MANAGING CHAOS

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Abstract

Since world of management has so many different opinions, organization managers are facing different management strategies. We can no longer articulate that organizations has stable and simple environment. Organizations are operating in an environment that is not only changes in a short amount of time but also unpredictable. This rapid and constant change is an indicator that the organization is in a chaos. Under these conditions, organizations that are able to battle, will maintain a competitive advantage. Otherwise organizations that are not able to adapt this environment will perish. Obstacle that is stated in chaos is not just simple clutter or a disorder. The term "chaos" is defined as an uncertain change which cannot be predicted; also it is one of the basic subjects of natural and social sciences. In this study the term of chaos, theory of chaos, social organizations and management in chaotic environment has been discussed.

Keywords: Chaos, Theory of Chaos, Management in Chaos.

1. Definition of Chaos and The theory of Chaos

"A nail saves a horseshoe, a horseshoe saves a horse, a horse saves a man, a man saves a battle, and a battle saves a country." Similar to real life, a number of small changes in chain of events cause big problems which are known as crisis point in science. Crisis points that are everywhere defined as chaos (Romya and Others, 2002). Since organizations are open systems that have continuous relations with the environment, has to adopt variable environmental conditions (Oge, 2005, p: 286). Organizations needed to be managed effectively at the time when global competition at peak.

1.1. Definition of Chaos

The dictionary definition of chaos; is confusion and disorder (Hun, 2005). Chaos is coming from an ancient Greek term "Khaos" which means a space that exists before anything and a thing existed before the emergence of everything (Bas, 2003). Chaos, in the sense of science, has been used as "scheme in the obstacles". The most accurate definition of the chaos has been stated by the physicist Jensen, he defined chaos as "complex, non-linear irregular and unpredictable behavior of dynamic systems" (Gleick, 1987, p: 16). Obstacle that is stated in chaos is not just a simple clutter or a disorder. Using obstacle as stated makes chaos and order that is the opposite of chaos, hard to understand.

Everything about the chaos and chaos theory started at the end of 19th century with the French mathematician Jules Henri Poincare's research. Poincare's stated in his "Science and Method" book that there are no permanent solutions for multivariable systems; it would become a volatile situation which makes system's future hard to estimate. According to Poincare, one of the tiniest spot that is unnoticed causes huge and significant results that would considered to occur spontaneously (Latif, 2002, p: 126).

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Physicists have started to discover that chaotic motion is one of the basic principles of universe and is very common. One of the most important discoveries, in 1963, a simplified model of air to work by a simple mathematical computer program was conducted by meteorologist Edward Lorenz. Lorenz studied on a model which shows the effects of heat by sun on a stream of air to reduce and multiply. Lorenz's computer codes that regulate the flow of air contain mathematical formulas. Since the computer code completely deterministic (predictable results), Lorenz, if given the same initial conditions, expected to see same results at all time. However, he was baffled to see that the initial values which he thought the same was resulting in different from the root outcome. When he did a detailed scrutiny, he had seen a little differentiation on the values entered. He determined that the differences, unlike usual standards, are at microscopic level so incredibly small and insignificant. Mathematics that used in Lorenz's atmospheric model, has been investigated extensively during 1970's.After all, as the main feature of a chaotic system, two different initial conditions can be considered the smallest difference in the string, the next or previous time will lead to major differences that has become a well known fact (Canan, 2007).

Aerial maneuvers of birds can be a good example for a clearer understanding of chaos. The behavior of groups of birds is more erratic than one bird. Each bird's unique movement belongs to the group causes irregularity. For example, birds flying in "V" shape fly faster and farther than a bird flying alone (Latif, 2002, p: 125). We can see that even in seemingly erratic flight of birds are actually in a certain order. Therefore, determining chaos as a disorder or a simple irregularity would be a wrong determination.

1.2. Chaos Theory

Chaos theory lies on a nonlinear dynamic foundation. Nonlinear systems have some specific properties and a lot of mathematicians are working on this issue. Not only mathematicians but also physicists, chemists and social scientists working in some logic and are investigating (Thietart and Forgues, 1995, p: 20). Chaos theory developed due to digital computers and their outcomes which can be easily seen on the computer's screen. Mathematical and basic scientific discoveries that are the foundation of theory, observed in 18th century and even in ancient times. Especially in Chinese mythology's chaos, and today's chaos that we described in scientific language appears to be an astonishing resemblance. In the West, scientists in a subsequent period, observed more complex cases. Like Poincare, Weierstrass, Von Koch, Cantor, Peano, Hausdorff, Besikoviç mathematicians at the very top level has created the basic concepts of this theory (tr.wikipedia.org, 2013).

Many events in the world actually has a chaotic restructuring; the formation of a snowflake, the rise of cigarette smoke, the development of tree roots, flight of a flock of birds, waves of the sea are all chaotic movements that are not random and has its own structures with a regularity. As a result, we can say that chaos also associated with possibility.

Due to the nature of chaos theory, classical physics perception of causality become misplaced and nowadays like quantum physicists has overthrown the Newtonian conception; Laplace's determinism has been crushed by chaos also it has been advocated to bring a new breath to the science (www.birebir.net, 2004).

2. Organizations in Chaotic Environment

Today the world is moving more and more quickly, make changes rapidly. The main feature of the present conditions is the various situations often encountered within a very short period of time and businesses are no longer lives in simple environment. Management of chaos theory or chaos management offers new insights about the functioning of the social organization in chaotic systems (www.dokumanlar.com, 2007). The term organizational chaos will be discussed in this section.

2.1. Organizations and Chaos

Organization's relation with the environment has non-linear feature. Complex organizational structure is formed as independent parts and these parts form a whole. As a result, in any of these parts has a small change that has been observed, can change the entire structure of organizations (Thietart ve Forgues, 1995, p: 21).Chaotic systems can be defined as a combination of order and disorder behaviors that can demonstrate a wide range of behavior. Strange and unpredictable behavior of chaotic systems has basically three reasons: First, chaotic systems, the resulting output from the previous cycle for the next period of the feedback-system are used as input. Since the relationship between variables is nonlinear, relationship between cause and effect is not proportional. Second; inputs that seem as trivial can influence the behavior

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of the system to a large extent as the times passes. The most popular version of this phenomenon, explained in the early 1960s, by Edward Lorenz is "The Butterfly Effect". According to this theory, a butterfly flapping its wings in the Brazilian rain forest may lead to a hurricane in the Atlantic Ocean within a few months. Butterfly effect, suggests that any variable in a model that is considered insignificant would be an obstacle to the model's reflection of reality. The third feature of chaotic systems is the sensitive dependence on initial conditions. Henri Poincare stated that "Small differences in the initial condition can lead to very large changes. It becomes impossible to make predictions." (Connelly, 1996).

In recent years, developments include judgments against traditional social scientists, because most of them are opposed to the basic principles of logical positivism. In many scientific disciplines arising findings suggest that nature is consisted of non-linear systems. Linear movement of assumptions often used as a start point during examining a social phenomenon. Then the non-linear hypothesis has emerged as a new perspective. As a result of this perspective, some basic principles of chaos theory are briefly discussed below (www.pau.edu.tr, 2007):

Non-linearity: In a system with inputs and outputs that are not created based on a certain percentage, means that there is non-linearity in the system. The idea of the disproportion of input to output is a part of our daily lives. For instance, 8 aspirins won't be eight times more effective than an aspirin or 50 ˚ C heats would not be twice as nice of 25 ˚ C. These examples can be given as an illustration of non-linearity.
Sensitive dependence on initial conditions: Variables in non-linear systems, under conditions of mutual causality interact; are required to be highly sensitive to the initial state. A small error in the system like digits after the comma can lead to a "fault" or it can turn into a qualitative change in the behavior of the system.
Deep-Order Policy / Laws: Chaos researchers used the term "phase space" in their studies. The numerical values in the phase space, is converted to the geometric images. Imaginary space called phase space used numbers in the area of corresponding to the coordinates. Today, conditions can be easily turned into a different situation very quickly and extremely easily.
Managers are always presented themselves in brand-new condition due to the dynamics of the environment and the multitude of interconnected elements which means there is chaos for managers. In the event of using traditional organization methods, organizations perceived as a rational and technical process, mechanical approach has underestimated the human factor as a result organizational functioning that is actually much more complex and ambiguous than a machine has been ignored. Today, linear-based identifiability has lost its validity. Therefore, all existing controllability adoption on the basis of management approach acknowledged as wrong (Latif, 2002).

2.2. Management in Chaotic Environment

According to traditional management thinking chaos is a terrible and an undesirable situation. Organizational structures precisely formed of a command and communication lines that is arranged in a hierarchical format and consist of precisely defined tasks. A structure designed as a virtual machine expected to process like a machine, and employers expected to pretend to work as if they are the parts of the machine. An early management system that is emerged during 200th century is all about the craftsmanship. The target is to increase productivity as much as possible by keeping human activity under control. Time and motion studies are the basis of this science. With the second wave of scientific management human factor recognized as an important variable and the organizations granted as a "social system". Data collection and mathematical analysis have become a key factor of strategic planning and decision-making, and computers turn out to be a huge support of linear programming and statistical analysis. Over the years models of computers has increased and mass data collection systems are developed. New analytical techniques originated with the foundation of computers. Although, these techniques inherent to be complex, are actually substantially linear (Latif, 2002:129).

Development of information technology and the rise of Information Company has emerged the chaos. Unpredictable future is determined by the non-linear effects of a strong force. Detailed planning and modeling is useful, but it is sufficient just for the beginning. Process needs to be supported continuously with supervision and the information management. Main goal of the chaos theory is to know the future. Uncertainty is constantly ignored. Although management theories states that performance of management works like a clock and a machinery, chaos and complexity theory argue that the situation is not like that at all.
Management of such a change can be summarized as follows (Tüz, 2004, p: 144–145):
- Analysis has lost its priorities,
- Cause -effect liaison has lost its meaning,

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- Long-term planning has become impossible to do,
- The term of vision has lost its meaning,
- Continuous consensus and strong cultures has become.

In this case, a business manager cannot operate infallibly without a long term planning and control. They will need contributions of colleagues. Also they need to call for their opinion and interpretation of events. That way managers will be able to manage chaos. Undoubtedly, business executives and other employees are important elements of the system. System cannot be unmanned, but it is not all the people who form a system (Latif, 2002, p: 132).

Tom Peters in his "Thriving on Chaos" book argues that business world has become chaotic, and in the current environment to sustain life is requiring a new management theory. Peters developed five basic principles for organizations in a chaotic environment which helps them to reveal a successful performance (Öge, 2005, p:300–302).

1. Strengthening the participation of individuals and flexibility of organizations. Peters suggested that every recruit within the organization joins every task, and like Japanese management system teams should be able to self-manage. To achieve high-level response is:

-Experiences of success and failure in an organization needs to be acknowledged and celebration of success plus employee recognition must be in place,
- Extra time has to granted for n new employees in order to learn new working system and organizational culture
- Employee training and retention is highly recommended,
- Incentives should be applied to the wage system,
- Job guarantee must be provided to workers.
-Employees within the range of acceptable job performance should be able to know that their position is safe.

Again, the reduction and simplification of organizational structure, job descriptions of mid-level managers to be revised, bureaucratic requirements and environmental conditions that humiliates employees to be eliminated, may also fall under this heading.

2. *Leadership style that contains the optimal level of tolerance for mess control, guidance, leadership and change.* According to Peters, leaders should not only focus on employee's problems but also to show more interest on their ideas and opinions about to solve organizational problems. Effective leadership requires to implement these ideas on issues. In addition to that a significant portion of responsibilities should be delegated to business flow by creating a horizontal management system and stay away from vertical bureaucracy.

Peters, the effective leadership to make by the administration of subordinates to the problems as well as their organization to solve the problems on the opinions and ideas to show more interest, these ideas give importance to implement, managerial powers and responsibilities, a significant portion of the business flows delegating and horizontal management system by creating a vertical bureaucracy It is necessary to move away.

3. Control that is provided by the simple main support system that measures the right things.

4. Be responsive to customers in order to encourage flexibility and increase sensitivity.

For the success of an organization, customer's desires and wishes through the products and services must be constructed. As a result there will be an increase on demand.

The organization's activities should be specialized, establishing of new markets through creating demand of potential customers and by product differentiation, an organization should be able to grant advantage over competitors.

5. All units within the organization and by individuals in these units to monitor market innovation.

Instead of developing new products, implementation of innovations through the customer's demand requires update of existing products. Staff of all level should take in hand of innovations in the organization. Therefore, increasing the number of new projects in the organization and implementation of which is useful and elimination of useless is one the key elements of organizations. Organizations in chaotic environment can adapt to sudden changes easily also they can change along with the changing world. Change is the door to learn and learning organizations can changes their capacity and skill to improve.

4. Conclusion

There will be no sign of life and naturalness in very strict environment. This rigidity will bring hierarchical management and deprivation also will destroy variation. Thus, these types of organizations will fail to adapt to changes in their environment. But on the other hand there will be no life in a completely irregular place.

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Completely explicit and non-stationary structure means inability to be effective, revealing weakness and finally failure. Organizations with these properties have identity, mission and purpose problems. Therefore these types of organizations fail to adopt and also they are failing on monitoring their environment for change and opportunity. Life requires a constant balance at a certain level. Neither extreme order nor chaos alone is suitable for the organizations. Somewhere between the two dynamic explains the most appropriate point to survive. (Öge, 2005, p: 302).

Organizations in today's tough competitive environment need to adopt constant change and practice innovation to outlast. In an environment where change is uncertain and constantly revealed, using traditional management approach would not be appropriate. Manager should improve themselves constantly with a proactive perspective, so that they can manage to adapt to this flexible structure. First thing to do for managers, who want to lead their organizations effectively, is to understand the philosophy of chaos which is the "order" in irregularities, so to reveal the butterfly that created the storm.

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