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The Nexus of Transformational Leadership of Emergency Services Systems: Extending the Wu-Shi-Ren (WSR)-Li Paradigms

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Abstract

Purpose: In the face of diverse national and international threats, this study explores the leadership challenges in emergency services systems in Canada. These adaptive complex systems respond to critical events that range from small scale to mass emergencies, disasters and catastrophes. This leadership study examines the requisite competencies and skill sets of emergency services systems.
Design/Methodology: This qualitative research study uses grounded theory to examine the phenomenology of emergency services leadership. Through triangulation, the theoretical paradigm of the Wu-Shi-Ren (WSR)-Li model, authentic transformational leadership emerged as relevant to this domain. This key informant study of 103 professionals from 81 organizations focused on the leadership challenges of emergency services systems. The response rate was 83.5 percent, using a semi-structured and open-ended questionnaire.
Findings: This study underscores the competencies and skills essential for authentic transformational leadership in emergency services systems. With the WSR-Li model as a base, it explores a dimension that is unique to emergency leadership in nations with strong public governance values. It extends the model to include a transgenic dimension, which is important in nations with cogent public governance values.
Practical implications: This study underscores the importance of relational capital and transformational leadership of emergency services systems nationally and internationally.
Social implications: This study stresses the importance of transformational leadership of emergency services as instrumental in saving lives, minimizing injuries and assuring complete health and social recovery nationally and globally.
Originality: Qualitative studies of the perspectives of emergency leadership has not hitherto been done in Canada, nor internationally. This study underscores the relevance of the WSR-Li model in discerning specific authentic transformational leadership attributes that are unique in emergency services systems.

Key words: Emergency services systems; Key informants; Qualitative research; Transformational leadership; WSR-Li model

Background

Emergency services systems are patient-centric and extend beyond traditional institutions to incorporate diverse professional communities that safeguard lives and social integrity. These complex adaptive systems self-organize in response to external environmental stimuli, in the form of range of emergency events, all requiring services intervention and strategic integration (Anyika 2014; Burgelman and Doz, 2001; Moerschell and Lao, 2012; Momani, 2012; Norm and Elsabe, 2011; Penprase and Norris, 2005; Rimstad and Sollid, 2015; Velev and Zlateva, 2011; Zukowski, 2014). These critical events range from regional small-to mass emergencies to disasters and catastrophes that require multi-regional, national and international responses. Table 1 provides the key emergency services system components and processes.

Table 1: Emergency service systems components and processes

Emergency prevention	Emergency preparedness	Emergency care services	Emergency recovery and rehabilitation	Emergency review and adaptive learning
Issues analysis	Business continuity plans	Care interventions	Community reconstruction	After-action reviews
Primary prevention	Contingency planning	Community responses	Facility care	Comprehensive audits
Risk assessment	Emergency plans	Convergence management	Home care	Simulations
Scenario analysis	Emergency resources	Diagnosis and treatment	Psychiatric care	Virtual education
Secondary prevention	Emergency training	Evacuation	Recovery operations	
Stakeholder analysis	Environmental scanning	Incident command centers	Rehabilitation care	
Strategic forecasting	Mitigation planning	Logistics		
	Recovery plans	Information management		
	Response plans	Military command centers		
	Simulation exercises	Primary hospital care		
	Surge capacity planning	Resuscitation/stabilization		
	Threat analysis	Search/rescue operations		
	Vulnerability analysis	Security controls		
		Social media networks		
		Tertiary hospital care		
		Transportation care		
		Triage		
		Volunteer management		

The extant literature points to leadership models that underscore adaptability, coalitions, collaboration and community engagement, collaborative decisions through mutual respect, professional trust and open communications (Avolio and Gardner, 2005; Burke and Litwin, 1992; Hayes and Omodei, 2011; Launder and Perry, 2014; Quinn and Rohrbaugh, 1983). The extant literature also underscores the importance of leadership in emergency services systems in safeguarding the well-being of individuals and the integrity and resilience of communities and organizations (Aaron, 2006; Caro, 2010; Charman, 2015; Cheng, 2013; Eshghi and Larson, 2008; Gibson and Tarrant , 2010;; Goonan and Stoltz, 2004; Henstra, 2010; Ibrahim, 2007; Ilhan, 2011; Kantur and Iseri-Say, 2012; Kumar, 2011; McEntire, 2011; McGuire and Silvia, 2010; Phipps and Prieto, 2011; Simpson and Hancock, 2009; Van de Vactor, 2011; Van De Walle and Turoff, 2008; Wankhade and Murphy, 2012;Wyld, 2013).

Authentic transformational leadership is the nexus of performance excellence (Bass and Steidlmeier, 1999). In emergency services, such leadership underscores caring and compassionate values that preserve and uphold health, well-being and communal integrity as crucial. It focuses on synergistic decision-making and transformation in highly complex, dynamic and uncertain contextual environments of emergencies. Such environments require competencies of coalition building, flexibility, foresight and vision, innovation, and negotiation in orchestrating systemic processes and fostering performance excellence across emergency services systems.

Emergency service systems are inter-organizational systems between cultures that differ in professional values, missions and perceptions. These cultures incubate and thrive in larger polities, which are articulated through the governing organizations through which emergency resources flow. These interact through an exchange of informational and relational capital through transactional processes. This leadership facilitates tight coupling of relational and transactional capital and leveraged this through transactional and transformational skill sets. Where the capital and process resources are lacking, leadership comes into play to foster, propel, drive and leverage the emergency services systems. In essence, emergency service leaders drive the interplay of socio-technical processes within the system that incubate in meta-cultural domains. Hence socio-political elements influence behavior and trust within socio-economic contexts. Mutual trust and understanding, or relational capital are the drivers of organizational system behaviour. They foster collaborations and create climates of good faith, open collaboration and result in goal attainment and shared responsibilities.

The "Wu-Shi-Ren (WSR)-Li" model espoused through Zhu (2002) provides a potent framework to understand these dynamics in the Realpolitik of emergency services systems. The model underscores the perspectives, sensing and the psycho-cognitive elements ("Shi-Li") with socio-political elements and power structures ("Ren-Li") to leverage emergency resources ("Wu-Li") (Zhu, 2001). In Zhu's perspective (2002), "sensing and caring" transform the "knowing". This study extends Zhu's WSR-Li framework into the Realpolitik of emergency services systems, which is not explicitly reported in the extant literature. In particular, the dimensions that are relevant to leadership as shown in Table 2 include:

1. **Relational capital (Shi-Li)**: Shared perceptions, caring values and motivations that harmonize and coalesce emergency services systems in an atmosphere of mutual trust and benefit;

2. **Transactional capital (Wu-Li):** The gamut of capital, knowledge and emergency resources for all stages of emergency services systems;

3. **Transactional skills (Ren-Li):** All systems processes that avail and effectively deploy emergency services resources.

4. **Transformational skills (Ren-Li):** Leadership skills mobilize power and resources to effect effective and efficient response and transformational changes to emergency services systems.

Table 2: Summary of Wu-Shi-Ren (WSR)-Li model dimensions in emergency services systems

Dimensions Zhu (2002) WSR-Li Model	Characteristics	Emergency services systems articulation
1. Relational Capital (Shi-Li)	Sensing Shared perspectives Psycho-cognitive values Weltanschauung	Authentic leadership Mutual trust building between emergency services domains Shared caring values
2. Transactional Capital (Wu-Li)	Operational resources Knowledge resources Conditions	Resourcing emergency services systems
3. Transactional Skills (Ren-Li)	Internal technical processes	Integration of emergency services processes
4. Transformational Skills (Ren-Li)	Synergistic processes Integrating Wu and Ren-li Leveraging through Shi-Li.	Transformational leadership
5. Transgenic Skills (Ren-Li)	Governance	Governance processes and leadership

Theoretically, emergency services professionals interact to build and exchange relational capital (Shi-Li) in order to mutually benefit from transfers of capital, knowledge and resources (Wu-Li). This is done through transactional and transformational processes (Ren-Li). The transactional processes include all of the emergency services processes in place. The transformational processes are leadership processes that mold and design, and develop the system through time. This is the essence of transformational leadership. Through the building of relational capital (Shi-Li), it leverages the emergency resources (Wu-Li) and transactional processes (Ren-Li) through the exercise of leadership competencies effect improved and effective responses throughout the system. When transformational leadership (Ren-Li) focuses and builds on caring values and paradigms (Shi-Li), it is becomes authentic leadership. In essence, emergency services systems require authentic transformational leadership competencies. Yet emergency services systems require authentic transformational leadership of an order not yet fully potentiated in Canada**.** The extant literature does not report on the perceptual dimensions of emergency services leaders of these diverse elements using the WSR-Li model in the domain of emergency services systems. Yet this theoretical deployment of that model has potential to reveal interesting perspectives on the evolving role of emergency services leadership.

Methods

Until recently, the extant literature has not reported on qualitative research studies on the perception of emergency leadership challenges in Canada, nor internationally. This qualitative study explores the phenomenology of emergency leadership, using a grounded theory and key informant approach to elicit the perspectives of emergency professionals (Beck and Plowman, 2014; Seidel and Urquhart, 2013). Moreover, this study deploys a triangulation approach, whereby several conceptual leadership and adaptive complex systems constructs are merged with the Wu-Shi-Ren (WSR)-Li model to form the theoretical framework (Halcomb and Andrews, 2005; Hussein, 2009). This key informant study points to significant authentic transformational leadership attributes and competencies essential to emergency services systems**.**

In this study, an institutional research ethics board reviewed then approved the study objectives, protocol and research instrument given that this was a qualitative study of human subjects. Select professional bodies were points of entry that consented to issue an invitation to their membership to participate in this study. These included the Canadian Association of Fire Chiefs, the Canadian Association of Social Workers, the Canadian College of Health Leaders and the Canadian Information Processing Society. This chain referral sampling approach facilitated access to diverse public safety and emergency leaders across a wide spectrum of emergency services systems in Canada. A six-week response time limit defined the purposive sample size in line with the study objectives. The key informant recruitment strategy was voluntary and confidential, as were the responses. Within a six-week limit of the study, professional members were sent a link to a confidential online survey questionnaire in a secure database under the researcher's name with an online cloud-based company. The privacy and confidentiality standards were detailed and each respondent was required to sign an explicit consent statement before proceeding with the questionnaire. Respondents had the option to elect to complete the same questionnaire through a teleconference. There were 26 semi-structured open-ended questions on perceived leadership attributes and skills, direct experiences, emergency preparedness, future scenarios, systemic performance, technology and coalitions. Table 3 highlights only some of the salient study questions of the semi-structured interviews.

Table 3: Sample of thematic questions of key informant study of emergency service leaders in Canada

Theoretical WSR-Li dimensions	Sample thematic questions
Relational Capital (Shi-Li)	Describe the context of emergency service systems in which you work. Indicate life-threatening encounters you have personally witnessed that called for involvement with emergency services systems. Describe in detail one life-threatening situation you have personally encountered. Describe up to five performance challenges of the emergency systems.
Transactional Capital (Wu-Li)	List accessibility and availability resource challenges in emergency services.
Transactional Skills (Ren-Li)	List key emergency services system lessons you have learnt. Comment on the extent to which the emergency management systems worked effectively. List five emergency events that will threaten your community over the next 20 years. Indicate which emergency plans your organization currently has in place. Indicate whether your organization actively tests and conducts simulations annually. Comment on the level of emergency preparedness in your organization.
Transformational Skills (Ren-Li)	Identify key catalysts and inhibitors to emergency services systems development and evolution. Describe the levels of collaboration in emergency services systems. Comment on up to three barriers to collaboration in emergency services systems. List and comment on the best leadership practices that promote collaboration in emergency services systems. Describe critical leadership qualities in effective emergency management systems. List technological developments you foresee over the next 20 years. Comment on your vision of technological changes and its impact on emergency services systems.

A total of 103 key informants were sent invitations to participate and complete the research instrument online or, as in seven cases, through a teleconference with the researcher within the study time limit. Seventeen online questionnaires had negligible responses and were dropped from the study. The response rate was 83.5 percent with 86 key informants representing 81 organizations across Canada, including two from the United States. These included leaders from: 16 Federal government agencies; 17 Provincial government and regional health authorities and 16 municipal government and first responder units. They also included 14 private systems firms involved with emergency systems; 13 health care facilities; and five national professional associations. Of the total respondents, 89 percent were senior professionals with ten or more years of experience. Moreover, there were 28 health professionals, 15 government officials, 14 fire and rescue officers, 11 services care providers, ten military officers, four social workers and four information system professionals– all with relevant emergency management experience. Seven key informants opted to answer the questions by teleconference during which the interviewer made detailed notes of the responses. The interviewer verbally summarized the key points to the interviewee to clarify any points.

The results of all questionnaires were culled, analyzed and summarized into major themes. Through the open-ended online questionnaire format, the key informants provided textual descriptions of their professional experiences and perceptions of emergency leadership challenges. This open-ended approach evoked responses that were meaningful and particularly salient to each key informant. Furthermore, it produced an array of results that were explanatory, textually rich and unanticipated. Consonant with a grounded theory approach, the qualitative data generated tagged codes of repeated ideas, concepts and elements all part of the substantive coding process. Theoretical memoing identified the first concept and continued right through the comparative analytical processes of the text data. The tagged codes were grouped and integrated into concepts and constructs. The theoretical base that emerged was that of authentic transformational leadership operating within an open-system context that was adaptive, complex and dynamic. The high degree to which evoked concepts fit with the text data and echoed the concerns the key informants underscored the validity of this approach. The emerging model of authentic transformational leadership, using the WSR-Li components, showed how problems are resolved and was highly adaptable to new data that fine-tuned the model. The results suggested the importance of emergency services leadership in promulgating knowledge creation, organizational learning, performance excellence, resilience and systemic transformation.

Results and Discussion

The results of the semi-structured study indicated perceptual agreement on challenges of leadership of emergency services systems. Using the WSR-Li perspective, Table 4 highlights the salient themes that emerged from the first stage of theoretical memoing of emergency leadership challenges.

Table 4: Emergency services systems using Wu-Shi-Ren (WSR)-Li model perspective

Relational capital	Transactional capital	Transactional processes	Transformational processes	Transgenic processes
Shi-Li	**Wu-Li**	**Ren-Li**	**Ren-Li**	**Supra-level Ren-Li**
Authenticity	Base hospitals	Care interventions	Adaptive learning	Comprehensive auditing
Belief sets	Clinical resources	Clinical processes	Change management	Emergency preparedness
Caring values	Clinical supplies	Communicating	Coalescing	Governance processes
Common mission	Emergency departments	Emergency responding	Coalition building	Governance resources
Common values	Emergency physicians	Contingency planning	Community reconstruction	Governance structures
Environmental focus	Emergency professionals	Convergence management	Conflict resolution	Scenario analysis
Mutual understanding	Experience	Credentialing	Futures thinking	Simulation
Sustainability	Explicit knowledge	Emergency planning	Innovation	Socio-political context
Trust	Finances	Emergency preparedness	Issues analysis	Strategic coalitions
Value on Life	Fire and rescue	Emergency resourcing	Leadership	Strategic forecasting
Weltanschauung	First responders	Evacuation	Negotiation	
	Homes	Incident commanding	Reengineering	
	Human resources	Logistics	Risk assessment	
	Incident command centres	Information management	Strategic control	
	Industries	Learning	Strategic planning	
	ICT	Mitigation planning	Systems auditing	
	Medical technology	Prehospital care	Threats analysis	
	Mental health professionals	Primary hospital care	Transformation	
	Military centers	Professionalizing	Virtual education	
	Paramedics	Recovery operations	Vulnerability analysis	
	Physiatrists	Rehabilitation care		
	Police	Stabilization		
	Rehabilitation centers	Search/rescue operations		
	Social workers	Surge capacity planning		
	Stakeholders	Training		
	Tacit knowledge	Transportation care		
	Transportation technologies	Triage		
	Trauma care centers			

Through subsequent theoretical memoing, twelve interrelated significant constructs emerged that point to particular competencies for authentic transformational leadership of emergency services systems. These salient and emerging themes are presented and discussed below from the optics of the WSR-Li model.

1. Relational Capital (Wu-Li)

Leaders must invest time, energy and effort in understanding the diverse range of paradigms of emergency service professionals. Leaders build strategic coalitions through significant relational capital in the form of mutual trust and understanding to promote systemic benefits. Key informants underscored the importance of overcoming the significant perceptual divide between respective emergency professionals. Key informants were particularly emphatic on bridging different assumptions, motivations, organizational pressures, values and views among diverse emergency professionals. Two emerging themes on relational capital were particularly important: shared caring values; strategic cognition and foresight; and performance excellence.

1.1 Shared caring values

Emergency services leaders must have foresight and vision motivated by deep compassion for their fellow human-beings. Foresight and a compelling caring vision that inspires and motivates others are hallmarks of emergency services leaders. Leaders must have an intuitive sense and understanding of the interrelatedness of environments and organizations. The ability to effectively communicate that vision and inspire others to collaborate and integrate emergency efforts is crucial. Deep empathy for others and compassion must inform that vision. At the same time, emergency leaders must understand human and socio-political behaviour and their limitations. Emergency services leaders must have the humility to accept that forces at work may at times be beyond human comprehension and control. Yet in spite of this, foresight and vision must inspire other emergency professionals. This relational capital serves as the basis for resilience in emergency services systems.

1.2 Strategic cognition and foresight

Strategic cognition and foresight requires common systems thinking capabilities, precognition skills and astute situational awareness. Systems cognition requires that emergency services leaders look beyond the bounds of their institutions and adapt regional systems perspectives. Leaders also need to understand how regional and national emergency organizations are financed, governed and structured as integral parts of emergency management systems. Strategic cognition underscores the need for proactive precognition skills. Emergency services leaders must think of the "unthinkable". Emergency events often incubate silently and mask dangerous environmental warning signals, latent systemic problems and potential failures. Denial of red flags of smoldering crises remains one of the greatest challenges in emergency services management and are political and psychological by nature. On an individual level, the consequences of denial are shock, disbelief, paralysis, panic and even disregard. Organizational indifference leads to systemic paralysis, reactive responses, chaos and undue response delays that often prove disastrous for individuals, organizations and communities. Emergencies challenge set beliefs, expectations, perceptions and understanding of reality. Emergencies are rarely only visual assaults. They also engage auditory, tactile and olfactory senses that shock and paralyze the psyche. They often challenge the normalized view of ordered entities of reality and convolute them into the unthinkable. Prior experiences with emergencies and emergency training remain instrumental in overcoming the cognitive shock and information overload in actual emergency events. Effective cognitive skills allows leaders to maintain equanimity and decisiveness in the exercise of their emergency responsibilities. This too the essence of resilience. Strategic foresight requires astute situational awareness. Astute environmental perceptions allows leaders to analyze a myriad of scenarios that take into account systemic resource limitations. Moreover, threats have the potential to compound and escalate posing further risks and convolute scenarios - all of leaders must prepare for. Strategies to mitigate risks include: enhancing community resilience, emergency preparedness, promoting health and safety, closing socioeconomic gaps and strengthening public health and safety legislation. All of this requires the development and exercise of cogent emergency services leadership through this type of relational capital.

1.3 Performance excellence

Another important relational capital element essential is the shared view of and drive for performance excellence in emergency services systems. Performance is predicated both on efficiency, as measured by response and transport times, and effectiveness, based on survival and injury rates, recovery times. Most key informants reported that emergency response systems performed well or better than expected. Some key informants reported on burnout rates and post-traumatic stress disorders. This underscored the importance of emergency professionals who themselves are potential victims in the course of their exercise of their duties and responsibilities. Comments by the key informants also raise the question of cost-effectiveness and over-capacity in normative situations- both of which are central to the issues of performance management in emergency management. Yet it was the shared pursuit of performance excellence that complemented and actualized the relational capital. Moreover, it served as a key element of authentic transformational leadership in emergency services systems.

2.0 Transactional Capital (Shi-Li)

The sustainability of emergency services systems is dependent on generating sufficient transactional capital. Transactional capital also posed major challenges to the evolution of emergency services systems. Leaders recognized that sufficient and stable transactional capital, such as financing, human resources, information, knowledge and technologies, is essential for emergency services systems. Its accessibility, adequacy, appropriateness, availability, quality, sufficiency and timeliness is the basis for performance excellence. This transactional capital has to meet emergency system standards not only regionally, but nationally and internationally. Given the range of small to mass emergencies to disasters and catastrophes, a range of transactional capital in the form of essential emergency resources must be tapped into. Key informants acknowledged that resource limitations in emergency services systems is sometimes a hindrance to performance excellence. Some leaders underscored unstable and limited public budgeting systems limited access to critical capital and operational emergency resources. This is turn hindered the efficiency and effectiveness of emergency services systems and the attainment of performance excellence. Defining the levels and quality of transactional capital remains an authentic transformational capital challenge.

3.0 Transactional Skills (Ren-Li)

The key informants pointed out the importance of the process competencies and skill sets essential for emergency service leaders. Strategic leaders with core competencies in financial management, human resource management and project management are only a few of the competencies. The ones pointed to in this study however included skill sets and competencies in: emergency preparedness; skills in creating and developing high-reliability emergency organizations; strategic logistics; and systems engineering

3.1 Emergency preparedness

Key informants underscored the importance of competencies in threat and scenario analysis. Identifying and articulating clear and specific scenarios with probability estimations was deemed critical in formulating cost-effective emergency preparedness strategies. The respondents in this study viewed technological and biological emergencies as accounting for over 55 per cent of most likely scenarios in the next twenty years in Canada. They also viewed sociogenic, meteorological and topological emergencies as counting for the remainder 44 per cent. Key informants stressed that emergency services leaders must engage individuals, organizations and communities in emergency preparedness as a social responsibility. This remains the vital core of planning and the praxis of the emergency management. Resilience depends on engaging and creating a social consciousness and motivation to help others. Effective business continuity, emergency response and recovery plans together with frequent training and exercises increase personal and systemic resilience. Repeated simulations and scenario-driven exercises are instrumental in effective training and learning of emergency professionals and strategic leaders. In turn, human response performance and organizational resilience (Hills, 2015; Rodríguez-Sánchez and Perea, 2015). Resilience is important for psycho-social recovery and is part of an integrated and systems perspective of emergency management (Eyre and Brady, 2013). Forty-five per cent of respondents reported that their organizations had updated business continuity, emergency preparedness and disaster recovery plans. The remainder either had one or two of these in place (33 per cent); or reported none (21 per cent). Key informants perceived emergency services performance depends upon the degree of emergency preparedness and its integration as an individual and social responsibility.

3.2 High-reliability emergency systems

Performance excellence points to the need for high-reliability emergency organizations. This underscores the need for leadership competencies in emergency informatics, strategic logistics and systems engineering. Emergency services leaders must strive to create high reliability organizations in emergency management through the deployment of a range of innovative technologies. Continuous learning, improvement and adaptability are the hallmarks of such organizations that prevent and mitigate the impact of emergencies efficiently and effectively. Creating and sustaining such organizations remains a challenge in the absence of effective and reliable telecommunications and advanced decision support systems. Systems interoperability is the basis for data and resource sharability between organizations. Common information technology standards, policies, processes and procedures strengthens the effectiveness of critical emergency services infrastructures. The knowledge of emergency informatics, including the development and implementation and management of technological systems in the emergency systems domain. This would include an understanding of telecommunications and the imposing issues of systems interoperability. Emergency services leaders must leverage innovative technologies to transform emergency services systems. The potential to transform emergency services through a panoply of technological innovations that are on the horizon is massive. Such technologies include advanced global communication and tracking systems, big-data storage systems, cloud-computing, intelligent systems, holographic applications, robotics, simulation systems, telemedicine, tele-surgery and virtual technologies. Emergency leaders must pave the way through transformative systems in collaboration with diverse stakeholders, including those from the private technology systems. Leaders must be technologically knowledgeable and able to effect positive deployments of innovations through systems and change services skills and strategies.

3.3 Strategic logistics

Emergency services leaders must have competencies in strategic logistics, including planning and strategy formulation to assure effective access to emergency supply chain networks. Deploying critical personnel, resources and supplies in place efficiently, harmoniously and effectively is of paramount importance, particularly in disaster and catastrophic situations. Strategic logistics must also take into account supply-chain threats and vulnerability where affected on climate or socio-economic changes reinforces systemic resilience (Andreoni and Miola, 2015). Forged linkages with defence and military infrastructures together with well-developed and secure transportation networks are key to effective delivery of emergency relief resources. Moreover, leaders have to assure that logistical plans include access to effective supply chain networks through governance, military, non-governmental and private systems organizations.

3.4 Systems engineering

Moreover, leaders need to understand and deploy a range of systems engineering techniques to attain substantial efficiency and effectiveness benefits. Such techniques include benchmarking, business process engineering, Kaizen tools, lean design methodologies, process analysis, reengineering, root cause analysis, simulations and total quality management. These techniques are instrumental in doing more with less emergency resources. Moreover, reengineering processes will become important as emergency service systems to adapt and capitalize on technological advancements. The praxis of systems engineering is central to performance excellence and the attainment of greater levels of efficiency and effectiveness in the system.

4.0 Transformational Skills (Ren-Li)

Consonant with the extant literature, key informants emphasized leadership attributes including: astuteness; integrity; interpersonal influence; networking ability; personality traits; perspicacity; political skills; and social competencies. Proven expertise and systemic knowledge including an understanding of legal and sociopolitical contexts were also important. Cognitive skills, such as strategic and systems thinking in the face of complexity and pressing uncertainty, were also deemed important. Key informants repeatedly stressed the importance of forging collaborating networks and coalitions of diverse emergency professionals and community stakeholders through professional respect and trust. Change management, conflict resolution, effective decision-making and negotiation skills were also of import. Highly-developed communication and interpersonal skills were deemed important, as were emotional intelligence and professional competence. Leadership competencies also included analytical abilities and performance management. Key leadership attributes underscored included accountability, discipline, empathy, a high tolerance for stress and uncertainty, personal integrity and professional ethics. Repeatedly, the key informants underscored the need for adaptability, courage, discipline, equanimity, initiative and tenacity in the heat of battle. Situational awareness and self -awareness of personal limitations, as well as the ability to delegate authority, were also deemed important. Key informants felt that leaders had duties and responsibilities to work closely and proactively with all levels of governing authorities within and across jurisdictional lines. They asserted that leaders had an important role in militating and lobbying for pertinent legislation and regulations that facilitate systems interoperability, inter-organizational collaboration and coalitions. A few maintained military experience enhanced leadership skills for effective management required in demanding emergency situations.

All informants unanimously asserted that authentic and effective leadership require and transformational skills. These skill sets remain the crucial ingredient to building shared visions and strategic coalitions between emergency professionals. The question is: who should lead initiatives? The vision and leadership for strategic coalitions rests entirely with emergency services leaders. Transformational leaders are the central change agents, who initiate and lead significant socio-cultural and process changes within emergency services systems. Transformational skill sets remains a challenge for emergency services leaders who do not have the requite knowledge, experience and core competencies in management. The two critical transformational skills identified by the key informants included the strategic ability to create and engage coalitions in emergency services systems.

4.1 Strategic engagement in coalitions

Strategic engagement includes skills in collaborative networking and the development of coalitions for emergency preparedness. Emergency services leaders must forge effective collaborative networks and coalitions of diverse stakeholders across a wide spectrum of professionals and communities. The survivability of individuals and viability of organizations and communities ultimately depend on them. Effective collaboration leads to information, knowledge and resource sharing as well as systems interoperability that underpin effective emergency responses. The importance of identifying and engaging multiple stakeholders in emergency systems through such networks remains paramount. Aside from emergency professionals and care providers, stakeholders include representatives from community groups, defence and military, government, non-governmental organizations and the private sector systems. Such collaborative engagements are crucial in building understanding, trust and resilience. Effective collaboration requires cogent inter-organizational coalitions and linkages across multiple jurisdictional and political authorities regionally, nationally and internationally.

4.2 Technological Coalitions

The key informants concurred that technological innovations and deployments are crucial in emergency services systems. A myriad of technologies on the horizon have potential to assist emergency professionals in their important work in the future. These include autonomic computers, driverless emergency vehicles, drones, nanotechnology, robotics, sensor technologies and terabyte storage capacities. Key informants tempered their optimism with the view change will inexorably slow in the light of sociopolitical and financial realities. The effectiveness of emergency services systems above all depend on reliable and secure telecommunications between critical organizations that comply with interoperability standards. Key informants underscored the lack of systems interoperability was one of the single greatest barriers to effective emergency systems in Canada. Moreover, they viewed these barriers as being sociopolitical in nature and not technological ones. Nor were key informants hopeful that coalitions with the private sector would bear fruit and be instrumental in the diffusion of advanced technologies. Respondents stressed that differences in mission, perceptions and values between the public and private systems militated against cogent and stable partnerships. However, they did think that cooperation and engagement of the private sector was deemed important in three critical areas. These include supply chain networks, particularly in disaster recovery, joint emergency preparedness efforts and technological innovations and diffusion.

Thus, authentic leadership implies core competencies that include strategic thinking and precognition skills with core values of caring. Transformational leadership includes the ability to engage communities of professionals and stakeholders and the private sector in collaboration towards the common vision of performance excellence in emergency services systems. Authentic transformational emergency leadership is essential in reducing the scourges and impacts of emergency events from small scale mass emergencies to disasters to catastrophes.

5.0 "Transgenic" Transformational Power ("supra-level" Ren-Li)

Yet, there was one additional nexus of consensus from all the key informants, which is yet a supra-level of Ren-Li needed to support and galvanize the future evolution of emergency services systems. This level is in the form of public governance, or a "transgenic" level that allow for sustainable development and evolution of emergency services systems. In Canada, public governance of emergency services systems determines levels of financing, strategic direction and control. The proactive engagement and support of governance bodies is key to effective strategic coalitions in emergency services systems. Governing organizations affording demonstrable financial and a panoply of emergency resources are of paramount importance to the sustainability of emergency service coalitions and efforts. Key informants expressed perceived differences in the relational capital, deficiencies in emergency resources and the management of these resources through transactional processes. Moreover, the Realpolitik of social-political and economic contexts limits the transformational abilities of leaders. Key informants believed that governing bodies have a responsibility to set strategic directions and provide the needed transactional capital, in all its forms to sustain and reengineer emergency services systems for the public benefit. These key informants viewed public governance as the essential "transgenic" force that fosters and galvanizes authentic transformational leadership. Transformational leadership backed by "transgenic" forces have the potential to increase efficiencies and levels of quality care for emergency services systems regionally and nationally. Whether through governance legislation and regulations, public financing, technological standards and regulations or information and knowledge management, all have a paramount place in the positive transformation in emergency services systems.

Conclusion

A theme of this key informant study is that emergency service leaders must invest the time, energy and effort in understanding each other's Weltanschauung (view of the world), or paradigms. Authentic transformational leaders understand a priori the potential power to promulgate greater efficiencies, enhanced cost-effectiveness and quality emergency services. It is also imperative that they exercise high levels of transactional and transformational skill sets in order to promulgate emergency leaders. From this study, efficiencies and effectiveness levels of emergency services systems depend on development of relational capital consonant with positive transactional processes and transformational processes. The sustainability of such is also dependent on generating sufficient transactional capital. The most effective emergency systems are ones where emergency leaders collaborate directly and closely with governance authorities. Indeed, public governance values form the underlying meta-cultural frame of this exploration of the perceptions of emergency leaders. Emergency leaders are the lodestar of future emergency services systems. It appears that the transformational base rests where transactional power is concentrated. Canada has solid and cogent values in public governance of emergency services systems. It is the strength and quality of governance leadership that provide the transformational and "transgenic" energy, which drives improvements in emergency services systems. It is this added Ren-Li supra-level of Ren-Li that holds the transgenic power to leverage sustain and transmute emergency services systems for the public benefit. Conceptually, this key informant study of leaders provide support for and the basis for the extension of the WSR-Li model in the Realpolitik world of emergency services systems. Moreover, it would appear that this "transgenic" governance "Ren-Li" force is particularly relevant in nations that hold to cogent public social governance values. It is in these values constructs that emergency services systems are substantiated and take form.

Future leadership studies could shed more light inter-organizational learning paradigms that foster growth, innovation, social responsibility and sustainability. Moreover, qualitative studies using grounded theory and key informant approaches hold promise for examining perceptions of emergency professionals, on emergency informatics, patient relationship management, health intelligence systems, emergency supply chains robotic sensors and systems. The WSR-Li model posits that further research into emergency informatics is needed to explore the relational capital and transactional and transformational processes in a range of dynamic socio-cultural domains. Research into these areas is not an end in itself, but promises to elucidate how potential technologies can be unleashed for the betterment of humankind. This study focused on the perceptions of emergency leaders engaged in cultures where public governance is a profound and cogent value. The same dynamics described here also propel e-governance in a world with converging transnational values and imperatives. This scenario remains an unexploited and titanic area for endeavour for future exploration and research in emergency services systems.

The universe of emergency services is fraught with complex and competing health care priorities and challenges. As with emergency services, leaders must also look beyond the institutions and adapt a systems and regional approach to the delivery of care. Moreover, authentic transformational leadership with its emphasis on guiding change, while maintaining strong caring values is of paramount relevance. Emergency preparedness in collaboration with regional health authorities and proactive scenario analysis underscore that communities must ever be at ready for potential threats. Whereas governing authorities assess institutional performance, it is the public themselves who will judge emergency services performance. Leaders will be held to accountable come the time of the ultimate test of mass emergencies, disasters and catastrophes. They must not be found wanting. Emergencies never end at the door of hospital emergency departments. Rather they find closure when victims, emergency professionals and communities have fully physically, emotionally and socially recovered from the ordeals experienced. The frequency and magnitude of emergency events will undoubtedly increase given demographic increases and exposure to growing range of threats in vulnerable environments this Century. Authentic transformational leadership in emergency services systems will be crucial in the future evolution of effective emergency critical infrastructures nationally and internationally. What with emergency resource constraints and limited political will and public support, sustainable emergency services systems continue to require cogent and strong cogent authentic transformational leadership. In the quest to forge continuous collaboration and integration of emergency services systems, authentic transformational leadership will be crucial. Such leadership will be the catalyst for the creation of integrated virtual organizations supported through advanced technologies that will interoperate regionally, nationally and internationally. Authentic transformational emergency leadership seeks to harmonize emergency services policies and strategies across multi-levels of governments and communities. Ultimately all this is for the common good in face of the ravages of emergency situations regionally, nationally and internationally.

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