COMPLEXITY LEADERSHIP THEORY AND LEADERSHIP CAPABILITIES MODEL ON LEADERSHIP EFFECTIVENESS IN EDUCATIONAL INSTITUTIONS IN SARAWAK, MALAYSIA

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INTRODUCTION

1.1 Introduction

New age challenges such as globalization, technology, deregulation and democratization (Halal & Taylor, 1999), pose continuous challenges for organizations and their leaders (Barkema, Baum & Mannix 2002; Schneider, 2002). The new age is about an economy where knowledge is a core commodity and faster learning will sustain superior performance in the Knowledge-Era (Child & McGrath, 2001). Therefore, the success of new era organizations lies more in its social assets- its organizational IQ and learning capacity (McKelvey, 2001; Quinn, Anderson & Finkelstein, 2002; Zohar, 1997). Rather than leading for system efficiency and control, appropriate for Industrial-Era (Jones, 2000), organizations find themselves leading for adaptability, knowledge and learning, appropriate for Knowledge-Era (Achtenhagen, Melin, Mullern & Ericson, 2003).

Despite the questionable relevance of old model of leadership to current working environment, there is no clear provision of alternatives to address new demands of Knowledge-Era context (Uhl-Bien, Marion and McKelvey, 2007). Knowledge-producing organizations such as educational institutions are still operating within the boundaries of traditional educational leadership models such as transactional and transformational leadership (Gronn, 2002) that focus on individual leaders with positional authorities (MacGillivray, 2010). However, Goldstein, 2008 proposes that leadership should not be seen only as a positional authority but as a complex interplay of leaders' behaviour work to foster complex mechanism and generate conditions in which agents (workers) can respond quickly and effectively. Hence, enabling leaders who work to catalyse conditions in which they can thrive, will likely to create team collectivism, process effectiveness, learning, creativity and resource balancing leadership behaviours that may weed out poorly adaptive outcomes (Marion, 2008). The aforesaid conditions are demonstrated by Hazy's (2006) Leadership

Capabilities Model (LCM). Hazy's LCM identifies complex leadership behaviours that facilitate complex systems leadership.

In order to sustain their relevance as knowledge producing institutions educational institutions will have to adapt faster learning mechanism. Hence, educational change or reform that involves changes (Fullan, 2006) simultaneously involves complex adaptive system that requires agents or teachers to 'adjust their behaviour by adapting to curriculum changes' (Wanda Siu, 2008). With increased complexity in Malaysia's education system, that is exhibited by the existence of multi-types of both primary and secondary schools as shown in Table 1 and Table 2 below. The statistic in those two tables shows that Malaysia's educational system is complex enough that it has fulfilled the Law of Requisite Complexity (McKelvey & Boisot, 2003) that requires a change in thinking away from individual, controlling views toward views of organization as complex adaptive systems that enable continuous creation and capture of knowledge.

Table 1 : Schools in Malaysia

Types of Schools	*Number of Schools*
Day Scholar Schools	9518
fully boarding schools	60
art schools	2
sports schools	2
technical and vocational schools	88
religious schools	56
cluster schools	300 schools by 2014
high performance schools	57

Source: Ministry of Education website 2013

Table 2 : Schools in Sarawak

Types of Schools	*Number of Schools*
Day Scholar Schools	1429
Fully Boarding Schools	4
Art schools	1
Technical and Vocational schools	6
Religious schools	8

Source: Sarawak State Education website, 2013

Apart from the various types of school system, Malaysia's educational institutions have to deal with the demands of national educational agendas such as Malaysia's Educational Development Plan, A Sport for Each Student's, 10th Malaysia's Educational Plan, Primary School Comprehensive Curriculum, Elevating Malaysia's Language and Strengthening English Language Policy, Educational National Key Result Area, School-Based Assessment and Malaysia's Interim Strategic Educational Plan. These national educational agendas have resulted in complex internal and external environment for educational institutions as they have to operate against top-down and bottom-up tensions between top management and operation agents (teachers). At the same time, schools in Malaysia have to deal with the demands of the existing stakeholders such as the market demands, local communities and parents.

Drawing from complexity science, this study will investigate how educational institutions in Malaysia manage the above said tensions between administrative, adaptive and enabling leadership by utilizing LCM (team collectivism, process effectiveness, learning, creativity and resource balancing) to ensure leadership effectiveness (creativity, adaptability and learning) in complex educational institutions environment.

2 WHY COMPLEXITY LEADERSHIP

2.1 New Leadership Paradigm

Extensive research on traditional models transpires from Industrial Era to Knowledge Era for more than 50 years (Drucker, 1998).However, the new age challenges in Knowledge Era have resulted in the need to review the traditional leadership models. Knowledge Era leadership requires a change in thinking away from individual centralized power to complex system leadership that enables creation and capture knowledge (Uhl-Bien, Marion & McKelvey, 2007). The new leadership paradigm must address that Knowledge Era leadership as a complex interplay of leaders' behaviour work to generate conditions that produces new patterns of behaviours or new modes of operating (Jones, 2000). Knowledge Era leadership does not lead for organizational control but it leads to align power and control (administrative); generate dynamic interactions for change activities (adaptive); and address creativity, adaptability and learning in operating context (enabling) (Uhl-Bien, Marion & McKelvey, 2007).

2.2 The Law of Requisite Complexity

The expansion of Malaysia's education system in terms of its size of students' enrolment (e.i. 5 214 261 enrolment in 2013), trained and knowledgeable workforce (e.i. 60 000 graduate teachers by 2014, continuous exposure to national agenda based changes (e.i. NKRA and National Education Plan Development) and its participation in global educational interests (e.i. SEAMEO and UNESCO) are strong predictors that Malaysia's educational system is becoming more complex. Considering the complex nature of Malaysia's educational institutions or what is referred as the Law of Requisite Complexity (McKelvey & Boisot, 2003), Malaysia's educational institutions have an existing complex system that has the potential to function effectively in complex environment as it equates the complexity of existing environment (Uhl-Bien, 2007). Hence, Malaysia's educational institutions must

consider a shift from Industrial Era leadership model to Knowledge Era leadership in order to enable continuous creation and capture of knowledge (Uhl-Bien, 2007).

3. WHY LEADERSHIP CAPABILITIES MODEL?

3.1 As Measurement of Complex Educational Institutions Leadership Effectiveness

Previously, the measurement of complex system leadership effectiveness in LCM was illustrated by corporate organizations transformation effort and by ten series of virtual experiments which replicate ten different environmental scenarios (Hazy, 2004). The computational tests are superficially done, hence, the leadership activities are not tested sufficiently in real world realities with real challenges. Therefore, there is a need to investigate how educational institutions in the real world manage the real world challenges in complex working environment.

Little is done to demonstrate the applicability of complexity leadership theory to enhance the capabilities of leaders in organizational settings (Livingstone and Lusin, 2010). The complexity theoretical literatures may continue to advance but little is done to justify what types of demands and constraints it places on organizational leadership (Osborn and Hunt, 2007). Hence, there is a need to investigate how beneficial behaviours of leadership impacting leadership effectiveness in educational institutions which operating in complex environment. Secondly, by identifying the beneficial leadership behaviours it may provide leaders especially in the existing bureaucratic educational institutions, the crucial understanding on how to engage in meaningful enabling activities that are beneficial to the organization despite its inherent complexities (Livingstone and Lusin, 2010).

Complexity leadership is new compared to traditional leadership models ((Avolio, Walumbwa, Weber, 2009). There are limited studies that measure complex system

leadership capabilities and effectiveness in existing complex organizations especially in educational institutions.

The Kaufmann's (1993) NK model used in organizational contexts (Levinthal 2001, Levinthal and Warglien, 1999) to explore strategic choices and top management team dynamics only come close to modelling leadership dynamics (Lichtenstein, Uhl-Bien, Marion, Seers and Orton 2006). Recent research results on the link between leadership capabilities and leadership effectiveness through the Leadership Capabilities Model (LCM) have been explored through computational modelling (Hazy, 2006). Hence, there is a critical need to study those relationships in complex educational institutions in this Knowledge-Era.

4. Previous Studies

4.1 Introduction

Complexity science has been heralded as a powerful set of methods for explaining non-linear, emergent behaviour in organizations (McKelvey, 1997; Anderson, 1999). Among other things, complexity studies have defined many organizational pehenomena, including entrepreneurship (Stevenson & Harmeling, 1990; McKelvey, 2004; Lichtenstein, 2007), innovation (Cheng & Van de Ven, 1996; Saviotti & Mani, 1998; Rivkin, 2000, 2001); organization design (Garud, Kumaraswamy & Sambamurthy 2006; Sigglekow & Rivkin, 2006), organizational learning (Carley & Svoboda, 1996; Carly & Hill, 2001), and strategic adaptation and organizational evolution (McKelvey, 1999; Morel & Ramanujam, 1999; Gavetti & Levinthal, 2000).

In the field of leadership, leadership scholars have been exploring how complexity science can explain and support emergent behaviour in dynamic organizations (Marion & Uhl-Bien, 2001; Uhl-Bien, 2007). The need for on going innovation and the increasing amount of information that become accessible to knowledge workers, scholars of Complex

Systems Leadership Theory argues that leadership should not be focused on individual leaders with positional authorities (MacGillivray, 2010). Instead, leadership is seen as a process embedded within each and every interaction throughout organization (Lichtenstein, Uhl-Bien, Marion, Seers, & Orton, 2006).

According to earlier notion of complexity leadership, heterogenous agents interacting according to a small number of simple rules,will create new regimes of order on their own through 'self-organization' dynamics that are inherent in complexity conditions (Hazy, Goldstein & Lichtenstein, 2007). Drawing from this argument by taking into consideration the capacity for emergent behaviour within the culture, processes and interaction of the organizations, it is suggested that agents could essentially self-organized all the way up- level upon levels without the need of a central controller (originally suggested by Anderson (1999).

However, there are other complexity scholars suggested that a combination of *bottom-up* and *top-down* dynamics are necessary in complex organizations (Uhl-Bien, 2007). Meanwhile, Goldstein (2007) argues against the belief that bottom-up self-organization can generate any order at all without significant enabling and constraint factors, i.e., administrative influence. The debate for the two approaches result in perturbing questions whether, how and when leaders should enact formal organizational policies and processes to encourage innovation versus to 'self-organize' their way to success.

4.2 Complexity Leadership Theory (CLT)

CLT is explored through a novel paradigmatic focus on the dynamics of relationship (Livingstone & Lusin, 2010). The theory postulates that leadership is far too complex to be understood as traits and behaviors of one or more individuals, rather, it refers to the interplay from which a collection of impetus of action and change emerges when heterogeneous agents interact in networks ways that produce new patterns of behaviour or new modes of operating

(Heifetz, 1994; Plowman & Duchon 2008; Plowman & Solansky, Beck, baker, Kulkarni & Travis, 2007). CLT focuses on identifying and exploring behaviors that foster organizational creativity, learning and adaptability when appropriate complex adaptive systems dynamics are able within the context of hierarchical coordination (Ulh-Bien, 2007).

One of the many challenges of complex system organizations is the constant tension between top-down, centralized structures that enable exploration and bottom-up, emergent structures that enable exploitation (Panzar, Hazy, McKelvey & Schwandt, 2007). Exploration includes …variation, risk taking, experimentation, play, flexibility, discovery and innovation (March, 1991). Exploitation includes … refinement, choice, productivity, efficiency, selection, implementation and execution (March, 1991). Organizations in both opposing spectrum should be able to allocate all of its resources to both endeavours in order to remain productive in a competitive environment.

Leadership guides the collective energy toward exploitation or exploration (Panzar, Hazy, McKelvey & Schwandt, 2007). It is the specific micro-dynamic interaction of leadership that provides the necessary structure for efficient exploitation, the circumstances that promote exploration (Livingstone & Lusin, 2010). Based on this premise, CLT proposes that complexity leadership consists of three leadership roles that entangled within and across people and actions; administrative, adaptive and enabling leadership (Uhl-Bien, 2007).

4.2.1 Administrative Leadership

Administrative refers to the actions of individuals in formal managerial roles which include organizational structuring, vision generation, organizational strategy development and resource acquisition (Uhl-Bien, Marion & McKelvey, 2007). It also plans and coordinates organizational activities such as bureaucratic functions or a top down function based on authority and position (Uhl-Bien, Marion & McKelvey, 2007). It is focused on the establishment of

control and exploitation of responses, resulting in greater organizational efficiency (Schreiber & Carley, 2008).

4.2.2 Adaptive Leadership

Adaptive leadership is an emergent, interactive dynamic that produces adaptive outcomes in a social system (Uhl-Bien, Marion & McKelvey, 2007). It is a collaborative change movement that emerges nonlinearly from interactive changes or from 'spaces between' agents (Bradbury and Lichtenstein, 2000; Drath, 2001; Lichtenstein, Uhl-Bien, Marion, Seers, & Orton, 2006). Network in which agents are perpetually interacting and adapting to internal and external environmental tensions are referred as complex adaptive systems (CAS) (Hazy, 2008; McKelvey, 2008). CAS is triggered by the struggles between authority and preferences (differences in knowledge, skills and beliefs) (Uhl-Bien, Marion & McKelvey, 2007). An appropriate amount of balance must be kept to promote evolution while retaining order. The point of balance between the extremes of adaptive tension is known as the edge of chaos or the bottom-up structuration combined with top-down hierarchy (Lewin, 1992).

4.2.3 Enabling Leadership

The role of enabling leadaership in the CLT framework is to directly foster and manouver the conditions (e.g. context) that catalyse adaptive leadership and allow for emergence (Uhl-Bien, Marion & McKelvey, 2007). It allows the channeling of adaptive leadership dynamics back up through hierarchical structure of administrative leadership for strategic planning and exploitation (Schreiber & Carley, 2008). Enabling leadership interplays two primary roles. First, it catalysts necessary conditions for CAS by fostering interaction and interdependency that results in interactive dynamics (Uhl-Bien, 2007). Second

it manages the entanglement between administrative (the tension to structure and to control) and adaptive leadership (promotes emergent interactive dynamics upward the formal managerial system) (Uhl-Bien, 2007). Enabling leadership is fundamentally manages the bidirectional interface between administrative and adaptive leadership.

5. LEADERSHIP CAPABILITIES MODEL (LCM)

5.1 Introduction

LCM posits that leadership is central to the process of change, variation, selection and retention (Hazy, 2006) and it constitutes the complex system in five ways. The five ways refers to five value-creating levers available to the leadership meta-capability to regulate performance and adaptation in the complex system (Hazy, 2006). These value-creating levers; team collectivism, process effectiveness, learning and sharing information, creativity and resource balancing enables LCM to measure leadership effectiveness.

5.2 Team Collectivism

Assigning autonomous individuals to collective cause is one of primary objectives of managerial role. Leadership behaviour that influences this value-lever is the channelling of each individual energy and effort toward a collective agenda (Barhard, 1938).

5.3 Process Effectiveness

Coordination of organizational processes promotes process effectiveness in achieving a collective agenda. Autonomous agents distribute resources internally to improve team-work and internal system interactions to gain peak performance (Hazy, 2006).

5.4 Learning and Sharing Information

At this stage organizational leadership enables encouraging interactions across boundaries to promote learning and information sharing thus creating new knowledge to enable future options (Hazy, 2006). However, the changes may carry little or not materialized benefit with respect to the environment (Levinthal & March, 1981, 1993; March, 1991). Hence, by enabling information learning and sharing across people and actions; new innovations and new possibilities emerge (McKelvey, 2003).

5.5 Nurturing Ideas

Leadership behaviour that enables empowerment, developing ideas and channeling resources promotes the emergence of powerful ideas that builds new capabilities to enable adaptation against environmental demands. An enabler of adaptation is the existence of diversity (Allen,2004) and by protecting diversity in within the environment, complex system leadership creates support for creativity to the point where, once introduce to the environment it has adequate fitness to survive (Lynn & Reilly, 2002).

5.6 Balancing Investment And Risks

Establishing consistent well-defined decision criteria within the organization helps to guard organizational resources and generate more value from the resources. It also enables members balance priorities, investments and risks (Hazy, 2006). By relating the tensions between the exploitation of current environment and those that encourage exploration and learning new ones (March, 1991) helps to regulate strategic choices within the organization (Sigglekow & Rivkin, 2003).

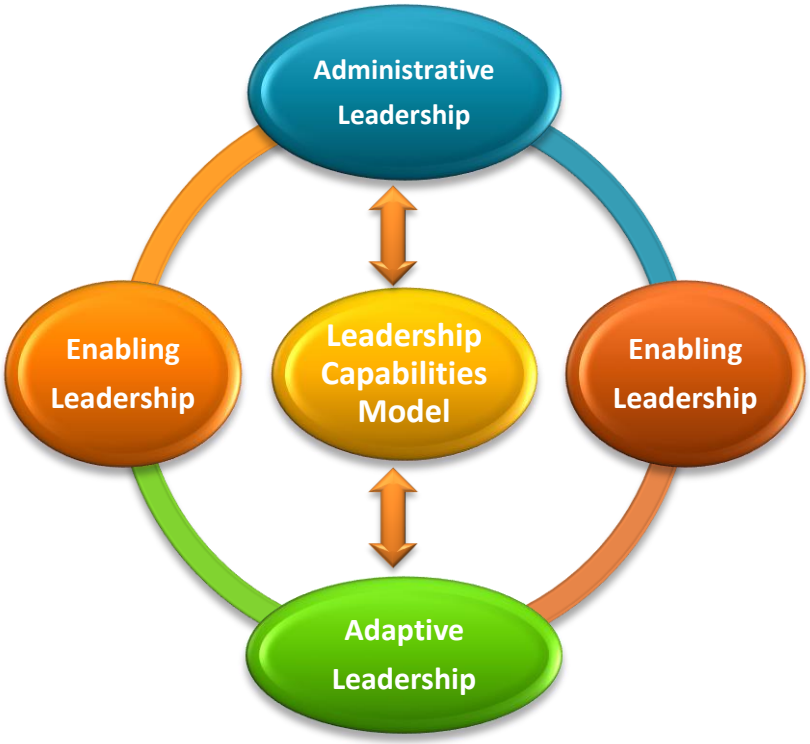
6. THEORETICAL FRAMEWORK

6.1 Introduction

The relationship between CLT and LCM is presented in Figure 1. The model derives from Schreiber and Carley (2008) Complexity Leadership Model and Hazy's (2006) definition of leadership capabilities model. Although it retains the three basic functions of Uhl-Bien's (2007) CLT but it seeks to integrate the impact of identified leadership behaviours in LCM on the leadership process.

This model reflects current Malaysia's educational institution leadership context as administrative leadership plays a pivotal role in the administrative system. At the same time, as Malaysia's educational institutions advance to the future, they need to adapt to the growing organisational complexities in which they are operating.

Figure 1: Theoretical Framework



6.2 Complex Leadership Outcomes CLT, LCM & Leadership Effectiveness

Complex leadership effectiveness occurs in all hierarchical levels of an organization (Uhl-Bien, Marion & McKelvey, 2007). The complex leadership outcomes of adaptive leadership differ across hierarchical levels of course (Boal, Whitehead, Philips & Hunt, 1992: Hunt & Ropo, 1995). With close reference to educational institutions at the strategic level (upper hierarchy) relates largely to emergent planning, resource acquisition and strategic relationship with the environment. The effective output for organisational level (middle hierarchy) relates to emergence of focused planning, and resource allocation. At the operation level (lower level) relates to the development of knowledge, innovation and adaptation.

7 The Relationship Between CLT and LCM

7.1 Administrative-Adaptive Tension and Team Collectivism

Leadership behaviours such as monitoring, controlling and providing feedback encourage organization's members to work for collective benefit rather that for their personal agenda (Hazy, 2006). When leaders channelling each individual energy and efforts towards collective efforts at the same time they enables organizational members negotiate their organizational membership rights and responsibilities. Administrative and adaptive tension is managed when agreed agendas are achieved in the negotiating process.

7.2 Administrative-Adaptive Tension and Process Effectiveness

The second leadership behaviors such as facilitating team dynamics and exhibiting approval in process effectiveness improvement by organization members help to promote team accountability and teamwork (Hazy, 2006). The coordination of activities allows organization members to self-organize in order to achieve a purpose. The tension between administrative and adaptive leadership tension is managed when leaders provide support to

the self-organize process such as providing needed resources to fine tuning the members interactions to gain locally defined peak performance.

7.3 Administrative-Adaptive Tension and Learning and Sharing Information

Leadership behaviours such as encouraging communication across boundaries and at the same time tolerating mistakes deem to promote learning and knowledge sharing (Hazy, 2006). The administrative and adaptive leadership tension is managed as in the process of acquiring, sharing and experimenting new knowledge, organisational members are actually recombining their resources, tasks and knowledge in such process.

7.4 Administrative-Adaptive Tension and Creativity

Leadership behaviours such as empowering teams to develop ideas, iterating new ideas swiftly and channelling resources to experimentation encourage organisation members to nurture powerful ideas and build new capabilities to enable adaptation (Hazy, 2006). The administrative and adaptive leadership tension is managed when leaders take the position as the catalyst of reconfiguration of capabilities, subsequent development, testing and improvement of organisation members' ideas.

7.5 Administrative-Adaptive Tension and Resources Acquisition

Leadership behaviours such as establishing consistent well-defined decision for projects and programs enhance organisational potential to generate more value in the future (Hazy, 2006). The tension between administrative and adaptive leadership is managed when the leaders enable members to balance priorities, investment and risks. As members are able to balance the organisation resources it helps to regulate strategic choices (Siggelkow & Rivkin, 2003) that are related to markets exploitation and capabilities exploration.

8. IMPLICATIONS AND LIMITATIONS

8.1 Theoretical Implications and Limitations

The model presented in this paper demonstrates how identified leadership behaviours in LCM may positively impact a complex system. It is not to conclude that such relationship exists between the complex processes of leadership and all leadership behaviours. However, it is worthwhile to acknowledge of a relationship between leadership behaviours and complex processes is a step toward the reconciliation of the opposing paradigmatic viewpoints of complexity and behaviour based theories. If a theoretical understanding of the relationship between the complex process of leaderships and leadership behaviours is established, Malaysia educational institutions may exert greater influence over future outcomes. The multitude of variables impacting the complex system leadership prohibits the possibilities of prediction or the definitive establishment of definitive causal relationships, but an illumination of the relationship between complex systems leadership and complex leadership behaviours may increase the probability of Malaysia's educational institutions being steered in a positive direction by its leadership.

8.2 Practical Implications and Limitations

It is hope that Leadership Capabilities Model may provide an opening through which CLT can find real-world application. The LCM for educational institutions is purely theoretical at this point of time and is in need of significant qualitative and quantitative research. Causal relationship would be impossible to establish but an evaluation of correspondence between complex process of leadership and leadership behaviours may possible be revealed. If such a correspondence is observed, complex leadership practitioners in Malaysia's educational institutions may take the first step toward effectively impacting complex adaptive system (CAS). Malaysia's educational institutions success is ultimately

dependent upon a multitude of other factors beyond complex leadership behaviours, but it may shed light on how leadership behaviours fit into the complex system.

9. Conclusion

This paper has demonstrated the contributions of CLT at the system level and the CLT contributions would be significantly expanded with an integration of Leadership Capabilities Model. Leadership behaviours provide the conduit through which enabling leadership allows the flow of information between administrative and adaptive leadership and LCM model helps to manage the tension between the two strains of leadership in CLT.

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