

Organizational Complexity in a Limited Resource Setting: A Systemic Perspective

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Abstract

The greatest challenges facing organizations in recent years are how to manage its interconnectedness, multi-level or interdependent complexities in a limited resource setting. The objectives of this paper are to explore the above, assess its diverse characteristics, evaluate approaches and its contributions to complexity management, ascertain the nature of individual complexities within organization and how they seldom cope with it, make an overview of current scholarly thinking on its varied uncertainties. Conceptual framework was used to illustrate the qualitative research approaches considering its usage in organizational discourse. The paper contains very useful advice to human resource managers on how best to manage scarce resources for sustainable organizational development. It concludes that no organization can succeed at the neglect of the impact of the individuals' complexities that constitute the system as a whole, financial and institutional resources and their connection to organizational system thinking for sustainability and development to emerge.

Keywords

Organization, Complexity, Limited Resource Setting, Systemic, Uncertainties

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1. Introduction

There is no generally accepted definition of the term "organization" as scholars definitions are bound to a certain location which can also be based on existential determinant. Ezeali and Esiagu (2009), defined an organization as a social unit, involving an arrangement of men, material and money in order to promote interaction of two or more persons for the attainment of organizational goals. William Schulze (1919), defined it as a combination of the necessary human being, materials, tools, equipments, working space and appurtenances brought together in systematic and effective coordination to accomplish some desired objectives. These goals have many diverse, autonomous but interrelated and interdependent components or parts linked through many (dense) interconnections (Business Dictionary, 2015). The

above is confronted with series of interrelated pattern of a behavior aggregated together to function as a whole in an organization. One of the major problems confronting organization is the effective way of matching its complexity in a limited resource setting. The complexity literary means it is being formed of many parts with seldom difficulty to understand, involution, a state of being complicated, entanglement, intricacy based on how organization actually behave in the real world which are very complex- hence, the name complexity. The organizational complexity sometime results in tradition-bound, somewhat that ponderous and showing signs of deterioration and several undesirable characteristics. Due to limited resources, there is over-centralization, incessant conflicts between cadres, little emphasis on results and concrete performance, counterproductive separation of authority from responsibility, inappropriate personnel resource development and so on.

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This is compounded by restricted amount of inputs required by an organization such as motivated staff, finances, production facilities and raw materials. The reverberation, social and business environment that has to do with a scarcity situation involving limited resources tends to put pressure on affected individuals and organizations. For an organization to grow and prosper, it must monitor changes in manpower situation, government policies, economic changes and technological breakthrough amongst others (Ezeali and Esiagu, 2009). The above implies that in the context of an organization, complexity is associated with interrelationships of individuals, their impact on the organization and the organization interrelationships with its external environment. The magnitude of complexity is not equal in every organization. Hence, some organizations are more complex than others. From the foregoing, despite organizational complexity being a global phenomenon, its limited resource setting is pandemic and its upsurge is troubling and the damage done to the system is astronomical and has defied all necessary approaches to managing its sustainability. In reality, there is no firm where complexity has not safely shown its systems. Amongst organizations (private and public), either of the post or units complain of uncertainty, in subsystems complexity is found, in its interdependent or interconnections, there exist complicatedness and diversity. Effective organizational complexity management depends on the extent individuals and institutions appreciate organization as a complex evolving systems that have subsystems and are subject to both internal and external pressures, some of which are not capable of being controlled, but can be complicated or complex no matter efforts imposed, rules or procedure implied and structures design. They are subject to competitive advantage or survival of the fittest. Gokce and McGrath (2011), maintains that complex organizations are far more difficult to manage than merely complicated ones. Bruce Waltuck (2012), in evaluating characteristics of a complex system, views the complex human dynamics of organizations, and suggested ways to work as change agent to include being like an autonomous agent when stuck in spite of the constraints, far from equilibrium (the edge of chaos) especially in the face of threat or when galvanized by compelling opportunity, self-organizing criticality, emergent patterns that seldom occur from the iterated behaviours in the organizational system, attractors of meaning that influences our change, sensitivity to initial conditions, fractal pattern, bifurcation, feedback loop and adaptive. It is harder to predict what will happen, because complex systems interact in unexpected ways. To think in a complex way within an organization is therefore to apply the notion of opening to the concept set out in closed theories. Complex thinking is what allows observer to think Without incoherencies between two ideas that are contrary, this is possible thanks to a meta-point

of view that makes relative the contradiction and the loop inscription that makes productive the association of the antagonistic notions, that have become complementary (Morin, 2001; Mario and Milton, 2010). In other way, organizational complexities display varied pattern of uncertainties especially on its human resources. While nothing has been written about the complexity in limited resource setting, instead, there exist logjam in conceptual clarification and confusion on best approaches to adopt for sustainable development.

Based on the above, the objectives of this paper are to enable researchers' intention to explore the above, assess its diverse characteristics, evaluate approaches and its contributions to complexity management, ascertain the nature of individual complexities within organization and how they seldom cope with it, and make an overview of current scholarly thinking on its varied uncertainties.

2. Organizational Personnel Resources Complexity

The entire whole of personnel in organizational complexity is by the present of the existing personnel in the units of the whole make the whole functioning. The complexity according to Morin (2001, p. 175), arises in the heart of the unit as relativity, rationality, diversity, alterity, duplicity, ambiguity, uncertainty, antagonism, and in the union of these notion which are complementary, concurrent and antagonical one regarding the others. These do not operate in isolation. There are personnel resources which are much more than a basic unit of analysis that partakes in managing available limited resources. It has own complex internal environment derived from genetic inheritance and the totality of experience. In varying degree, he is influenced by the social pressures to which he is subject both within and outside the organization; and in turn, he may in varying degrees, facilitate or inhibit the activities of the organization. The system is the complex being, which is more, less different from itself. It is both open and closed at the same time. There is no organization without anti-organization and there is no function without dysfunction. The circumstances in which most businesses today find themselves are therefore complex, dynamic and uncertain. The environment in an organization is becoming more complex and changes more often and suddenly (Tvede, 1997; Stacey, 1993; Goswami, 1993; Tetenbaum, 1998; Laszlo, 2002). These are compounded with limited resources all cumulating to complexity in the organization. These include:

2.1. Individual Resource Complexity

It is difficult if not impossible for an individual decision

make to see an entire complex system. This is compounded by our cognitive limits to our understanding of the effects of other people’s actions and our own, and hence, focusing on one thing can prevent us from seeing others (Gokce and McGrath, 2011). This leads to logjam in applicability of technical know-how to mitigate the risk caused by precarious resources that constitute a burden or its vicious circle which as it increases (due to pressure of demands), the more difficult it is for the system to cope. The period between the emergent of the circle (input) and its treatment (processing and output) creates a logjam. The greater the logjam, the less able is the system to cope with its environmental uncertainties which result in complexity. These complexities are evidence centered on social responsibility, supervision, organizational justice, performance appraisal, compensation and reward, collective bargaining, job design and the likes of other reposed complex administrative responsibilities in the organization. Onah (2008. P.252), posits that it is tempting to simplify complex situations by imposing artificial and often arbitrary boundaries in the hope of producing more conveniently-sized areas of (organizational) study. But, such

approach, according to Glen (1975), often creates more problems than it solves. Therefore, one cannot ignore the uniqueness of the individual when managing people in organizations. Thus, for sample of people given in any context, we can envision differences varying in such behavior as job performance (quality, quantity, and accuracy), tenure on the job, absenteeism, attitude (towards the job, union and so on), ability to be visual or auditory discriminations, heart rate, acceptability by subordinates or co-workers (Onah, 2008). The scope for most of such aspects of behavior range along a continuum from undesirable to desirable in terms of some set of values such as units of production or scores on an attitude questionnaire (McCormick and Tiffin, 1977). However, the above become imperative as human dynamics are confronted with organizational development arising from disparity from training and environmental system which result in diverse system perspective and initial reaction which are compounded by complex habit, fear of the unknown, interest and psycho-social impact all cumulating to uncertainty amongst individuals within the organization.

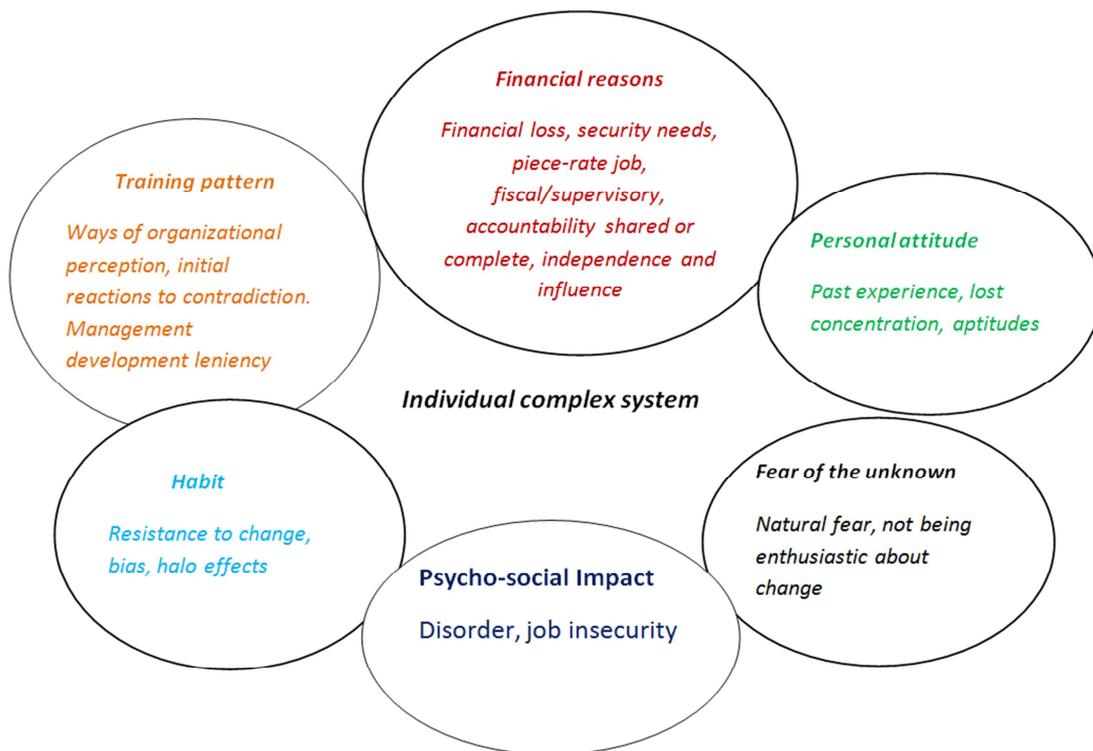


Figure 1. Individual resources complexity.

2.2. Group Resource Complexity

Most time in organization, due to limited resource distribution, some personnel pride of not wanting to be defeated may make some group members refuse to see reason even when it is clear that a superior argument or logic

should be allowed to prevail in an organization. This constitutes uncertainty in the organization. It occurs when two more people who act together to accomplish an organizational goal are burden by uncertainty (Ivancevich, et al, 1994). It can be formal or informal groups who do not exist, they start and develop over time into maturity into four

stages (forming stage, storming stage, norming stage and performing stage). The essence of group decision-making is to have different opinions from different backgrounds. This system usually arises when members are under pressure to conform and when peer pressure does not allow members to argue or disagree with others in the process of organizational decision making. This complexity is compounded by indecision or disagreement.

2.3. Team Resources Complexity

This is a small number of personnel in organization who are organizationally empowered to establish some or all of a team goals, make decisions about how to achieve those goals, to undertake the tasks required to meet them, and to be individually and mutually accountable for their results (Hellriegel and Slocum, 1996). It can be functional, cross-functional, problem-solving and self managed teams. These resources dominant nature of the managers constitutes burden that also increase complexity within the organization. They are limited by the challenges of value congruence. The unavailability of resources for the emerging necessity of the team results in complex competitive disparity. In other way, some organizations do not possess adequate manpower resources both in quantity and quality to prosecute programs. In most cases, available staff is not well qualified and lack requisite experience to manage complex organizations. The complexity of building organizational technical capacity requires integrating systems into holistic complex instrument and building the ability to interpret them in order to inform the work of planners, implementers and evaluators.

3. Organizational Complexity and Financial Resources

Organizations all over the world are finding it difficult to meet up with her financial resources, number and strength of the needs which are to be served. The effective management of its financial resource depends on the extent it applies the principles of public accountability in rendering stewardship by a public officer after holding an office. This cut across superior-subordinate levels. The above is compounded by low generation from internal revenue sources, corruption-fraud-embezzlement incidence, undue state control, mismanagement of fund, instability in organization, lack of public enlightenment, dependence on allocation and deficit budgeting which are individually complex in nature. The high cost of living occasioned partly by mismanagement of economies and rapid population growth result in unintended consequences that are based on an aggregate of individual elements. The financial plan of the organization has series of financial activities or expenditure, roles and authority

relationships which are carefully designed to achieve set objectives. The gap of providing the requisite needs results in complex problem in an organization.

4. Organizational Complexity and Institutional Resources

The above appreciate that within an organization, there are forms or system of action in which the people organizes the affairs in relationship with each other. It includes series of interrelated design/structures and mechanism which provides the requisite capacity and support for action in the form of organization. This institution can be inform of Ministries, Department and Agencies of government or private organization through which social security are provided to the populace. The institution as a system of action possesses certain indispensable qualities. These are classified according to Nwachukwu (1999), to include the ability to be;

Capable: The institution must have capability to produce or deliver the product or perform the function for which it was created.

Acceptable: The system must have been accepted in the society and environment of its location in a way either by individual, group, or team and must appreciate the value-chain inherent or institutional behavior.

Survival: This means that no matter the complex nature of the organization, it must be able to survive because of its adequate support whether financial, personnel and or politically. The system can achieve the above because it has the capability to adapt itself and its program to changing and evolving conditions and situations.

Nwachukwu (1999), maintains that any institution or organization that lack any one of these qualities of capability, public acceptance and survival capacity, will fail as an organization. Besides the above, the term "institutional behavior" implies tenacity in the adherence to routinized way of doing things which perhaps good ways when initiated, become moribund as the tenacity seldom result in creating vested interests in the institution, or in the establishment of vested interest in minority portions of the clientele public served by the institution. The components of an institution include a clear definition of purpose, policy, program activity and method. They include legal authority and requisite delegated administrative powers to the subsystems or components part. However, ignorance of purpose, policy and program method or if not ignorant, disagreement with these on the part of the responsible personnel could results in less than full agency effectiveness and even leads to organizational complexity. The individual institution functions in a complex relationships and a network of

interactions which, if friendly and supportive, enhance their performance and which, if hostile and uncooperative, can improve the intended operations and thwart the accomplishment of institutional purpose (Nwachukwu, 1999). The degree of the above impact results in complex organizational complexity.

5. Organizational Complexity and System Thinking

The consistent changing or unpredictable pattern and uncertainties of managing organizations in modern day are characterized by series of interrelated, interconnected and interdependent pattern of behavior aggregated to function as a whole. The complex system makes it hard to be predictable which make the matter worse. There arises the need for clarity of the conceptual perspective relationship to organizational complexity.

System thinking implies the way or scientific discoveries of interconnectedness and assessment of complex environment that facilitates effective program planning, implementation, monitoring, evaluation and learning from experience within an organization. By systemic perspective, it means the relationship to which an organization is dynamic. Multi-level and multi-dimensional, multi-motivated, probabilistic, multi-disciplinary, descriptive, multi-variables and adaptive (Sharma et al, 2012). Norbert and Wiener pioneered in the field of cybernetics and gave cleared views of an organization as a system consisting generally of inputs, process, outputs, feedback and environment as shown below.

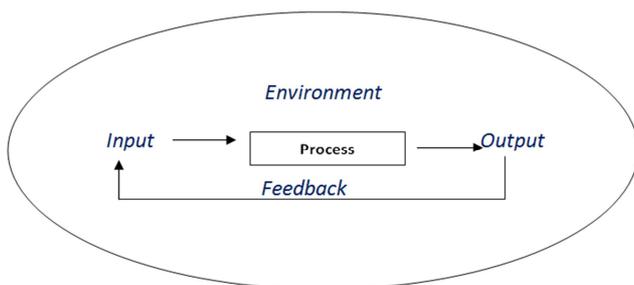


Figure 2. Organization systems theory, (Source: Sharma et al, 2012,p.263).

The complexity inherent occurs on the process of providing the above where;

Input: In this context mean all organizational demands, aspirations, interest, desires, and values of the personnel. Absence, mismanagement and any ambiguities arising from the above constitute problems resulting in uncertainties or organizational complexity. This above is tense by limited resource setting.

Process: This is the decision making chamber comprising the

executive personnel reposed with the responsibility or challenges of ascertaining cause-effect relationships of the organizational demand and they result in either complicated, leverage or complex adaptive system.

Output: This is the generality. The feedback mechanism channel of communication to the society for criticism after which output goes back to input for implementation.

Based on the above, the organization is a complicated “open system” it is necessary to consider environmental influence to the system and how the system influences the environment while planning changes, making decisions and solving problems inside the organization especially in an unstable and unpredictable environment (Aelita, 2010). In an organization, there are systems in which there may be multiple “right” answers and are technically complicated, but cause-effect relationships are known, and results are challenging and difficult but knowable (Quinn Patton, 2011). These shows complex systems are characterized by high levels of uncertainty and lack of agreement. Where complicated systems are the domain of the “unknown knowns”, complex contexts are the domain of the “unknown unknowns” (USAID, 2011; Snowden and Boone, 2007). They also detailed the important characteristics of complicated and complex systems of an organization to include interconnectedness, non-linearity, feedback, patterns and emergency.

Mario and Milton (2010), in assessing paradigm of complexity organization notes that a complex organizational reality as a space of confluence of multiple forces emerged from diverse scope and exerted in different directions that show up in complementary, concurrent and anthagonic relations, immerse in an internal environment of relative disorder, diversity and uncertainty, where any theoretical statement about the functioning of the organization is nothing but a particular bond between the observer and the reality studied. This complexities influences speed of its reform to a large extent, structure, business process resources, and employees and culture (Wu Ci-Sheng and Zhao Shu-ming, 2012). It maintained that complexity of the organization have multiple decision-making levels and internal communication channels which takes the form of hierarchy, and as the higher decision level is, the stronger the communication frequency and range between the decision makers and decision environment. However, the problem of organizational complexity includes its unintended consequences and making sense of a situation. However, Espinosa and Porter (2011), explores the reoccurring decimals in complexity management in organization aiming to improve their sustainability using core contributions from two different approaches which include the Viable System Model and Complex Adaptive System as well as cybernetics to the lineage of system

complexity theory. The Complex Adaptive System takes an open ecological relations amongst multiple types of human and natural systems, but in contrast, it emphasizes permeability and exchange of information and feedback across all boundaries (Scott, 1987), particularly those between the organization and its component systems, and its external environment. The Viable System Model perspective also has complexity and sustainability with framework and is scientific understanding of neural network type of organizations and a revised reading of cybernetic theory. It is therefore recursive model that explains core principles of viability with several “meta-systemic” roles responsible for providing the right managerial and technical services to all viable systems (Stark, 2000; Espinosa and Porter, 2011). Its

cybernetics as the theory of complexity have importantly influenced new understanding of organizations as complex systems like “science of effective organization” (Von Hayek, 1972; Beer, 1979; Rihani, 2002; Wulun, 2007; and Richardson, 2008). The cybernetic means “they are self-steering, using feedback to guide and control their behavior” in limited resource setting (Felix and Nigro, 1965). They also developed mechanism to collect, interpret and apply feedback in their decision-making process so as to acquire capacity to adapt, evaluate performance and correct errors constituting organizational complexity. The basic elements of a cybernetic system can be schematically represented as follows:

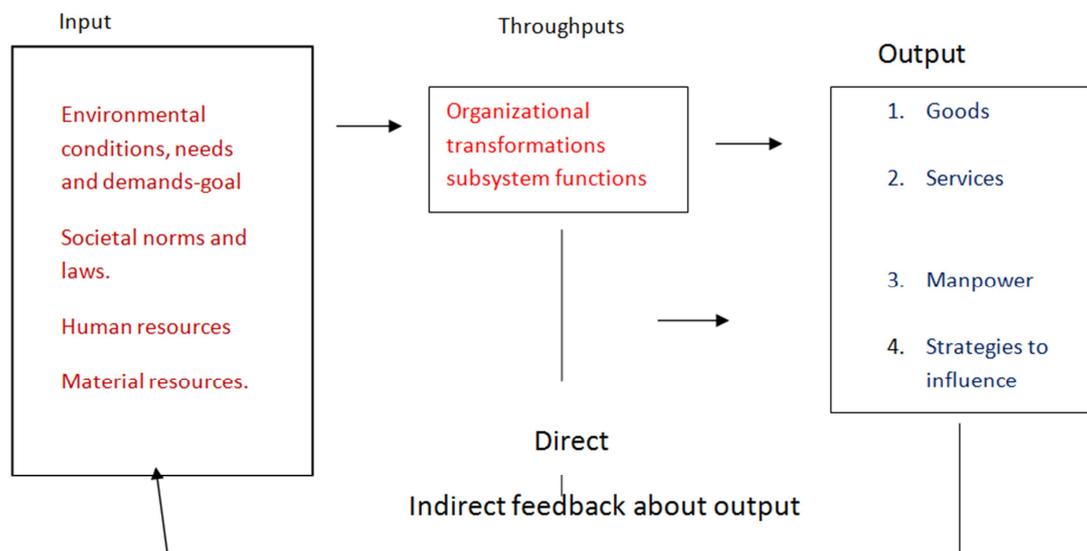


Figure 3. Cybernetic system, (Source: Sharma, et al 2012.p. 264).

The principles for sustaining the above complexity in a non-linear and unpredictable ways include self-organization that signifies the spontaneous bottom up process whereby a system element interact and recombine with little top down design or control (Nishiguchi, 2001), nonlinear feedback and coevolution which includes the ability to give or receive responses to their own or agents and systems (Baum and Singh, 1994; Porter, 2006a), edge of chaos which enable productive energy to shift to key problems, emergence of relativity from simple higher-level order to complex lower-level processes (Sawyer, 2005; Espinosa and Porter, 2011). In ordered system, the level of organizational complexity means that all agent behavior is limited to the rules of the system. Besides the above, there are other ways the systemic thinking or perspective can contribute to the quality and quantity of organizational complexity which seldom result in conflict. It includes its ability to ensure comprehensiveness from fragmentation and narrowness of inquiry to comprehensiveness with simplicity, comprehensibility by

moving from long list (programming context, information overload) to key conflict dynamics (reductionist approach, components parts study), and portability by feeding the analysis forward into planning and programming (USAID, 2011; Ricigliano, 2011). This constitutes subtle problems in a limited resource setting where effects overtime of intervention are not obvious. Based on the above, Ackoff, 1999; Gharajedaghi, 2006; and Aelita, 2010 had detailed on four foundations to be intersected for effective system perspective in an organizational complexity. These include:

Holistic Thinking: This focuses on the whole, logic and process orientation. It appreciates the organizational design or structure, function, process and context all applied with technical know-how in the organization.

Operational Thinking: This focuses on evaluation and identification of linkages or interconnectedness with subsystem.

Interactive Design: This ascertains disparities in similarities

of differences through problem formulation, identification of leverage point, designing solution and evaluating performance.

Self-organization: This provides measures for movement toward predefined order.

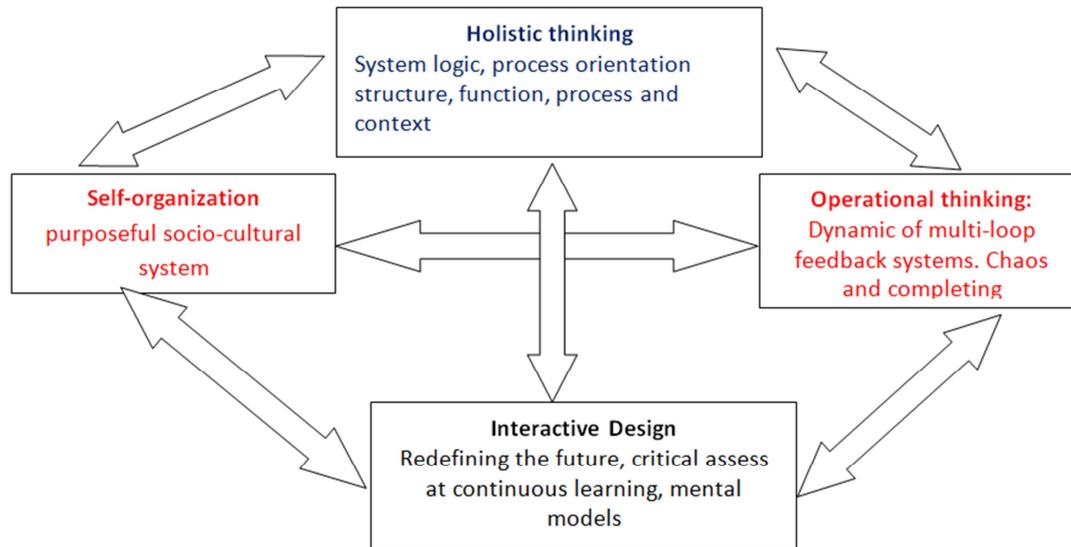


Figure 4. Foundations of systems thinking. (Source: Gharajedaghi (2006)).

Generally, the above synchronizes with Emery and Trist (1971), in types of problems and organizational strategy called docile or isolated problems, docile problems of groups, dynamic interactive problems and aggressive interactive problems. These can also be addressed by appreciating key dynamics, identifying the leverage points for change and farming or contextualizing theories of change and developing indicators of impact on the overall system. However, the dynamics of the complexity can only be ameliorated using systems archetypes tool which focuses on the systemic structures and dynamics rather than on individual factors or event (USAID, 2011). Meadows (2008), maintains that archetypes describe common system dynamics that produces pattern of behavior in a variety of context all reinforcing loops (vicious and virtuous cycles) and balancing loops (stabilizing or resistance dynamics). This systemic perspective target the heart of complexity and enables escape of system traps by reorganizing them in advance and not caught in them or by altering structure, formulating goals, weakening or strengthening opportunities. It can also occur by shifting the burden or exclusion through a “quick fix” dynamic until a complex problem is adopted (Kriesber, 1996; Senge, 1994). Martin and Mike (2011), remarks that the ability to manage complex organizational system flies in the unspoken assumption that the unit of analysis for strategy is a single organization unit. In such environment, advantage will flow to those organizations that can create effective strategies at the network or subsystem level. The challenges of a complex organization can therefore be more adaptive by looking at the mavericks, identifying and address its

uncertainties, put in initiative on every risk, examine multiple alternatives and increase the clock speed (Martin and Mike, 2011).

6. Suggestions for Further Study

There is little study on the step by step modality to test the Viable System Model and Complex Adaptive System in a complex organization with resource limited setting. The decision not to adopt and or decoupled are limited in the study. Besides the systemic thinking of organization complexity, there are need to explore other approaches of the organizational complexity in the context of resource limited setting.

7. Conclusion

Effective management of organizational complexity in a limited resource setting can only be achieved by appreciating how its system interrelate, interconnect, interdependent and its multi-dynamic nature of the subsystem to the whole. This paper discussed organizational complexity, impacts between its uncertainties and personnel resources, financial resources, institutional resources and system thinking. It appreciates an overview of current scholarly thinking of the above concepts as it relates to a limited resource setting. It explained the principles for sustaining the complexity and x-rayed available methods to be intersected for effective sustainable system. It noted that the systemic perspective of an

organizational complexity pave ways for clear appreciation of the inherent uncertainties, concept incongruence, complex or complicated system status, fostering disparity or linkages of its comprehensibility and comprehensiveness of an organization. The paper posits that rather than organization dependant on the dynamism of leverage point for change at the detriment of sustainable management, it should consolidate on a functional Complex Adaptive System and Viable System Model. The aim is to avoid development today at the detriment of tomorrow. It appreciates the utilization of systems archetypes by reinforcing loops (vicious and virtuous cycles) and balancing loops (stabilizing or resistance dynamics including self-fulfilling prophecies, addiction and escalation (Meadows 2008; USAID, 2011). The paper also assert that with the above approaches, modern organizational complexities go a long way to alleviate the numerous limited resources (human and material) being wasted in an orthodox (unorganized or non systematic) manner of sustainable development. The ability of an organization to adapt therefore depends on the characteristics of the methods, field, innovation, evaluation and inferences drawn for development studies or in addressing the inherent vicious circle.

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