Organizational Innovation Mortality:
From the Population Ecology and Institutional Perspectives

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ABSTRACT

The objectives of this conceptual paper are to explain the mortality of organizational innovation and to identify factors related to the research question of “Why some organizational innovations fail to survive in organizations?”. By integrating population ecology and institutional theories, a framework on innovation mortality suggested in the paper considers the interaction of innovation, organization, and environment, together with three aspects of innovation: culture, technique, and economics. To bring innovation and organizational factors into the framework will help to reduce the determinism of population ecology and emphasize more on organization adaptation. The implication of this research will provide a basis for the prevention of the mortality of highly advantageous innovations and increase the success rate of organization innovation implementation.

Keywords:
Business innovation, Institutional and ecology contexts, Inter-organizational relations, Knowledge management, Organizational culture
INTRODUCTION

To provide more competitive advantage in a present global environment, many organizations search for innovations that can make a difference. A study by Bain (2007) found that over eighty percent of executives rate innovation as a top three priority. The innovation trend that many organizations are interested to use in the future includes corporate blog, consumer ethnography, RFID (radio frequency identification), customer segmentation, and collaborative innovation (Bain, 2007). However, past performances show that the rate for innovation failure is high, e.g. reengineering could be high as 70 percent (McIntosh, 2003).

Innovation research is a relatively new field of inquiry. Current main themes on innovation research cover the adoption and diffusion of innovation (Abrahamson, 1991; Rogers, 1983), understanding the current state of innovation (McGourty et al., 1996; Tang, 1999; Yamin, 1999), exploring the main determinants of successful innovation (Balbontine et al., 1999; Shaw, 1998; Spivey et al., 1997), and the positive effects on competitiveness and profitability (Atuahene-Gima, 1996; Yamin et al., 1999; Subramanian & Nilakanta, 1996). Innovation failure research is of general interest recently as well but there has been far less work in this area (Astebro and Michel, 2005), especially for the conceptual framework based on the organizational theories.

The objective of this conceptual paper is to predict the mortality of organizational innovation and to identify factors related to the research question of “Why some organizational innovations fail to survive in organizations?”. A high rate of mortality has been found in many organizational innovations. That is, for any given year there are about as many failed innovations as there are first-time adoptions (Rogers, 1983). Despite this high rate, much less research on innovation mortality has been done compared to innovation adoption and diffusion. Therefore, increasing attention should be paid to organizational innovation mortality so that there will be more understanding about this phenomenon. In addition, the implication of such research may provide a basis for the prevention of the mortality of high advantage innovations and increase the success rate of organization innovation implementation. McGrath cited that there are benefits to be gained from the study of failures: “By carefully analyzing failures instead of focusing on successes,
scholars can begin to make systematic progress on better analytical models of entrepreneurial value creation.” (1999: 28 cited in Thornhill & Amit, 2003).

To answer the above research question, this paper will converge population ecology and institutional theories by focusing at the organizational level. These two theories have a common assumption that organizations are tightly coupled with environments. Therefore, only innovations imported from outside organizations are considered in this paper in order to investigate the environmental factors, one of the main dimensions of the proposed framework. Organization innovation is defined here as an idea, practice or method that is new to the organization (Rogers and Shoemaker, 1971; Rogers, 1983). Mortality in this paper means discontinuance (Rogers, 1983) or a decision to reject an innovation after having adopted it. Also, innovation survival, as suggested by Astebro & Michela (2005), means “the length of survival of an innovation in the marketplace”. Innovation mortality emphasizes the organizational decision; whereas innovation survival focuses more on the market decision.

The framework proposed in this paper is an attempt to bridge a theoretical gap between the population ecology and institutional theories on the explanation of organizational innovation mortality. To bring innovation and organizational factors into the framework will help to reduce the determinism of population ecology and emphasize more on organization adaptation. In other words, not only by environment selection, but organizations themselves also have a role in continuing to use or reject innovations.

**LITERATURE REVIEW**

**Population Ecology**

The population ecology theory assumes that organizations have inertial forces which limit their capability to adapt to environmental changes (Hannan and Freeman, 1989). According to Hannan and Freeman (1989), these inertial forces have both internal and external constraints. Internal constraints are organization’s investment, limitation of information for top-management, internal politics, and organizational histories. External constraints are legal and fiscal barriers to entry and exit from markets, availability of information, and legitimacy constraints.
These inertial forces are relative to environmental change and vary with the life cycle, organizational size, and complexity of organizations (Hannan and Freeman, 1984, 1989). Therefore, major innovations in organizational strategy and structure will occur early in the life histories of organizations. Moreover, existing organizations, especially the largest and most powerful, rarely change strategy and structure quickly enough to keep up with the demands of uncertain, changing environments.

From the population ecology perspective, the processes of change are ultimately controlled by the environment because of the above-mentioned inertial forces (Hannan and Freeman, 1977; Morgan, 1986). In other words, the mechanism of change is natural-selection rather than organizational adaptation (Hannan and Freeman, 1989). Given the scarcity of resources, survival goes to the ‘fittest’ organizations which could successfully eliminate the weaker competitors.

Population ecology theory proposes that there are three processes of change: variation, selection, and retention (Aldrich and Pfeffer, 1976). Variations arise as a result of cross-reproduction and random variation of characteristics (Morgan, 1986). Some of these variations will find a niche and survive in the competitive environment. Selected organizational forms then will be preserved and become institutionalized in the environment (Daft, 1986). The process of variation, selection, and retention leads to the establishment of new organizational forms and to changes in current organizational forms.

Population ecology has provided insights into the way new populations of organizations can emerge and fall through the dissemination of innovations (Morgan, 1997). The strength of population ecology is that it highlights explicitly on the importance of selection processes, which is largely ignored in previous organizational theories, and emphasizes on the dynamics of change (Pfeffer, 1985:417). Ecological models can be used to understand the consequences of changing the variation or selection mechanisms (Pfeffer, 1985:417-418). The implication of population ecology on innovation is that environmental selection shapes the vital rate of all kinds of innovation. Table 1 summarizes the assumptions and differences in focus between population ecology and institutional perspectives, as well as the implications relevant to organization innovation mortality.

Despite of its contributions, population ecology is criticized to be far too deterministic a theory to provide an adequate explanation of how organizations actually evolve (Astley and Van de Ven, 1983; Morgan, 1986; Singh and Lumsden, 1990). In addition, population ecology is criticized to be insufficiently
attentive to organizational change and adaptation (Astley and Van de Ven, 1983; Perrow, 1986; Singh and Lumsden, 1990; Young, 1988). Population ecology also focuses on competition, while the collaboration receives less attention.

**Institutional Theory**

The institutional theorists have paid more attention to organizational innovation (Hinings and Greenwood, 1988; Meyer and Rowan, 1977; Rowan, 1980; Tolbert & Zucker, 1983; Zucker and Tolbert, 1981). The findings of these researches have similar conclusions that organizational innovation adoption is based on rationality, but organizational innovation diffusion is based on legitimacy. However, very little consideration has been given to the explanation of mortality (Baum and Oliver, 1991; Zucker, 1987), including organizational innovation mortality.

An assumption of institutionalization is that organizations tend to conform to the norms and expectations of the institutional environments (Meyer and Rowan, 1977; Scott and Meyer, 1992). Changes among organizations tend to produce isomorphism (DiMaggio, 1988; DiMaggio and Powell, 1983). Isomorphism may be limited to a single field or sector (DiMaggio and Powell, 1983; Scott and Meyer, 1992), or may diffuse across sectors (Baron, Dobbin and Jennings, 1986; Dobbin et al., 1987).

There are three processes of isomorphism: coercive, mimetic, and normative (DiMaggio and Powell, 1983). Coercive processes are concerned with acquiescence to the demands of powerful organizations; mimetic processes are concerned with modeling of other organizations to reduce uncertainty; and normative processes arise from professionalization. Institutional theorists also use these mechanisms to explain the adoption and diffusion of innovation. Once an innovation is institutionalized, it is adopted and accepted not because it has rational or technical properties but because social expectations are that good, well-managed organizations will do so (DiMaggio, 1988; Meyer and Rowan, 1977; Pfeffer, 1982).

Institutional theory contributes insights for explaining imitation behavior in the innovation diffusion process (Abrahamson, 1991; Abrahamson & Rosenkopf, 1993). Institutional theory explains how myths, meaning, and values, rather than efficiency, autonomy, and exchange, may drive organizational behavior (Oliver, 1991). The institutional perspective also demonstrates why a lack of innovation is so commonplace.

Nonetheless, institutional theorists stress on environmental deterministic by overemphasizing on conformity with the institutional environment (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Institutional theorists have explanation for a lack of innovation from cultural perspective, but are silent from other perspectives.

<INSERT TABLE 1 ABOUT HERE>

CONCEPTUAL FRAMEWORK

By integrating population ecology and institutional theories, a framework on innovation mortality suggested in the paper considers the interaction of innovation, organization, and environment, together with three aspects of innovation: culture, technique, and economics (see Table 2). It proposes that (1) from the cultural dimension, innovation mortality is dependent on cultural compatibility of innovation and organizational culture, moderated by age and legitimacy of innovation; (2) from the technical dimension, innovation mortality is determined by complexity, moderated by organizational structure and collaboration network; (3) from the economic dimension, innovation mortality is determined by sunk cost of innovation, moderated by size and competitiveness of innovation.

Presently, there is still a paucity of framework which considers the interaction of related factors to explain and predict innovation mortality in general. This systematic framework is anticipated to contribute to solve the problems of too strong determinism and competition of population ecology, and the limitation of institutional theory in explaining innovation mortality.

<INSERT TABLE 2 ABOUT HERE>

Cultural Dimension of Innovation:

**Proposition 1:** Cultural compatible organizational innovation is negatively related to innovation mortality.

According to the institutional theory, the pressure of legitimacy will drive organizations to imitate other organizations by adopting the same innovation (See DiMaggio, 1988; Tolbert and Zucker, 1981; 1983). However, not all organizations will have success in such innovation imitation. For instance,

One main reason for the failure of innovation imitation is the cultural incompatibility of the adopted innovation. In this paper, culture is the set of key values, beliefs, and understanding that are shared by a group of people (Smircich, 1983). There are values which influence the creativity of designers and inventors, together with the various beliefs and habits of thinking, which are characteristic of innovation (Pacey, 1991; Saha, 1988). This attribute may be indicated as the ideological or cultural aspect of innovation. In other words, innovation is not value-free (Pacey, 1991).

The most acceptable innovation would have to be highly compatible with existing culture (Rogers, 1962; Macdonald, 1992). The innovation which is incompatible with culture will lead to a culture clash and decline of innovation eventually. The organizational culture is influenced by many sources. These include national culture, profession, age, gender, education, and organizational characteristics, etc. In Hofstede’s study, national culture explained 50 percent of the differences in employees’ attitudes and behavior in a single multinational corporation (Adler, 1997). Also, Lewis (2006) cited that as people grow up, the learned national concepts become their core beliefs, which we find almost impossible to discard.

From the study of Pei Zhou-Sivunen (2005) on Enterprise Resource Planning (ERP) implementation in China, it found that the success rate is only 10 percent. Therefore, his study suggested that there should be a concern as well as preparation for possible conflicts, delay, and other difficulties in ERP implementation, which are caused by the Chinese organizational culture. Several researchers have asserted that the failure rate of technological-based innovation in public organization tends to be high (Kock et al., 1996 cited in McMaster & Wastell, 2004) due to various factors. One main reason is that staff culture puts emphasis on the need for consultation and consensual change (McIntosh, 1997).

**Age**

**Proposition 2:** The culturally incompatible organizational innovation in younger organizations will have higher mortality than older organizations.
According to Stinchcombe (1965) and several empirical studies (Maple, 1982; Freeman, Carroll, and Hannan, 1983; Starbuck and Nystrom, 1981; Hannan and Freeman, 1989), organizations face a liability of newness: new organizations fail at higher rates than old ones. Young firms may lack knowledge and experiences in dealing with innovation (Rippman & Rumelt, 1982).

Thornhill & Amit (2003) collect data from 339 Canadian corporate bankruptcies and confirm that younger firms fail because of inadequacies in managerial knowledge and financial management abilities. Older organizations are able to accumulate more skills, learning, and experiences to manage organizational innovation. Therefore, this paper proposes that culturally incompatible innovations will have lower mortality in older organizations than the young ones.

**Legitimacy of Innovation**

**Proposition 3:** The culturally incompatible organizational innovation under a high innovation legitimacy context will have lower mortality than the one under a low innovation legitimacy context.

Legitimacy of innovation here refers to the degree of societal cultural support for an innovation (Meyer and Scott, 1992). Legitimacy is usually controlled by those outside the organization (Pfeffer and Salancik, 1978; Singh, Tucker, and Meinhard, 1991). An organization may have to deal with external interest groups, professionals, or government, which have a standard basis for innovation legitimacy, e.g. pollution control systems. When the control of resources and authority of an innovation is centralized in a few powerful organizations, legitimacy is largely dependent on those organizations (Benson, 1975). As such, high innovation legitimacy will put more pressure on an organization to continue to use the innovation even though it is not compatible with its own culture.

Mallak L.A., Bringelson L.S., and Lyth D.M (1997) suggest that organizations seeking ISO 9000 certification should be “decisive, team-oriented, risk-averse, and should value stability, pay attention to detail, value high levels of organization and value working in a co-operative environment with good interpersonal relationships”. However, there are many organizations may not have such cultural environment, but still need to pursue ISO 9000 due to the legitimacy of this innovation (Rukhamate, 2003).

**Technical Dimension of Innovation**

**Complexity**

**Proposition 4:** Complexity of organizational innovation is positively related to innovation mortality.
Innovation complexity is “the degree to which an innovation is perceived as relatively difficult to understand and use” (Rogers, 1983:230). In this paper it is suggested that complexity of innovation is positively related to its mortality. This is because (1) organizations may have limited ability in implementation when a complex innovation deals with diverse and uncertain processes; or (2) organizations may lack resources if the innovation used plenty of resources; or (3) it may be too risky for organizations to continue to use a complex innovation which has conflicting or uncertain outcomes.

Bearden (2003) studies the utilization of small satellites to conduct low-cost planetary investigations of NASA and industry. This paper assesses NASA’s “Faster, Better, Cheaper” approach in terms of a complexity index measured against development time and spacecraft cost. A comparison of relative failure rates of recent planetary and earth-orbiting missions are presented, and conclusions regarding dependence on system complexity are drawn. Thus, this paper suggests that organizational innovation with high complexity will have higher mortality than one with low complexity.

**Knowledge Management**

**Proposition 5:** Complex organizational innovation implemented by organizations with knowledge management practices will have lower mortality than the ones that do not.

Knowledge management is a process concerned with knowledge acquisition, knowledge codification, knowledge sharing, and knowledge distribution for the purpose of organizational effectiveness (Takeuchi & Nonaka, 2004; Davenport & Prusak, 1998). Organizations with knowledge management practices, especially for knowledge codification and knowledge sharing will help people in organizations learn and ease the complexity of organizational innovation.

The knowledge to deal with the complexity of the innovation can be collected from the experts in the organizations. Then others are able to learn from the knowledge collection sources later. To share knowledge among experts and other organization members is another way that facilitates people to understand the complexity of the innovation and learn how to deal with it. From a study of high-tech firms, it is found that organizational learning through knowledge management strongly influences organizational innovation (Therin, 2002). Therefore, complex organizational innovations implemented by organizations with knowledge management practices will have lower organizational innovation mortality than the ones that do not have such practices.
Collaboration Networks

**Proposition 6**: Complex innovation implemented by organizations which have collaboration networks will have low mortality.

Population Ecology theory is criticized for its emphasis on competition and ignoring the fact that organizations collaborate as well as compete (Morgan, 1986). The emerging collaboration network for innovation is a strategy responded to changing industrial structure and technological development (Smith et al., 1991). Such collaboration network has a motive of reciprocity rather than domination (Oliver, 1990). Since the pace of technological change increases and product life cycles shorten, this circumstance provides incentive to obtain economies of scale through the sharing of technical know-how and working skills (Storper and Harrison, 1991).

Other benefits from collaboration network are to ensure higher and more predictable flows of resources or supplies (Aldrich and Auster, 1986; Saxenian, 1991), to be able to access resources (Pfeffer and Salancik, 1978; Dimaggio and Powell, 1983), and to exchange information (Rogers, 1983; Saxenian, 1991). In addition, Smith et al (1991) suggest that collaboration network renders the following advantages to organizations: exploiting new innovations, accessibility to expertise, technical support, and obtaining grants to support innovations.

These advantages from collaboration network assist to reduce innovation complexity, especially the complexity which is related to uncertain and conflicting inputs, processes, and outcomes. Cross, Hargadon, & Parise (2005) cited that “the major barriers to innovation today result not from failures of individual genius but rather from failures of collaboration.” The empirical study by Baum and Oliver (1991) also shows that institutional linkages significantly reduce failure of child care service organizations. Thus, it is proposed that complex innovation implemented by organizations which have collaboration networks will have lower mortality.

**Economic Dimension of Innovation:**

**Sunk Cost of Innovation**

**Proposition 7**: The high sunk cost innovations have lower mortality than the ones with low-cost ones.
Sunk cost is an organization’s investments in plant, equipment, and specialized personnel, all of which constitute assets that are not easily transferable to other tasks and functions (Hannan and Freeman, 1989). Specifically, sunk cost of innovation includes the expenses of the following elements: hardware, software, construction, manpower training, and systems improvement (before implementing innovations). In addition, it also covers transaction costs comprising of the cost of contracts as well as the cost of enforcement and policing (North, 1990). Sunk cost is one of the inertial forces which constrains organizational change (Hannan and Freeman, 1989). Under resource scarcity condition, organizations have to utilize the high cost innovation even though sometimes the innovation may be obsolete or does not improve performance significantly.

Thailand introduced Government Fiscal Management Information Systems (GFMIS) in the public sector in 2004. GFMIS is a comprehensive integrated computerized fiscal system covering all activities related to the public finance sector, i.e. budgeting, procurement, financial and accounting, cost, personnel systems. The government invested a huge budget for this project. With numerous problems and limitations of the system (Lorsuwannarat, 2006), the government still have to carry on the systems due to the huge sunk cost. This paper argues that innovation which has a high sunk cost will have low mortality.

Proposition 8: High sunk cost organizational innovation in small organizations will have higher mortality than that in large organizations.

According to Hannan and Freeman (1989), selection processes in modern societies favor organizations with greater structural inertia, and larger organizations will have lower mortality rates. This propensity of smaller organizations to have higher mortality rates is known as the liability of smallness (Aldrich and Auster, 1986; Freeman et al., 1983).

Aldrich and Auster (1986) have suggested some reasons underlying the liability of smallness. They argue that smaller organizations have greater difficulty in raising capital. Also, government regulations have a higher impact on smaller organizations. Finally, small organizations are at a major disadvantage for labor input because they cannot offer long-term stability. Camison-Zornoza, et al (2004) performed a meta-analytical study of innovation by using the pool of accumulated knowledge up to date, examining the time span 1970-2001 from 53 empirical studies published in the most important journals on business
administration. This study confirms that size and innovation has a significant and positive correlation. Therefore, it is proposed that high sunk cost innovation in small organizations will have higher mortality than that in large organizations.

*Competitiveness of Innovation*

**Proposition 9:** High sunk cost organizational innovation will have higher mortality in a highly competitive innovation environment.

According to population ecologists, selection criteria favor innovations that increase the speed and scale of output (Aldrich and Mueller, 1982). An existing innovation can only be displaced if there is another innovation having greater relative advantages. From the institutional point of view, to institutionalize an innovation usually takes time; an innovation with strong competitions may not have a life-cycle long enough to be institutionalized. Zucker (1987) cited that non-institutionalized innovations have higher mortality.

This paper proposes that a high sunk cost innovation with low competition tends to have low mortality. Because such an innovation will have a better chance to be institutionalized than an innovation with strong competitions. For example, mainframe computers are innovations which used to be dominant forces in computer information system. They are the most expensive of all systems, costing several million dollars to purchase and up to $250, 000 per month to rent (Senn, 1990). These computers are very fast, able to process programs written in many languages, and capable of doing processing for multiple users simultaneously. However, the mainframe era is fading, microcomputers, being significantly cheaper than mainframe but with almost equal power, have proliferated in organizational population. Therefore, this paper suggested that high sunk cost innovation will have higher mortality in a highly competitive innovation environment.

**IMPLICATIONS AND CONCLUSIONS**

By converging population ecology and institutional theories, this paper is the first to propose a framework for the prediction of organizational innovation mortality. A unique contribution of the paper is the integration of adaptation and selection explanation of innovation mortality. This paper suggests that environmental selection does not totally shape the mortality rate of innovation as suggested by population
ecology. Innovation mortality also depends on innovation characteristics and institutional adaptability factors. This paper focuses on three aspects of innovation: culture, technique, and economics, with the major determinants of mortality being cultural incompatibility, complexity, and sunk cost of innovation.

Institutional theorists have some explanations on the process of innovation adoption and diffusion, but not on mortality. From the institutional theory, early adoption of innovation is predicted from rational basis; and the diffusion of innovation is explained by legitimacy. In order to better understand the whole process of innovation, this paper suggested that the mortality of innovation can be determined by the characteristics of innovation, and moderated by organizational and environmental factors.

This paper also distinguishes between externally and internally induced mortality. Both theories emphasize the role of external environments. Organizations are viewed to have some limitations of adaptation. This paper argues that innovation mortality is not exclusively controlled by the selective environment as suggested by population ecology and institutional theories. The interaction between innovation characteristics and organizational factors as well as the interaction between the innovation and environmental characteristics may influence the innovation mortality.

This framework has the following implications for future research and practices. The adaptive strategies which the managers may use to decrease the failure of an innovation are as follows. First, managers should adapt their organizational culture to nurture and promote innovation they adopt. Some management tools tend to grow in performance-oriented culture, for instance balanced scorecard, and performance-based budgeting. Organizations with high power distance are not good places for such innovations to survive. Second, complex innovations need to be managed through creating knowledge capabilities and knowledge sharing in the collaborative networks. Nowadays, it is sometimes difficult to avoid complex innovations. By utilizing the idea of knowledge management and creating collaborative networks can help turning complexity into reality. Third, an innovation should be tested for its feasibility and acceptability, and be compared with other competitive innovations in the marketplace before full-scale investment.

<INSERT TABLE 2 ABOUT HERE>
The complementary aspects of population ecology and institutional theories facilitate the development of a framework for a better understanding and prediction of the organizational innovation mortality. Operational measures of the proposed factors are suggested in Table 3 for potential future research which may be conducted in any industry which adopts a wide range of innovations, e.g. information technology, hospitals, financial sectors, hi-tech industry, and public services. The future research may converge other related theories such as interorganizational relations, resource dependency, and political theories. By doing so, a more comprehensive innovation mortality model will be obtained.

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Table 1: Comparison of Population Ecology and Institutional Theories

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Population Ecology</th>
<th>Institutional</th>
</tr>
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<tbody>
<tr>
<td>Organizations are tightly</td>
<td>- Organizations have inertial forces which limit their capability to adapt to</td>
<td>- Organizations tend to conform to the norms and expectations of the institutional</td>
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<td>coupled with environments</td>
<td>environmental changes.</td>
<td>environments.</td>
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<td>- The processes of change are ultimately controlled by the environment.</td>
<td>- Organizations adapt to environmental changes.</td>
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<tr>
<th>Level of analysis</th>
<th>Population</th>
<th>Focal organization</th>
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<tr>
<td>Process of change</td>
<td>Variation</td>
<td>Coercive</td>
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<td></td>
<td>Selection</td>
<td>Mimetic</td>
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<td></td>
<td>Retention</td>
<td>Normative</td>
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<tr>
<td>Motive for change</td>
<td>Competition</td>
<td>Pressure for legitimacy</td>
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<tr>
<td>Mechanism of change</td>
<td>Natural-selection</td>
<td>Imitation</td>
</tr>
<tr>
<td>Implication for innovation</td>
<td>- Environmental selection shapes the vital rate of all kinds of innovation.</td>
<td>- Early adoption of innovation can be predicted from rational basis.</td>
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<td></td>
<td>- Organizational mortality rates decrease with age (liability of newness)</td>
<td>- The diffusion of innovation is explained by legitimacy.</td>
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<td></td>
<td>- Smaller organizations tend to have higher mortality rates (liability of smallness)</td>
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<tr>
<td>CULTURE</td>
<td>INNOVATION</td>
<td>ORGANIZATION</td>
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<tr>
<td>Cultural Compatibility</td>
<td>e.g. ERP implementation in China (Pei Zhou-Sivunen, 2005)</td>
<td>Age</td>
</tr>
<tr>
<td>Complexity</td>
<td>e.g. NASA projects (Bearden, 2003)</td>
<td>Knowledge Management</td>
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<tr>
<td>Sunk Cost of Innovation</td>
<td>e.g. GFMIS (Lorsuwanarat, 2006)</td>
<td>Size</td>
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<tr>
<td>ECONOMICS</td>
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Table 2: Proposed Framework for Organizational Innovation Mortality
Table 3: Measures for Organizational Innovation Mortality Factors

<table>
<thead>
<tr>
<th>INNOVATION</th>
<th>ORGANIZATION</th>
<th>ENVIRONMENT</th>
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<tr>
<td><strong>Cultural Compatibility</strong></td>
<td><strong>Age</strong></td>
<td><strong>Innovation Legitimacy</strong></td>
</tr>
<tr>
<td>- The degree to which an innovation is perceived as being compatible with existing values, past experiences, and the needs of potential adopters (Rogers, 1983) 1) Value compatibility 2) Experience compatibility 3) Needs compatibility</td>
<td>- Number of years after organizational establishment</td>
<td>- Degree of societal cultural support for an innovation (Meyer &amp; Scott, 1992) 1) Acceptance by a community 2) Number of adopters</td>
</tr>
<tr>
<td><strong>Complexity</strong></td>
<td><strong>Knowledge Management</strong></td>
<td><strong>Collaboration Network</strong></td>
</tr>
<tr>
<td>- The degree to which an innovation is perceived as relatively difficult to understand and use (Rogers, 1983) 1) Systemic (consist of numerous components and subsystems) 2) Multiple interactions (across different components, subsystems, levels) 3) Non-decomposable (cannot be separated into its components without degrading performance) (Tidd, 1995; Hobday, 1998)</td>
<td>- The degree an organization has systems, mechanisms, and resources to create, disseminate, and incorporate learning from its own and others’ experience 1) Mechanism(s) for exchange or sharing knowledge in an organization, i.e. training, motivation system, and evaluation system 2) Resources for knowledge management implementation, i.e. budget, staff, information technology 3) Strategies or plans for knowledge management</td>
<td>1) Purpose is for networking (dialog and common understanding, clearinghouse for information, create base of support) 2) To accomplish shared vision 3) To build interdependent system to address issues and opportunities (National Network of Collaboration, 1995)</td>
</tr>
<tr>
<td><strong>Sunk Cost of Innovation</strong></td>
<td><strong>Size</strong></td>
<td><strong>Competitiveness of Innovation</strong></td>
</tr>
<tr>
<td>- Organization’s investments for innovation: 1) Size of investment 2) Potential sales 3) Payback period (Astebro &amp; Michela, 2005)</td>
<td>- Number of people in an organization</td>
<td>- Number of competitive innovations in the market: 1) Price competition 2) Existing competition 3) New competition (Astebro &amp; Michela, 2005)</td>
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</table>
Author’s Biography

Tippawan Lorsuwannarat is an Associate Professor and the Director of the Doctoral Program of Public Administration at the National Institute of Development Administration (NIDA), Bangkok, Thailand. She received her B.A. in Economics from Thammasat University and M.P.A. from the National Institute of Development Administration in Bangkok. She was granted a Canadian Government Scholarship to study in Canada, where she graduated with a Ph.D. degree in Administrative Studies from Schulich School of Business at York University. Her research interests include organizational innovation, organizational theories, and management information systems.