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ORGANIZATIONAL RESILIENCE FOR DISASTER MANAGEMENT

BY

MAHENDIRA RAJAN A/L VAITILINGGAM

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Graduate School of Management
International Islamic University Malaysia

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ABSTRACT

Organizational disaster resilience (ODR) has been a topic of interest in the last few decades. However, very few published literature strive to extend its capability to predict key determinants of ODR. A possible rationale for this for this gap may be due to the conceptualization of the ODR under which organizational perceptions can only be predicted with two constructs: continuity of operations planning (COOP) and operational drivers for vulnerability management (ODVM). The evidence in literature shows that COOP and ODVM constructs are not sufficient; hence, they may not explain ODR. Therefore, there is need for inclusion of additional factors that can enhance predictions of ODR. Extending research on the organizational resilience, this study developed and tested a model of ODR. The proposed model integrates key constructs from the organizational resilience potential research stream into the theoretical frame of the ODR and other theories from organizational resilience, such as the theories of highly reliability organizations, relative overall resilience and adjusted relative overall resilience. According to the proposed conceptual model, ODR is determined by four determinants; COOP, ODVM, strategic drivers for vulnerability management (SDVM) and adaptive capacities for high reliability organizations (ACHRO). This model was tested on a sample of 455 disaster management practitioners and representatives from various industry sectors in Malaysia. Using structural equation modeling (SEM), data analysis shows considerable support for the extended hypothesized model. The result indicates that, ACHRO explained 51% of the variance in ODR. Multi-group analysis on industry sector was carried to demonstrate applicability of this model to various industry sectors. Finally, this study derives linear regression equation from the model and tested it on organizations in Malaysia which had participated in this studyin this study.

ملخص البحث

أصبحت القدرة التنظيمية على مواجهة الكوارث من الموضوعات المهمة في العقود القليلة المنصرمة. و بالرغم من ذلك، هنالك القليل جدا من البحوث المنشورة فى هذا المجال وخاصة التى تسعى لتوسيع قدرتها على التنبؤ بالمحددات الرئيسة لشبكة الاتصالات مباشرةً . وقد يكون الأساس المنطقي الممكن لهذا الفجوة البحثية يعود إلى وضع تصور القدرة التنظيمية على مواجهة الكوارث التي يمكن التنبؤ بها فقط مع اثنين من بنيات استمرار عمليات التخطيط وتحريك العمليات التشغيلية بادراة نقاط الضعف. كما أوضحت الدراسات السابقة ان استمرارية تخطيط العمليات (ODR)، والحركات التشغيلة لإدراة نقاط الضعف (ODVM) ليست كافية. لهذا السبب، هناك حاجة لإدراج العوامل الاضافية التي يمكن أن تعزز التوقعات من استمرارية تخطيط العمليات. لذلك لابد من توسيع استمرارية تخطيط العمليات حول القدرة على المرونة التنظيمية، لذلك أجريت هذه الدراسة لاختبار القدرة التنظيمية على تصدى الكوارث. النموذج المقترح لتنفيذ الدراسة هو عن طريق دمج اللبنات الأساسية بين القدرة على المرونة التنظيمية لمجابهة الكوارث وإطار نظرى آخر لبعض المنظمات مثل الإطار النظري للمكتب الاتحادي للاجئين ونظريات أخرى من المرونة التنظيمية، مثل نظريات المنظمات المعروفة العالمية ،بالاضافة للمرونة النسبية الشاملة. وفقا للنموذج النظري المقترح (ODR)، يتم تحديد أربع محددات وهي (COOP) الدافع الإستراتيجي لإدارة نقاط الضعف (SDVM)، وقدرات التكيف للمنظمات ذات المصداقية العالية (ACHRO). هذا الأنموذج تمَّ اختبارة بتطبيقه على عينة شملت عدد 455 من المشاركين فى الدراسة لإدارة الكوارث علماً بأنهم ممثلين لمختلف القطاعات الصناعة في ماليزيا . أُستخدمت نمذجة المعادلة الهيكلية (SEM) . وقد أوضح تحليل التباين دعما كبيرا لنموذج الافترضات الموسعة. وأوضحت نتيجة قدرات التكيف للمنظمات ذات المصداقية العالية ACHRO أن هنالك 51 ٪ من التباين في ODR القدرة التنظيمية لتصدى الكوارث. وأجري التحليل مجموعة متعددة على قطاع الصناعة للتحقيق من جدوى تطبيق هذا النموذج على مختلف قطاعات الصناعة. وأخيرا، فإن هذه الدراسة أسهمت فى معرفة تحديد معادلة الانحدار الخطي من النموذج المستخدم واختبارها على المنظمات في ماليزيا التي شاركت في هذه الدراسة .

APPROVAL PAGE

The thesis of Mahendira Rajan a/l Vaitilinggam has been approved by the following:

_____

Professor Datin Dr Junaidah Hashim
Supervisor
Kulliyyah of Economics and Management Science
International Islamic University
Malaysia

_____

Professor Dr Rafikul Islam
Internal Examiner
Kulliyyah of Economics and Management Science
International Islamic University
Malaysia

DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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I would like to dedicate this thesis to my father, my source of life, love and strength. To see him being happy and proud of his children's achievements are my timeless motivation and source of energy. My father passed on before I could make him happy and proud another one time by completing this study. My mother consoled he is always present in our hearts and to continue achieving and bringing goodness to humanity. This makes my father happy and proud of his children. I am and will remain grateful to my father.

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LIST OF ABBREVIATIONS

ACHRO	Adaptive Capacities for High Reliability Organizations
AMCHAMP	American Chambers of Commerce
AROR	Adjusted Overall Resilience Scale
BCI	Business Continuity Institute
BCM	Business Continuity Management
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CI	Critical Infrastructure
COOP	Continuity Of Operations Planning
CR	Critical Ratio
DID	Drainage and Irrigation Department
DRC	Disaster Recovery Centre
DRM	Disaster Risk Management
EFA	Exploratory Factor Analysis
EMS	Environmental Management System
FA	Factor Analysis
FMM	Federation of Malaysian Manufacturers
GFI	Goodness of Fit Index
ILI	Incremental Fit Index
KPI	Key Performance Index
MCEER	Multidisciplinary Centre for Earthquake Engineering
MEF	Malaysian Employers Federation

MIHA	Malaysian Industrial Hygiene Association
MOSHPA	Malaysian Occupational Safety and Health Practitioners Association
MRT	Monorail Transit System
MSOSH	Malaysian Society for Occupational Safety and Health
NAT	Normal Accident Theory
NFI	Normed Fit Index
NGO	Non Governmental Organizational
ODR	Organizational Disaster Resilience
ODVM	Operation Drivers for Vulnerability Management
OHSAS	Occupational Safety and Health Assessment Systems
ORPS	Organizational Resilience Potential Scale
QMS	Quality Management System
RMR	Root Mean Square
RMSEA	Root Mean Square Error Approximation
ROR	Relative Overall Resilience
SDVM	Strategic Drivers for Vulnerability Management
SEM	Structural Equation Modeling
TLI	Tucker Lewis Fit Index

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION TO ORGANIZATIONAL RESILIENCE

Globalization in tandem with development in technology has resulted in exposure to risks being far more widespread. Disasters can spread beyond borders and have devastation capacity to affect across regions. No particular country or community is protected from this impetus. A disaster affecting Malaysia, ie flood, could result in loss of valuable lives and properties and resulting in interruption to basic amenities such as electrical, water, sanitary, health care, education and etc. In this respect, country and community resilient plays a vital role to manage the impact of the disasters and get back to life as usual or better.

There is link between organizational and community resilience. This is evident from life critical services, ie electricity, water, gas, health care, education and others that are provided by the organizations. These services are vital for the continuity of community. In short, organizational resilience is fundamental needs to achieve community resilient. Resilient organizations have strong and effective foundation to support community needs in times of disaster.

Furthermore, it is evident that resilient organizations also strive better in the current competitive environment. Factors that drive resilience in organizations, ie pragmatic planning, vulnerability management and adaptive capacities are also the same factors that drive competitiveness in organizations. Hence, organizational resilience nurtures competitive characteristic which ensures survival and capability to strive in the current challenging business environment.

On the contrary, although the benefits of being a resilient organization are evident, many organizations have difficulties to give importance to resilience and to connect resilience to emergency preparedness and business interruption during normal business phase. Despite the acknowledgement from many business leaders on the vitality of organizational resilience, it remains to be accorded its deserved priority and competes to obtain the required resources. Operational and bottom line needs often supersede over organizational resilience, especially to obtain the required funding to be implemented. Organizations in Malaysia are not spared from this dilemma especially in the current challenging business environment. Top tier organizations are occupied in getting their organizations to the next level whereas the struggling organizations are too busy to spare any resources towards organizational resilience.

It is important that the current business environment is analysed from a pragmatic angle. Besides establishing the relationship between organizational resilience and competitiveness, it is vital to be able to measure and gauge organizational resilience. The ground rule in business remains what gets measured gets done. Further to this, organizations need tools that will enable measuring organizational resilience and profiling progress. In short, resilience measurement will enable organizations to gauge its plans and determine their status. With this data, organizations are equipped to review and determine if their strategies are appropriate or change if deemed necessary to remain competitive and thrive ahead. This is indeed the much needed business tool and a relevant business case not to be missed.

1.2 THE IMPORTANCE OF ORGANIZATIONAL RESILIENCE

Mitroff reviewed trends in disasters and highlighted the increase in the number of disasters (Mitroff, 2005) in the years before 2001. The main contributors were social

and high technology and points that disasters are integral to our current environment and challenges. Further to this, reliance on complex system and high technology has increased our vulnerability towards disasters (McManus, Seville, Vargo, & Brunsdon, 2008). Current disasters are complicated in nature and are as globalized as any other aspects of human activities (Boin & Lagadec, 2000).

Organizational resilience is a dynamic goal and are relevant and required both during normal times as well as disaster events (Mitroff, 2005). Due to this, ability to manage current challengers requires highly reliable organizations (Weick & Sutcliffe, 2007) to be endowed with superior tactical competencies (Durodie, 2003). Organizational resilience enables organizations to stay in business and grow in the face of disaster (Seville, Brunsdon, Dantas, Le Masurier, Wilkinson, & Vargo, 2008). Organizational resilience is critical as community and organizational resilience are complementing and supporting each other (Dalziell & McManus, 2004), and being a competitive organization to thrive in the current business environment (Parsons, 2007).

Historical data provides evidence that communities benefit tremendously from resilient organizations (Chang & Chamberlin, 2003). In essence, resilient organizations support community to bounce back in event of a disaster (McManus, Seville, Vargo, & Brunsdon, 2008). Buckle commented organizations demonstrate degree of resilience from social perspective (Buckle, 2006). McManus et al. argued people insist on organizations to embody strong reliability characteristics and leaders have the competency to manage both disasters which can be predicted and those that cannot be predicted (McManus, Seville, Vargo, & Brunsdon, 2008). Coleman sharply pointed out that in Australia a quarter of the organizations cease to exist in the aftermath of a disaster (Coleman, 2004).