

In the process perspective of crisis life circle theory, life cycle theory argues that crisis also has a life process as people do. From birth to growth, to maturity, then to death. Fink is the first one who used the medical term “lifecycle” to describe crisis. He believed that crisis can be divided into four periods, which is prodromal period, breakout or acute period, chronic period and resolution period. He thought that prevention was of first importance. According to the features of growth. Mitroff (1993) divided crisis into five stages: signal detection, preparation and prevention, damage containment, recovery, learning. Chinese scholars Li Fan and YouLing Chen (2004) put forward PPRR model, thought that the lifecycle of crisis can be divided into prevention, preparation, response, recovery. On this paper, we divides crisis into five periods: prevention period, outbreak period, treatment period, evaluation period and reconstruction period.

B. The demand analysis in each period of lif cycle

The informant and knowledge which is used in each phase is different, therefore, the way and tool of gaining this knowledge is different too. This paper analyzes the required knowledge based on life cycle of enterprise crisis.

1) Knowledge demand in prevention

Before it burst out, crisis is always lurking in enterprise. The key point of crisis management is prevention. Primary task is knowledge acquisition and storage. The origin of knowledge includes knowledge base, external environment knowledge and new body of intellectual values such as symptom information, history information of crisis, intervention cost, cognitive information, environmental information, preparedness information, knowledge drive and intelligent information.

2) Knowledge demand in treatment and evaluation

Due to harmfulness and destructiveness, crisis is usually a great hit to enterprise. Because of high rapidity and effectiveness of message transmission by internet and news media, enterprises, especially some famous

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enterprises, are easily become the news focus. Negative comment makes things become worse. All of these required managements to make proper decisions on time. The most important value of crisis knowledge is to provide evidence for the right decision. By using explicit knowledge from the date base and tacit knowledge of experts, managers would make more effective and scientific decision. Based on the case study, important crisis knowledge includes situation information, resource information, protocol information, strategic information and damage information. Crisis expert systems, forums, groupwares, blogs and data mining are the main ways to obtain this kind of knowledge.

3) Knowledge demand in evaluation and reconstruction

After crisis is gone, professional knowledge is needed to evaluate the performance of event handling. Thus, damage information and management information should be collected. Damage information includes financial loss, production loss, image loss, customer churn and so on. Management information includes responsibility of each management department in crisis management, management process, management methods, experience and lessons.

III. CRISIS MANAGEMENT SYSTEM BASED ON KNOWLEDGE DEMAND

Crisis management forms a complicated super-network, which includes personal network, knowledge network and process network. Personal network mainly refers to managers, who constitute organizational system of enterprise. Organizational system determines the structure and function of personal network. Knowledge network includes the implicit knowledge of experts and explicit knowledge in the knowledge base. The crisis management based on knowledge reduces the uncertainties in the management process, providing more support for decision making. Based on the three levels of super-

network, we divide crisis management into three layers, which are organizing layer of crisis management, crisis knowledge resources layer and process layer of crisis management based on knowledge. Process layer of crisis management based on knowledge sets a functional subsystem according to activity content and knowledge demand of each period of the lifecycle. During the management process, lots of crisis information and data is accumulated. The valuable part of it is mined and modified in deep, then is shared among different subjects. Crisis management organization in organizing layer carries out the whole management process. All of these form the system architecture of enterprise crisis management based on knowledge (shown in fig.1)

A. Knowledge resource system of enterprise crisis

Knowledge resource system includes expert panel in various aspects and database storing various crisis knowledge and crisis management knowledge.

1) Expert panel

Expert panel consists of crisis management expert, technical expert, representatives of public relations and representatives of consumer. Expert's intelligence and power is absolutely necessary. Expert's background diversity has positive significance of solving crisis. Crisis management experts take part in handling crisis directly; Technical experts play a supporting role in decision making and give suggestions for crisis management; representatives of public relations have an important impact on maintaining company image; representatives of consumer act as the supervisors, their feelings and attitude reflect managing effect. Looking from the organization structure, some experts join the crisis management team, others are external expert who keep close relationship with crisis management team. They provide decision references or technical guidance to decision-makers and executives in crisis management team.

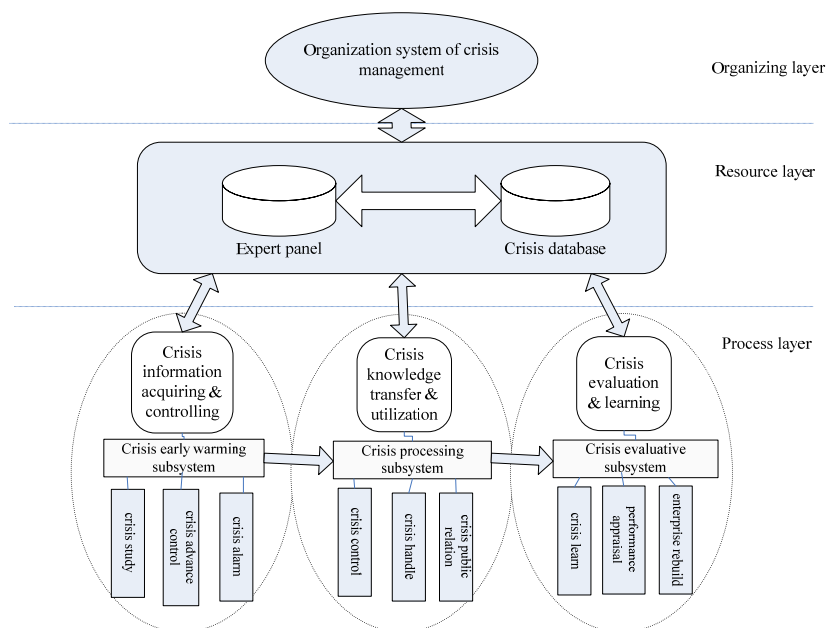


Figure1. Structure chart of enterprise crisis management system based on knowledge demand

2) *Crisis database*

Crisis database is the core of enterprise crisis management system. On database, crisis knowledge is collected and stored, providing an effective way for knowledge transfer and sharing. It is the foundation for knowledge intercommunion and innovation. Crisis database realizes crisis knowledge retrieval and satisfies application requirement by crisis knowledge expression technology, utilization technology and acquirement technology. According to certain knowledge representation method such as rule-based knowledge representation, logic-based knowledge representation, semantic network-based knowledge representation, crisis database, storing general crisis management knowledge, case knowledge and experience knowledge of crisis, scheme knowledge of crisis management centrally. Because of the timeliness of crisis, crisis database has to possess these functions of active renewing so as to make sure the accuracy and efficiency of crisis knowledge in database.

C. *Management process system of enterprise crisis*

Process layer consists of process system of crisis management. According to knowledge acquisition method and utilization, three subsystems of crisis management process system are divided into some function modules respectively. As a whole system, every subsystem and function module joins each other during the crisis lifecycle with knowledge transferring.

1) *Crisis early-warming subsystem based on knowledge requirement*

Crisis is everywhere; crisis management should start before breaking out. Effective early warning system is

used to monitor and prevent crisis event. In the normalization period, enterprise has its own knowledge management system to promote the competency among enterprises. There is not only enterprise knowledge base but also crisis knowledge base on the system. The main function of crisis studying module is learning and collecting knowledge from outside and inside which enriches the knowledge base, preparing knowledge resource for crisis management. Knowledge from outside includes crisis cases analysis, market, monitoring and enterprise public image; knowledge inside the firm includes production status, crisis has passed, enterprise culture, corporate performance and so on. This knowledge is transferred to corresponding employees by training, education, combating exercise with live ammunition or exchanging of experts. By doing this, enterprise can train enterprise staffs' ability to identify the crisis and improve the sensitivity to crisis. At the same time, crisis manager research on the preconditioning regimen, make it clear that who will be the members of crisis management team and what knowledge they have. In the prevention period, obtaining anomaly information and building crisis knowledge base becomes the focus of crisis. According to the roots of the crisis, different coping resources are needed, which includes human resources, financial resources, material resources and media resources. Researching on the crisis knowledge, managers can perfect the conditioning regimen or establish new treatment scheme. New production or better production process generate with knowledge innovation, crisis can be turned into business opportunity.

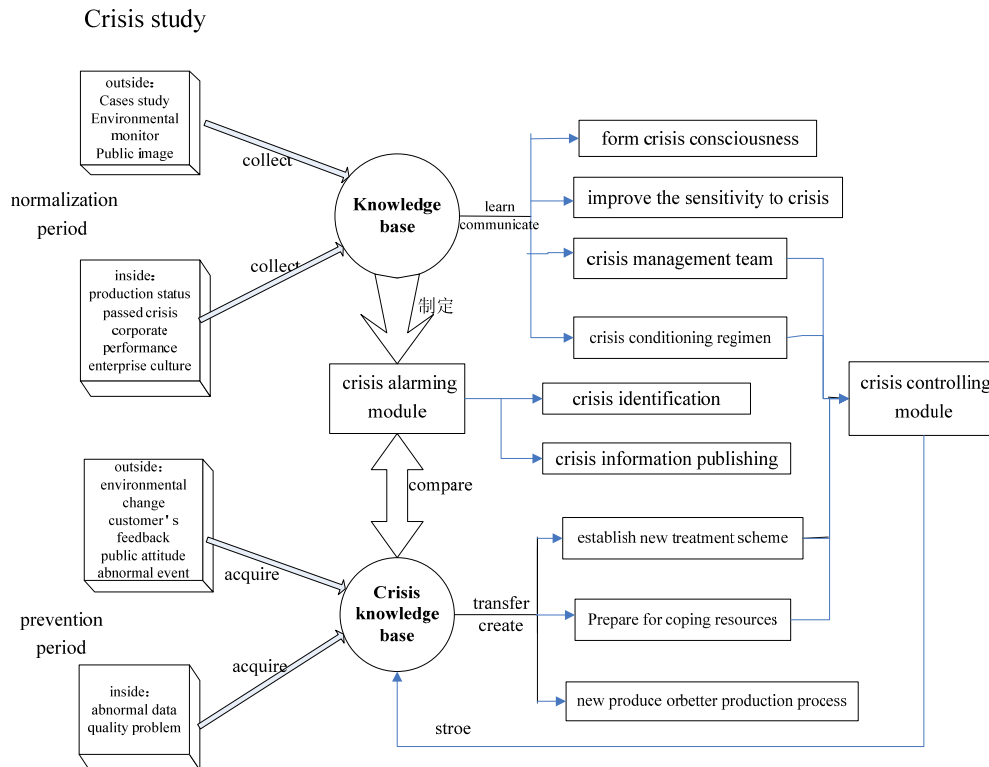


Figure2. Management flow of early warning system

Crisis management team, crisis conditioning regimen, crisis coping resources constitute the crisis advance controlling module. The major task of crisis advancing controlling module is extinguishing the “fire” of crisis before breaking out. The knowledge of crisis advancing controlling module in early-warming subsystem is put into crisis knowledge base, preparing for the coming crisis.

Experts make crisis index according to the knowledge in the knowledge base, then identify crisis by comparing crisis information with crisis index. Crisis identification together with crisis information publishing forms the crisis alarming module. Accurate alarm of crisis alarming module is an important tool to detect crisis in time and transfer crisis information to crisis treatment quickly. Detecting problem is the premise of solving problems, it is important to update the knowledge in the crisis alarming module in order to reflect the real situation accurately.

2) *Crisis processing subsystem based on knowledge demand*

When crisis breaking out unavoidably, decision makers of crisis management team should start the crisis processing subsystem immediately and try their best to exclude crisis. Crisis controlling, crisis handling and crisis public relation are three important function modules of crisis processing subsystem.

When the crisis alarming module acquires crisis sign then broadcasts crises and announces the crisis information, three function modules in crisis processing subsystem run in time and cooperate with each other which has common goal, that is to eliminate the crisis. The links of knowledge management mainly embody in the field of knowledge transfer and utilization. At first, crisis knowledge should be integrated and shared. Secondly, systematized crisis knowledge should be communicated within internal enterprise in time so as to make sure that every one in the enterprise has an overall and objective understanding and know his/her responsibility in the crisis management. The main task of crisis controlling module is to analyze the root of the crisis and identify the harm and effect of the occurrence in details. Managers try to break off route of transmission and prevent the crisis going worse. Combining the use of experts' intelligence and knowledge in the existing base, crisis handling module excludes crisis factor and potential risk, minimize the harm and loss which is taken by crisis. At the same time, crisis public relation modules use their original relation net or set new relation, communicate with outside (victim, public, media and government) actively, to relief the negative effect which is caused by crisis defending corporate image. Because of the dynamic tendency of crisis, new knowledge is needed to update the crisis knowledge base. We should make good use of knowledge acquisition tool, and the crisis knowledge in the database.

Having a well-run crisis processing subsystem is the premise of the enterprise going out of predicament. Mutual communication between decision makers and crisis management team is the guarantee of the

knowledge and information circulation. It is advisable to make full use of the function in each module in order to exclude the crisis in the shortest time.

3) *Crisis evaluation subsystem based on knowledge demand*

Crisis evaluation mainly includes performance appraisal, enterprise rebuilding and crisis learning. Crisis performance appraisal is a comprehensive evaluation on the passed crisis. Firstly, enterprise should build up a crisis management comprehensive appraisal index system which includes loss, cause, communication speed, accuracy of decision and the effect of treatment. Crisis loss includes loss of tangible assets such as fund, products, staff, and loss of intangible assets such as, company image, customers' credit, and employees' morale. The objective of performance evaluation are inspecting the effectiveness of crisis management and providing information for preventing next crisis. Crisis management is comprehensive appraisal index system and evaluation results are precious knowledge information, which play a guiding role for the next stage of learning and rebuilding. So information mining and data analysis have practical significance, making this knowledge is necessary.

The first thing of crisis learning is analyzing the result of crisis performance appraisal, distinguishing the highlight and shortage in handling the crisis. Some good methods such as effective management measures or experience and lessons of crisis management can be shared through forms like colloquium. The tacit knowledge of experts is shared with other by learning and communication, turned into explicit knowledge which can be stored in the knowledge base. New knowledge takes place of wrong and obsolete knowledge updates the knowledge base. Therefore, losing of valuable knowledge can be avoided while precious experience knowledge is provided for next crisis management.

Enterprise rebuilding means helping the enterprise run better after crisis by modifying rules and regulations, improving flow sheet structure, adjusting some human resources, putting forward optimization scheme for crisis management. Crisis is not only a disaster, but also an opportunity. Turning crisis into safety, business opportunity is the largest harvest of crisis, is the last aim of crisis management.

C. *Knowledge-based organization system responding to enterprise crisis*

Effective management of enterprise crisis can not be separated from the support of organization system. A knowledge-based management organization system is the base and guarantee of crisis management, which involves many departments. It contains three main organizations which consist of Central Command Institution, Execution Institution, and Guarantee Institution and the Consultation Institution which has experts and scholars.

The Central Command Institution is the core department in dealing with crisis. It reflects the enterprise's highest political level of operation efficiency and strategic decision-making and its emergency capabilities. The Execution Institution is responsible for

crisis prevention, crisis detection, crisis control and executing the decision of the Central Command Institution. The execution efficiency of the Execution Institution will directly affect the crisis management efficiency and effectiveness. The Guarantee Institution supports the Central Command Institution and the Execution Institution in many aspects such as material distribution, information communication and personnel training. In all of the organizations, knowledge-based staffs are required to explore and communicate the internal knowledge and assist the other organizations in communicating knowledge. Therefore, a consultation institute is formed by crisis management experts and scholars with rich experience can provide some valuable knowledge. The functions of this institute include: providing scientific and fast consulting scheme for the Central Command Institution while serious crisis happens; providing special consulting report and relevant training during the sensitive period; providing the latest development trend of crisis and so on^[8]. Then a Knowledge-based organization system is integrated by four correlative institutes above.

IV. ENDING WORDING

Recent years of crisis becomes more frequently, in only a few months ago, the “melamine” event swept over tens of dairy produce enterprises including famous enterprise such as SanLu Group, MengNiu Dairy and YiLi Company. In the uncertain market situation, knowledge becomes more and more important, theory and technology of knowledge management that used in enterprise crisis management has potential application. This way open horizon for finding new crisis management mode, have a promotion effect of improve the efficiency and effectiveness of crisis management. This paper just introduces a crisis management based on

knowledge requirement. However, more and more knowledge management theories should be used to provide further application schemes and strategies. How to make good use of knowledge management to improve the efficiency of crisis management will become an issue in strengthening enterprise management capability.

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