Structural Contingency Theory In, Population-ecology Theory Out

Ali Soylu, School of Business, Cameron University, Lawton OK, USA

ABSTRACT

The population-ecology approach (the natural-selection model) used to be a major orientation in consideration of organizational change and transformation. It is presented by its proponents as a theory distinct from structural contingency theory. This theory begins by rejecting the claim of contingency theory that organizations are adaptive. Contingency theory understands that the social and business environment is subject to change. Any misfit between the contingency variables and the structure leads to lower performance. The move from misfit to fit is adaptive change which is the essence of contingency theory. This study reviews and compares these two theories in detail.

POPULATION-ECOLOGY THEORY

According to Aldrich and Pfeffer (1976), the population-ecology model does not deal with single organization units but is concerned with forms or populations of organizations. Donaldson (1995) identifies three different elements in this literature: the root biological metaphor, historical population ecology, and population arithmetic. Hannan and Freeman (1977) say that population ecology emphasizes the broader perspective of populations, holding that adaptation of a population of organizations comes about by the environment selecting for survival those organizations which are well adapted and rejecting those organizations which are maladapted.

Population ecology is different from and rivals structural contingency theory. This theory is highly novel and it is a dramatic challenge to conventional organization theory of structural contingency type. The structural contingency theory could be used to specify which structures fit with which environmentally produced contingencies and thus produce a fit between organization and environment. For instance, a diversified firm needs a divisional structure to be in fit; if a diversified retains a functional structure it is in misfit. Population ecology could hold theoretically that the misfit of an organization to its environment leads to lower performance and hence reduced probability of survival.

There are some problems with population-ecology model. Van de Ven (1979) provides some criticism of this model. He suggests that the notion of “fit” between the environment and organizations is unclear. Hannan and Freeman’s article (1977) on population theory borrows from the biological theory of survival of the fittest. Essentially, they find that the environment is very important in determining the structure of firms. What manages to work with the environment (and fulfill its needs) will survive, and that which cannot will disappear. Hence, the environment eliminates the bad organizations and supports the good/beneficial organization.

Population-ecology is challenged and promoted in conjunction with a critical attack on adoption theory (i.e., structural contingency theory), not offered as a correspondent approach. Since the two schools of organizational thought are “sub-types of structural-functionalism,” there appears to be many possible complementarities.
In chapter 7 of Lex Donaldson’s (1995) *American Anti-Management Theories of Organizations*, structural contingency theory is chosen as the base due to its empirical validity. An organization is seen as existing in an environment with which it is interdependent and with which it transacts as an open system. The organization adjusts its structure over time to move into a fit with these task contingencies. Donaldson draws from the resource dependency theory of Pfeffer and Salancik, (1978) to argue that power phenomena such as executive succession are shaped by the critical resource needs of an organization. Population ecology (Hannan and Freeman, 1989) theory offers explanations for organizational founding.

Donaldson’s (1995) model looks at the life of an organization as comprised of three phases: founding, life, and death. Organizational founding is affected by ecological factors, which influence the need for such an organization and the opportunities. During its life an organization makes internal changes. The internal aspects of an organization can be divided into contingency factors, intra organizational power and organizational structure (Donaldson, 1995). He says that the organization structure changes over the life of the organization in response to contingency factors such as organizational size, task uncertainty, strategy, parent organizational size, public accountability, and critical resources and the organization tries to achieve a fit between these contingencies and fit for divisional strategy with a diversified strategy.

Donaldson (1995) makes one last argument against the newer organizational structure paradigms, namely population-ecology, institutional, resource dependency and organizational economics and as he continues to advocate structural contingency theory, an older paradigm. He states that “structural contingency theory remains as a cogent body of theory which is intellectually sound and empirically valid, certainly more so than any of the would-be alternative theories of organizational structure reviewed herein”.

Donaldson discusses the future research possibilities in the area of structural contingency theory. He feels that the “continuity and accumulation” are important aspects of the theory development. He thinks studies should emphasize organizational effectiveness and thus analyze the “fit between the relationship between strategy and structure”. In particular, to investigate if matching structure to environment is linked to performance.

While contingency theory focuses on the impact of the environment on an individual organization, the population ecology view of organizations argues that the environment exerts influence over entire populations of organizations (Hannan & Freeman, 1977). Although proponents of the population ecology theory understand that leaders of organizations formulate strategies and structures to adapt to environment contingencies, these theorists also argue that the environment contains a number of pressure factors that limit the organizations’ ability to adapt. Hannan & Freeman (1997) argue that the stronger the pressures, the lower the organizations' adaptive flexibility and the more likely that the logic of environmental selection is appropriate”.

Staw and Cummings (1990) contend that one of the most provocative questions in organizational research is to establish how organizations evolve and survive their environments. For them, population ecology theory helps organizational theorists study the form and variety of entire populations as they evolve over time in a given environment. Staw and Cumming's view is that organizational innovation and survival is subject to structural, collective and social conditions that affect the life of entire organizational sectors.

In their study of the strategic implications of age and size in organizations, Aldrich and Auster (1990) analyze the effects of external factors on the development of entire organizational populations.
Aldrich and Auster (1990) argue that, at the population level, the internal and external liabilities of age and size produce a "slowly changing aggregate of organizations supported by a highly volatile underlying process involving millions of organizational births and deaths, and the creation of new forms" (p. 35). Aldrich and Auster's interpretation of the population ecology perspective is that selection and retention, combined with the creation of new organizational forms, transform entire populations of organizations so that they are better suited to survive their environments.

Caroll, Delacroix, and Goodstein (1990), argue that the importance of population ecology theory is that it brings organizational theory back to its foundations of political and sociological analysis. Their main claim is that, unlike early organizational theorists, contemporary theorists have minimized the social and political nature of organizations. Consequently, Caroll, Delacroix, and Goodstein (1990) speculate about the effects of political environments on populations of organizations. Their ecological view of the political environments of organizations maintains that "the major intellectual shift of the field over the past 30 years, the leap from closed to open to closed systems models of organization, has coincided with the de facto dismissal of many of the political issues that concerned early theorists such as Michels (1949), Selznick (1949), and Gouldner (1954)" (Caroll, et al., 1990).

In their study of organizational adaptation, Hrebiniak and Joyce (1985) contend that population ecology theory applies to populations of organizations in imperfectly competitive niches. These niches define populations of organizations that face similar, if not identical, political and economic constrains. In the case of highly dependent populations, the oligopoly and control that is assigned to a given niche is tightly connected to the distribution of resources and the political impulses within the environment. Consequently, Hrebiniak and Joyce (1985) argue that population ecology theory is relevant to the study of organizations that face low organizational choice and high environmental determinism.

Freeman (1990) and Hannan & Freeman (1977) are perhaps the most comprehensive writers on population ecology. Their writings provide the foundations for the study of organizations from a population ecology perspective. Hannan and Freeman's (1997) seminal work on The Population Ecology of Organizations introduces the population ecology perspective on organization-environment relations as an alternative to the dominant adaptation perspectives. They contend that, although there are a wide variety of ecological perspectives of organizational development, they all focus on choice and selection. From their perspective, the bulk of the literature on organizations and environment subscribes to a different view, which they label adaptation perspective.

According to Hannan and Freeman, the central tenet of population ecology theory is that the combination of external factors and inertial pressures in the organization determine the organization's ultimate survival. The four main internal pressures in the organization are the limited transferability of invested resources, constraints of information received by the leaders, internal political constrains, and constraints generated by the organization's own history (Hannan & Freeman, 1977). "The external pressures that affect populations of organizations are the legal and fiscal barriers to entry the market, limited access to external information, legitimacy constrains emanated from the environment, and the collective rationality problem".

Hannan and Freeman also introduce "choice of unit" as an important concept in population ecology theory. Hannan and Freeman (1977) suggest that, just like ecological analysis is conducted at the individual, population, and community levels, organizational analysis must include the analysis of the various organizational units. Instead of three levels of analysis, organizational analysts face at least five levels of study: a) members, b) sub-units, c) individual organizations, d) populations of organizations, and e) organizational communities. Consequently, a comprehensive analysis of an organization, or an
organizational population, must include its history, its politics, its social structure, and the environment in order to identify the organizational forms and define the populations for research.

Hannan and Freeman (1977) and Freeman (1990) introduce three main principles that define the population ecology theory. These principles represent an extension and modification to Hawley's principle of isomorphism, which tends to answer the question of why there are so many kinds of organizations. According to Hawley (quoted by Hannan and Freeman), "the diversity of organizational forms is isomorphic to the diversity of the environments. In each distinguishable environmental configuration one finds, in equilibrium, only that organizational form optimally adapted to the demands of the environment". While that proposition sounds logical from an ecological perspective, Freeman (1990) and Hannan and Freeman (1977) suggest that there are the three main principles of population ecology that result from expanding Hawley's principle of isomorphism: a) competition, b) natural selection, and c) survival.

Population ecologists use biological theory (specifically Darwinian natural selection theory) as a "root metaphor and source of analogy," but organizations cannot be managed by the same laws of biology.. For example: Darwinian natural selection theory claims that living organisms reproduce themselves. Thus, the form, which taken by their children, is determined by their genes. This is not the case for organization structure. Organizations do not replicate the form taken by the successful organizations of the preceding generation.

There is an inconsistency with Darwinian Theory. Biological subjects are discrete organisms. They are born and then die. On the other hand, two organizations can merge into one or split into two. When small organizations grow or become large as the result of a merger, then this means adaptation and mess the distinction made between small and large organizations by population ecologists.

NATURAL SELECTION

An explanation for organizational survival

Natural selection is the central principle of population ecology theory. According to Freeman (1990), "natural selection refers to the differential reproduction and survival of organizations depending on relative competitive advantages". In their study of theories of organizational transformation, Levy and Merry (1986) contend that the natural selection perspective contains three basic premises about change in organizations. The first premise of the natural selection perspective is that organizational development and change are function of environmental changes (environmental determinism). Their second premise is that the persistence of change has meaning only when viewed in terms of the environment differentially selecting a population of organizations. Finally, they suggest that, according to natural selection theory, "managerial choice, planning, and changing are viewed as unnecessary or misleading explanations for the process of adaptation" (Levy & Merry, 1986).

Freeman's study of the organizational life cycles explores the logic of natural selection as the key for explaining the intimate relationships through which populations of organizations come into being, change, and disappear. For Freeman (1990), natural selection involves two key conceptual properties. First, natural selection presumes population logic. In other words, "although selection always involves things that happen to individuals, the effort is directed towards understanding the range of variation in morphological characteristics as displayed in some population or set of populations" (Freeman, 1990,). The second conceptual property of natural selection theories is that they are dynamic. For Freeman, the
natural selection principle helps explain the patterns or variation observable at one point in time in the life of an organizational population.

The main propose of the population ecology theory is of significant relevance for the study or entire populations that face similar environmental pressures. Hrebinia and Joyce (1985) contend that population ecology is useful to understand and interpret the organizational dynamics of groups of organizations that face minimum chance of choice for adaptation because of the extreme environmental constraints. Hannan and Freeman (1990) provide sufficient grounds for this argument. For Hannan and Freeman (1990), the use of the population concept in analyzing organizations is likely to provide insights for further studies of organizational structure. Furthermore, they argue that although exogenous shocks affect organizations differently, we still can identify classes of organizations, which are relatively homogeneous in terms of environmental vulnerability (Hannan & Freeman, 1990).

The application of population theory to organizational species could help theorists identify a species analogue for organizations (Hannan and Freeman, 1990). Such identification will enable theorists to develop organizational blueprints that would eventually determine the outputs of organizations as a result of environmental input. The development of a defined organizational form (or typology) will in turn provide a system for studying the organization-environment relations for such population in terms of its geographical, political, social, and market boundaries (Hannan and Freeman, 1990).

Since the definition of organizational form has been narrowed down to just the four key elements that are subject to high degrees of inertia: “stated goals, forms of authority, core technology, and marketing strategy”- population ecology cannot be viewed as a true rival to structural contingency theory (Donaldson, 1995). Donaldson noted that any inquiry into the process of organizational inertia would require an investigation into the internal power, politics, and decision-making system of organizations and thus would again require inquiry within the organization studied about their internal characteristics. Hannan and Freeman (1990) deliberately reject this notion, instead focusing on external forces of selection, a restriction that Donaldson regards as seriously impeding their study of organizational inertia.

Hannan and Freeman (1989) examine organizational mortality only at the aggregate level of the population, not at the level of individual organization. This leaves the questions, “Which organizations survive?” and “Why do others fail?” largely unanswered. It is possible that organizations may misfit to their environment, or perhaps they fit their environment but “die as a result of competitive pressure or had limitation to the resources, and carrying capacity of its ecological niche.” Population-ecological fails to distinguish between these two options and thus it remains unproven.

<table>
<thead>
<tr>
<th>Theory</th>
<th>Motivation for Growth</th>
<th>Implication for Research</th>
<th>Anticipated Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population Ecology Theory</td>
<td>Owners require a sufficient depth of management to compete.</td>
<td>Managerial experience a business owner retains prior to firm ownership.</td>
<td>The higher the level of managerial capacity prior to firm start-up, the more likely the owner will be to indicate a growth motive. Previous experience is correlated with the growth motive.</td>
</tr>
<tr>
<td>suggests growth stems from a</td>
<td>Knowledge acquisition is a cumulative process, years of experience.</td>
<td>influences the intentions and expectations of the business owners.</td>
<td></td>
</tr>
<tr>
<td>motivation to comply with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>others (seeking legitimacy);</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>meet others’ expectations.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The theoretical framework for the analysis of growth theory is adopted from Westhead, 1995.
STRUCTURAL CONTINGENCY THEORY

Structural contingency theory claims that individual organizations adapt to their environments. Based on their perceptions of the environment, organizational managers select contingency factors such as strategy, size and technology. These contingency variables, in turn, dictate the specific type of structure that would lead to superior performance. Any misfit between the contingency variables and the structure leads to lower performance. If there is a change in any of the contingency variables, the structure is out of fit and the organization needs to undergo structural change to regain fit between contingency variables and structure. The move from misfit to fit is adaptive change which is the essence of contingency theory. While contingency theory is neither novel nor exciting, an array of empirical research attests to its validity. Contingency theory offers a positive role to managers. Implicitly, they are charged with selecting appropriate contingency variables in light of the environment, choosing the right structure and managing structural change whenever necessary. Although contingency theory is silent on the process issues associated with such changes, it is still a valid theory of organization structure.

The theory simply claims that there cannot be any single organizational structure that can assure organizational effectiveness. Structure depends on certain characteristics of the organizations called "contingency factors" such as strategy, size, task uncertainty, and technology. These factors are influenced by elements such as industry, government, competitors, society which are located outside organizations. According to this theory, organizations can only be effective if they can fit their structure to the contingency factors and thus to the environment (Donaldson, 1996).

According to the structural contingency theory, if the tasks are certain and repetitive, a high degree of centralization and formalization, decision making and planning by the top management, would be suitable. These features are supposed to lead to higher effectiveness, i.e. tasks can be accomplished in most efficient way. However, if the tasks are relatively uncertain, there will be a need for "rich" information and skilled employees. It would be difficult to make strict plans or job descriptions in such cases. In other words, decentralization, reduction in hierarchical control and formalization, and more emphasis on teamwork and empowerment would be more suitable for uncertain tasks.

Contingency theory understands that the social and business environment is always subject to change. There is no a standard rule or law will solve management problems for all institutions. Kannan (2008) lists the main features of the contingency theory are as follows:

1. Management is essentially situational. Consequently the technique of management is contingent on the situation. If it properly conforms to the demands of the environment, the technique is effective and fruitful. In other words the diversity and complexity of the external situation with which the organization interacts alone should determine which measure or technique is to be chosen to be effective.

2. Management should therefore adopt its approach and strategy in tune to the requirements of each particular situation. Management policies and practices that spontaneously are responsive to environmental changes alone would be effective. To meet this, the organization should design its structure, leadership style, and control systems should all be oriented to the situation prevailing.

3. Since management effectiveness and success are directly related to its ability to cope up with the environment and to the changes overtaking therein, it should sharpen its diagnostic skills to be proactive and to anticipate and comprehend environmental changes.

4. In short the successful manager should recognize that there is no one best way or thumb rule to manage. They must not consider particular management principles and techniques as applicable to all time and all needs. There is no solution of universal applicability, as two situations may not be identical.
Kannan (2008) says that the contingency approach has a widespread applicability and practical utility in management of complex and large sized organizations. It advocates comparative analysis of organizations to bring about matching or fit between the organization structure and situational variables. Therefore this approach is also known as Situational Approach. The theory focuses attention on specific situational analysis that helps practicing managers to be pragmatic and develop competence for situational analysis. It combines the mechanistic and humanistic approaches to fit the particular situation ((Kannan, 2008). The Contingency Theory advances further and stresses the need to additionally examine the relationship between the organization and its environment too.

Kannan (2008) gives an example of practical application of contingency theory, the commonly referred "Z" theory also referred as Popular management theory, representing combining Japanese system of Management, with the best of the theories of X and Y of Douglas McGregor in America. According to the Z theory "Successful organizations are ones that have a culture that reflects the values of the employees." In the past American workers valued individual decision making and responsibility, employee specialization, rapid promotions, etc., and did not get social satisfaction from the job. Instead the church, community, family, etc., provided social needs. Type Z model organizations now attempt to integrate parts of the Japanese model of management (collective decision making, slow evaluation and promotion, and holistic concern), individual responsibility from the U.S. model of management, and variations of other aspects of management models to create a hybrid model of management.

Schoonhoven (1981) suggests that there are five problems with contingency theory, ranging from a simple lack of clarity in its theoretical statements to more subtle issues such as the embedding of symmetrical and non-monotonic assumptions in the theoretical arguments. Jay Galbraith (1973) tested several traditional contingency hypotheses along with more precise hypotheses developed from knowledge of the five problems with contingency theory. Schoonhoven (1981) suggests that a contingency theory of organizational effectiveness be formulated that includes interactive, non-monotonic, and symmetrical arguments.

As I mentioned earlier, the basic theme of the Contingency Theory is that organizations have to deal with different situation in different ways. There is no single best way of management applicable to all situations. In order to be effective, the internal functioning of an organization should correlate to the demands of external environment. The managers must regulate the organizational functioning in harmony with the needs of the people, i.e. members from within and customers and other externally.

CONCLUSION

Population ecology theory has yet to show the existence of population-level organizational adaptation, whereas structural contingency theory has shown individual organizational adaptation of organizational structure. Research shows that organizations do change their structures in adaptive ways. There is evidence supporting the structural contingency theory of adaptive change in on-going organizations. At present, the structural contingency theory of organizational adaptation is better supported then the population ecology theory of adaptation (Donaldson, 1996).

Both population ecology theory and structural contingency theory are functionalist theories which explain how fit between organization and environment is attained (Donaldson, 1995). The two theories could complement each other in that structural contingency theory would explain those cases where fit is attained by population processes of organizational birth and death (Donaldson, 1996). Therefore, from this point of view, we might be able to integrate these two models into one single model. However,
population-ecology has not developed in this complementary fashion; rather, it has been developed as a rival theory to structural contingency, and as a distinct paradigm, antithetical to structural contingency theory.

REFERENCES