

**THE MODERATING EFFECT OF INFORMATION  
TECHNOLOGY CAPABILITY ON THE RELATIONSHIP  
BETWEEN BUSINESS CONTINUITY MANAGEMENT  
FACTORS AND ORGANIZATIONAL PERFORMANCE**

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**THE MODERATING EFFECT OF INFORMATION TECHNOLOGY  
CAPABILITY ON THE RELATIONSHIP BETWEEN BUSINESS  
CONTINUITY MANAGEMENT FACTORS AND ORGANIZATIONAL  
PERFORMANCE**

**By**

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**Thesis Submitted to  
Othman Yeop Abdullah Graduate School of Business,  
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## ABSTRACT

Despite the enormous acknowledgement of the importance of Business Continuity Management (BCM) in sustaining organization survival, very limited studies have focused on the effects of BCM on organizational performance. Hence, the purpose of this study is to provide the empirical evidences that support the relationships that exist between BCM Factors and Organizational Performance with the moderating effects of Information Technology Capability (IT Capability) in organizations from various sectors in Malaysia. Based on the existing literature, BCM Factors are operationalized by Management Support, External Requirement, Organization Preparedness, and Embeddedness of Continuity Practices. A combination of self-administered and mail survey was deployed involving 147 ISO 27001 and ISO 22301 certified organizations representing both public and private sectors. These organizations were selected as they are deemed to possess a considerably higher sense of commitment towards embracing BCM best practices to enhance their business resilience. At the end of the data collection phase, the study managed to obtain 77 usable responses constituting an effective response rate of 55 percent. The findings indicate that BCM Factors namely External Requirement and Embeddedness of Continuity Practices are significantly related to Overall Organizational Performance and Non-Financial Performance. However, only External Requirement is found significantly related to Financial Performance. The results also reveal that fully supported relationships are found between IT Capability and all Organizational Performance dimensions. In addition, the findings show that IT Capability moderates the relationship between BCM Factors and Organizational Performance. These results provide valuable insights to both practitioners and academia for further understanding the effects of BCM Factors and IT Capability on Organizational Performance. Finally, the research limitations are discussed and suggestions on extended area of research are recommended for future researchers.

**Keywords:** business continuity management, organizational performance, IT capability, ISO 27001, ISO 22301

## ABSTRAK

Walaupun semakin banyak pengiktirafan terhadap kepentingan Pengurusan Kesyntambungan Perniagaan (PKP) dalam mengekalkan kemandirian sesebuah organisasi, namun kajian yang memberi tumpuan terhadap kesan PKP kepada prestasi organisasi adalah sangat terhad. Oleh itu, kajian ini adalah bertujuan untuk mengemukakan bukti empirikal yang menyokong perhubungan di antara faktor PKP dan Prestasi Organisasi dengan kesan pengantara terhadap Keupayaan Teknologi Maklumat (Keupayaan IT) dalam organisasi daripada pelbagai sektor di Malaysia. Berdasarkan literatur semasa, faktor PKP dioperasikan oleh Sokongan Pengurusan, Keperluan Luaran, Kesediaan Organisasi, dan Penerapan Amalan Kesyntambungan. Gabungan dua kaedah kaji selidik iaitu kaedah tadbir sendiri dan mel ini telah melibatkan 147 buah organisasi yang memiliki pengesahan sijil ISO 27001 dan ISO 22301 yang mewakili kedua-dua sektor awam dan swasta. Organisasi ini telah dipilih kerana dianggap memiliki komitmen yang tinggi dalam mengamalkan amalan PKP terbaik untuk meningkatkan daya tahan perniagaan masing-masing. Di akhir fasa pengumpulan data, kajian ini berjaya mendapatkan 77 maklum balas yang boleh diguna pakai untuk mewakili kadar maklum balas efektif sebanyak 55 peratus. Dapatan kajian menunjukkan bahawa faktor PKP seperti Keperluan Luaran dan Penerapan Amalan Kesyntambungan mempunyai hubungan yang signifikan dengan Prestasi Keseluruhan Organisasi dan Prestasi Bukan Kewangan. Walau bagaimanapun, hanya Keperluan Luaran sahaja didapati mempunyai hubungan yang signifikan dengan Prestasi Kewangan. Dapatan kajian ini juga menunjukkan sokongan penuh terhadap hubungan di antara Keupayaan IT dan kesemua dimensi Prestasi Organisasi. Selain daripada itu, kajian ini mendapati bahawa Keupayaan IT memberikan kesan pengantara terhadap hubungan di antara faktor PKP dan Prestasi Organisasi. Hasil kajian ini memberikan pandangan yang berharga kepada kedua-dua pihak iaitu pengamal dan ahli akademik untuk memahami lebih lanjut terhadap kesan faktor PKP dan Keupayaan IT ke atas Prestasi Organisasi. Akhir sekali, batasan kajian juga telah dibincangkan dan cadangan penyelidikan lanjut turut disarankan kepada penyelidik masa hadapan.

**Kata kunci:** pengurusan kesyntambungan perniagaan, prestasi organisasi, keupayaan teknologi maklumat, ISO 27001, ISO 22301

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## LIST OF ABBREVIATIONS

BCI	-	Business Continuity Institute
BCP	-	Business Continuity Planning
BCM	-	Business Continuity Management
BCMS	-	Business Continuity Management System
BIA	-	Business Impact Analysis
BNM	-	Bank Negara Malaysia
BRP	-	Business Resiliency Planning
CEO	-	Chief Executive Officers
CIA	-	Confidentiality, Integrity and Availability
CNII	-	Critical National Information Infrastructure
DRP	-	Disaster Recovery Planning
ETP	-	Economic Transformation Program
EUC	-	End User Computing
GTP	-	Government Transformation Program
ISMS	-	Information Security Management System
ISO	-	International Organization for Standardization
ICT	-	Information and Communication Technology
IS	-	Information System
IT	-	Information Technology
KBV	-	Knowledge-Based View
MAMPU	-	Malaysian Administrative Modernization and Management Planning Unit
OP	-	Organizational Performance
PDCA	-	Plan Do Check Act
RBV	-	Resource-Based View
ROI	-	Return of Investment
SDLC	-	System Development Life Cycle
SIRIM	-	Standards and Industrial Research Institute of Malaysia
SPSS	-	Statistical Package of Social Science

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

The purpose of this study is to examine the moderating effect of IT capability on the relationship of between business continuity management factors and organizational performance. This chapter presents the outline of this study. It describes the research background, states the problem statements, defines the research questions and objectives, highlights the significance of the study, outlines the scope of the study, and provides the definition of key terms. The chapter ends with the organization of the thesis.

### **1.2 Background of the Study**

In current landscape, the global business atmosphere and conditions are becoming more turbulent and sometimes unpredictable. Situations such as drastic technology advancements and social dynamics affect almost everyone including all organizations around the planet (Mitroff, 2004; Pollard & Hotho, 2006). Hence, organizations desiring to stay competitive and successful must be well protected, through heightened resilience so that they could remain profitably in the event of any fatal business disruption. According to Wong (2009), organizations that incorporate Business Continuity Management (BCM) in their strategic management could gain a distinctive competencies over their competitors in terms of operational resilience, which includes swift recovery of critical business functions at predefined period of time while minimizing the adverse impacts to their value and reputation.

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## REFERENCES

- Acuna, E., & Rodriguez, C. (2004). The treatment of missing values and its effect in the classifier accuracy. *Classification, Clustering and Data Mining Applications*, 639–648. Retrieved from <http://academic.uprm.edu/~eacuna/IFCS04r.pdf>
- Alesi, P. (2008). Building enterprise-wide resilience by integrating business continuity capability into day-to-day business culture and technology. *Journal of Business Continuity & Emergency Planning*, 2, 214–220.
- Allen, D. R., & Rao, T. R. N. (2000). *Analysis of Customer Satisfaction Data*. Milwaukee, Wisconsin: American Society for Quality.
- Allison, P. (1999). *Multiple regressions: A primer*. CA: Pine Forge Press.
- Alonazian, A. (2009). Developing a business continuity programme at Arab National Bank. *Journal of Business Continuity & Emergency Planning*, 3(3), 216–222.
- Alonso, F., & Boucher, J. (2001). Business Continuity Plans for Disaster Response. *CPA Journal*, 71(11).
- Al-Shammari, H., & Hussein, R. (2008). Strategic Planning in Emergent Market Organizations: an Empirical Investigation. *International Journal of Commerce and Management*, 18(1), 47–59.
- Alston, B. A. (2009). *An examination of the relationship between emotional intelligence and leadership practices*. Nova Southeastern University, Florida.
- Amit, R., & Schoemaker, P. J. H. (1993). Strategic Assets and Organizational Rent. *Strategic Management Journal*, 14, 33–46.
- Anderson, J. C., & Gerbing, D. W. (1988). Structural Equation Modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103, 411–423.
- Arend, M. (1994). Time to dust off your contingency plan. *ABA Banking Journal*, 86(2), 56.
- Armstrong, J. S., & Overton, T. S. (1977). Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing*, 14, 396–402. Retrieved from <http://cogprints.org/5205/>
- Ascari, A., Rock, M., & Dutta, S. (1995). Reengineering and organizational change: Lessons from a comparative analysis of company experiences. *European Management Journal*, 13(1), 1–30.

- Attaran, M. (2003). Information technology and business-process redesign. *Business Process Management Journal*, 9(4), 440–458. doi:10.1108/14637150310484508
- Babbie, E. (2004). *The practice of social research* (10th ed.). Belmont California: Thomson/Wadsworth Learning.
- Babbie, E. (2009). *The practice of social research* (12th ed.). Belmont, CA: Wadsworth.
- Bandyopadhyay, K., Mykytyn, P. P., & Mykytyn, K. (1999). A framework for integrated risk management in information technology. *Management Decision*, 37(5), 437–445. doi:10.1108/00251749910274216
- Bank Negara Malaysia. (2004). GPIS1 - Guidelines on Management of IT Environment.
- Bank Negara Malaysia. (2008). Guidelines on Business Continuity Management.
- Bank Negara Malaysia. (2011). Guidelines on Business Continuity Management (Revised).
- Baraghani SN. (2007). *Factors Influencing the Adoption of Internet Banking*. Lulea University of Technology, Sweden.
- Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120.
- Barney, J. B., & Arian, R. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, 27(6), 643–650.
- Barney, J. B., Wright, M., & Ketchen, D. J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, 27, 625–641.
- Baron, R. M., & Kenny, D. a. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–82. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/3806354>
- Bart, C., Bontis, N., & Taggar, S. (2001). A model of the impact of mission statements on firm performance. *Management Decision*, 39(1), 19–35.
- Bartlett, J. E., Kotrlík, J. W. K. J. W., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43.

- Barua, A., Kriebel, C. H., & Mukhopadhyay, T. (1995). Information technologies and business value: an analytic and empirical investigation. *Information Systems Research*, 6(1), 3–23.
- Bassellier, G., Reich, B. H., & Benbasat, I. (2001). Information Technology Competence of Business Managers : A Definition and Research Model. *Journal of Management Information Systems*, 17(4), 159–182.
- BCI. (2011). Dictionary of Business Continuity Management Terms. Business Continuity Institute. Retrieved from <http://www.thebci.org/glossary.pdf>.
- Beaumaster, S. (2002). Local Government IT Implementation Issues : A Challenge for Public Administration. In *Proceedings of the 35th Hawaii International Conference on System Sciences - 2002* (Vol. 00, pp. 1–10).
- Beazley, H., Boenisch, J., & Harden, D. (2002). *Continuity Management: Preserving Corporate Knowledge and Productivity When Employees Leave*. New York: John Wiley & Sons.
- Belaouras, S. (2009). State of Business Continuity Preparedness. *Disaster Recovery Journal*, 22(1). Retrieved from [http://www.drj.com/index.php?option=com\\_content&task=view&id=2206&Itemid=676](http://www.drj.com/index.php?option=com_content&task=view&id=2206&Itemid=676)
- Belluz, D. (2002, November). Modern Risk Management: Give Your Firm a Risk Profile and Gap Analysis. *Camagazine*.
- Berman, S. I., Wicks, A. C., Kotha, S., & Jones, T. M. (1999). Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance. *Academy of Management Journal*, 42(5), 488.
- Bharadwaj, A. S. (2000). A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation. *MIS Quarterly*, 24(1), 169. doi:10.2307/3250983
- Bharadwaj, A. S., Sambamurthy, V., & Zmud, R. W. (1999). IT capabilities: theoretical perspectives and empirical operationalization. *Management Science*, Charlotte, 378–385. doi:10.1145/352925.352962
- Bhatt, G. D., & Grover, V. (2005). Types of information technology capabilities and their role in competitive advantage. *Journal of MIS*, 22(3), 253–277.
- Biemer, P. P., & Lyberg, L. E. (2003). *Introduction to Survey Quality*. Hoboken, NJ.: John Wiley & Sons, Inc.



- Blos, M. F., Wee, H.-M., & Yang, J. (2010). Analysing the external supply chain risk driver competitiveness: a risk mitigation framework and business continuity plan. *Journal of Business Continuity & Emergency Planning*, 4(4), 368–374.
- Blumberg, B., Cooper, D., & Schindler, P. (2008). *Business Research Methods* (2nd Europe.). McGraw-Hill Education.
- Blyth, M. (2009). *Business continuity management: building an effective incident management plan*. New Jersey: J. Wiley.
- Boehmer, W. (2009). Survivability and Business Continuity Management System According to BS 25999. *2009 Third International Conference on Emerging Security Information, Systems and Technologies*. doi:10.1109/SECURWARE.2009.29
- Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision*, 48(9), 63–76.
- Bontis, N., Chua, C. K., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries industries. *Journal of Intellectual Capital*, 1(1), 85–100.
- Borodzicz, E. P. (2005). *Risk, Crisis and Security Management*. West Sussex and Hoboken, NJ: John Wiley & Sons.
- Botha, J., & Solms, R. Von. (2004). A cyclic approach to business continuity planning. *Information Management & Computer Security*, 12(4), 328–337. doi:10.1108/09685220410553541
- Bouma, J. J., & Kamp-Roelands, N. (2000). Stakeholders expectations of an environmental management system: some exploratory research. *European Accounting Review*, 9(1), 131–144.
- Bradberry, T., & Greaves, J. (2005). *The emotional intelligence quick book everything you need to know to put your EQ to work*. New York: Simon & Schuster.
- Bryman, A., & Bell, E. (2007). *Business Research Methods* (2nd ed.). Oxford University Press.
- Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, 36(12), 66–77.
- Brynjolfsson, E., & Hitt, L. (1996). Paradox lost? Firm-level evidence on the returns to information systems spending. *Management Science*, 42(4), 541–58.

- Brynjolfsson, E., & Hitt, M. (1995). Computers as a Factor of Production: The Role of Differences Among Firms. *Journal of Economic Innovation and New Technologies*, May 3, 183–199.
- BSI. (2014). ISO/IEC 27001:2013. *British Standard Institute*. Retrieved from <http://www.bsigroup.com/en-GB/iso-27001-information-security/ISOIEC-27001-Revision/>
- Byrne, B. M. (2010). *Basic Concepts, Application, and Programming* Roulledge Taylor & Francis Group. New York.
- Capron, L., & Hulland, J. (1999). Redeployment of Brands, Sales Forces, and General Marketing Management Expertise Following Horizontal Acquisitions: A Resource-Based View. *Journal of Marketing*, 63, 41–54.
- Cavana, R., Delahaye, B. L., & Sekaran, U. (2001). *Applied business research: qualitative and quantitative methods*. Singapore: Markono Print Media Ltd.
- Cerullo, M. J., & Cerullo, V. (2004). Business Continuity Planning : A Comprehensive Approach. *Information Systems Management*, 21(3), 70–78.
- Cerullo, M. J., & McDuffie, R. S. (1994). Planning for disaster. *CPA Journal*, 64(6), 34. Retrieved from <http://eserv.uum.edu.my/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=9410052296&site=ehost-live&scope=site>
- Chan, Y. E. (2000). IT Value : The Great Divide Between Qualitative and Quantitative and Individual and Organizational Measures. *Journal of Management Information System*, 16(4), 225–261.
- Chapman, C., & Ward, S. (1997). *Project Risk Management - Processes, Techniques and Insights*. John Wiley & Sons.
- Chatterjee, D. C., Richardson, V. J., & Zmud, R. W. (2001). Examining the Shareholder Wealth Effects of New CIO Position Announcements. *MIS Quarterly*, 25(1), 43–70.
- Chen, C., Lim, J.-H., & Stratopoulos, T. C. (2011). IT Capability and a Firm's Ability to Recover from Losses: Evidence from the Economic Downturn of the Early 2000s. *Journal of Information Systems*, 25(2), 117–144. doi:10.2308/isys-10108
- Childs, D., & Dietrich, S. (2002). *Contingency Planning and Disaster Recovery: A Small Business Guide*. Hoboken, NJ.: John Wiley & Sons.
- Choudhuri, B., Maguire, S., & Ojiako, U. (2009). Revisiting learning outcomes from market led ICT outsourcing. *Business Process Management Journal*, 15(4), 569–587. doi:10.1108/14637150910975543

- Chow, W. S. (2000). Success factors for IS disaster recovery planning in Hong Kong. *Information Management & Computer Security*, 8(2), 80–87. doi:10.1108/09685220010321326
- Chow, W. S., & Ha, W. O. (2009). Determinants of the critical success factor of disaster recovery planning for information systems. *Information Management & Computer Security*, 17(3), 248–275. doi:10.1108/09685220910978103
- Christensen, C. M., & Overdorf, M. (2000). Meeting the Challenge of Disruptive Change. *Harvard Business Review*, 78(2), 66–76.
- Churchill, G. A., & Brown, T. J. (2004). *Basic marketing research* (5th ed.). Sydney: South-Western College.
- Churchill, G. A., & Peter, J. P. (1984). Research Design Effects on the Reliability of Rating Scales : A Meta-Analysis, XXI(November).
- Clark, C. E., Cavanaugh, N., Brown, C., & Sambamurthy, V. (1997). Building Change-Readiness Capabilities in the IS Organization: Insights from the Bell Atlantic Experience. *MIS Quarterly*, 21(4), 425–455.
- Clas, E. (2008). Business Continuity Plans: Key to Being Prepared for Disaster. *Professional Safety*, 53(9), 45–48.
- Coakes, S. J. (2005). *SPSS: Analysis Without Anguish: Version 12.0 for Windows*. Queensland, Australia: Wiley.
- Coakes, S. J., & Steed, G. (2003). *SPSS without Anguish*. Sydney: John Wiley & Sons Australia.
- Coakes, S. J., Steed, L., & Ong, C. (2009). *SPSS 16.0 for windows: Analysis without anguish*. Australia: John Wiley & Sons.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Conlon, R., & Smith, R. V. (2010). The role of the board and the CEO in ensuring business continuity. *Financial Executive*, 26(9), 52–55.
- Cool, K., & Schendel, D. (1988). Performance Differences Among Strategic Group Members. *Strategic Management Journal*, 9, 207–223.
- Cooper, D., & Schindler, P. (2003). *Business Research Methods* (8th ed.). McGraw Hill.
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Los Angeles: Sage Publications.

- Creswell, J. W. (2012). *Educational research : planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Boston, MA: Pearson Education, Inc.
- CyberSecurity. (2015). CNII Portal. *CyberSecurity Malaysia*. Retrieved from <http://cnii.cybersecurity.my/main/about.html>
- Cyberview. (2009). Cyberjaya – A Haven for ICT Industry. *Cyberview Sdn Bhd*. Retrieved from <http://www.smibusinessdirectory.com.my/news-archive/366-cyberjaya--a-haven-for-ict-industry.html>
- D’Amico, V. (2007). Master the Three Phases of Business Continuity Planning. *Business Strategy Series*, 8(3), 214–220.
- Davenport, T. H., Long, D. W. De, & Beers, M. C. (1998). Successful Knowledge Management Projects. *Sloan Management Review*, Winter, 43–57.
- Dawis, R. V. (1987). Scale construction. *Journal of Counseling Psychology*, 34(4), 481–489. doi:10.1037//0022-0167.34.4.481
- De Vaus, D. A. (2002). *Surveys in Social Research* (5th ed.). London: Routledge.
- DeCoster, J. (1998). Overview of factor analysis. Retrieved from <http://www.stat-help.com/notes.html>
- Dess, G. G., & Robinson, R. B. (1984). Measuring Organizational Performance in the Absence of Objective Measures : The Case of the Privately-held Firm and Conglomerate Business Unit. *Strategic Management Journal*, 5, 265–273.
- Devellis, R. F. (2003). *Scale development: Theory and application* (2nd ed.). Thousand Oaks, California: Sage Publications.
- Dewett, T., & Jones, G. (2001). The role of information technology in the organization: a review, model and assessment. *Journal of Management*, 27, 313–346.
- Dossi, A., & Patelli, L. (2010). You learn from what you measure: Financial and nonfinancial performance measures in multinational companies. *Long Range Planning*, 43, 498–526.
- DRI Malaysia. (2015). Education. Retrieved from [http://www.dri-malaysia.org/education.aspx#.VQ0\\_zySwpD4](http://www.dri-malaysia.org/education.aspx#.VQ0_zySwpD4)
- Easterby-Smith, M., Thorpe, R., & Jackson, P. (2008). *Management Research* (3rd ed.). London: Sage Publications.
- Easterby-Smith, M., Thorpe, R., & Lowe, A. (2002). *Management Research: An Introduction* (2nd ed.). Sage.

- Edy Sarif. (2008). Technical glitch holds up trading again. *The Star*. Retrieved from <http://www.thestar.com.my/Story/?file=/2008/12/25/business/2891674&sec=business>
- Elliott, D., & Swartz, E. H. (1999). Just Waiting for the Next Big Bang: business continuity planning in the UK finance sector. *Journal of Applied Management Studies*, 8(1), 43–60.
- Elliott, D., Swartz, E., & Herbane, B. (2010). *Business continuity management: a crisis management approach* (2nd ed.). New York, USA: Routledge.
- EPU. (2002). Knowledge - Based Economy Master Plan. Retrieved from <http://www.epu.gov.my/en/pelan-induk-ekonomi-berasaskan-pengetahuan>
- Ernst & Young. (2008). Moving Beyond Compliance. Ernst & Young's 2008 Global Information Security Survey.
- Ernst & Young. (2011). Into the cloud, out of the fog: Ernst & Young's 2011 Global Information Security Survey. Retrieved from [http://www.ey.com/Publication/vwLUAssets/Into the cloud out of the fog-2011 GISS/\\$FILE/Into the cloud out of the fog-2011 GISS.pdf](http://www.ey.com/Publication/vwLUAssets/Into_the_cloud_out_of_the_fog-2011_GISS/$FILE/Into_the_cloud_out_of_the_fog-2011_GISS.pdf)
- Fahy, J. (2000). The resource-based view of the firm: Some stumbling block on the road to understanding sustainable competitive advantage. *Journal of European Industrial Training*, 24(2 3/4), 94–104.
- Feeny, D. F., & Ives, B. (1990). In Search of Sustainability : Reaping Long-term Advantage from Investments in Information Technology. *Journal of Management Information Systems*, 7(1), 27–46.
- Feeny, D. F., & Willcocks, L. P. (1998). Core IS Capabilities for Exploiting Information Technology. *Sloan Management Review*, 39(3), 9–21.
- Feng, M., Terziovski, M., & Samson, D. (2008). Relationship of ISO 9001:2000 quality system certification with operational and business performance: A survey in Australia and New Zealand-based manufacturing and service companies. *Journal of Manufacturing Technology Management*, 19(1), 22–37. doi:10.1108/17410380810843435
- Ference, G. (2001). Improving organizational performance using Survey-driven Databases'. *Cornell Hotel and Restaurant Administration Quarterly*, 42(2), 12–27.
- Fink, A., Marr, B., Siebe, A., & Kuhle, J.-P. (2005). The future scorecard: combining external and internal scenarios to create strategic foresight. *Management Decision*, 43(3), 360–381. doi:10.1108/00251740510589751

- Fink, D. (1994). A Security Framework for Information Systems Outsourcing. *Information Management & Computer Security*, 2(4), 3–8. doi:10.1108/09685229410068235
- Foster, S. P., & Dye, K. (2005). Building Continuity into Strategy. *Journal of Corporate Real Estate*, 7(2), 105–119.
- Fox, R. J., Crask, M. R., & Kim, J. (1989). Mail survey response rate: A meta-analysis of selected techniques for inducing response. *Public Opinion Quarterly*, 52(4), 467–491.
- Frahm, J., & Brown, K. (2007). First steps: linking change communication to change receptivity. *Journal of Organizational Change Management*, 20(3), 370–387. doi:10.1108/09534810710740191
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51(1), 115–134. doi:10.1037/0022-0167.51.2.157
- Freeman, R. E. (1984). The politics of stakeholder theory: Some future directions. *Business Ethics Quarterly*, 4(4), 409–421.
- Freeman, R. E. (2004). *A Stakeholder Theory of the Modern Corporation. Ethical Theory and Business* (7th ed.).
- Gage, T., & Reinoso, V. (2002). Leading Through Uncertain Times. *Journal of Business Strategy*, 23(2), 10–11.
- Gallagher, M. (2003). *Business Continuity Management: How to Protect your Company from Danger* (1st ed.). London: Financial Times and Prentice Hall.
- Gallagher, M. (2007). Business Continuity Management Emerging Standards. *Accountancy Ireland*, 39, 34–36. doi:Article
- Garcia, A. (2008). Business Continuity: Best Practices. *eWeek*, 25(33), 32–40.
- Gay, L. R., & Diehl, P. (1992). *Research methods for business and management*. New York: Macmillan Coll Div.
- Gerber, M., Solms, R. Von, & Von Solms, R. (2005). Management of risk in the information age. *Computers & Security*, 24, 16–30. doi:16/j.cose.2004.11.002
- Ghuri, P., & Gronhaug, K. (2005). *Research Methods in Business Studies: a Practical Guide* (3rd ed.). Prentice Hall.

- Gibb, F., & Buchanan, S. (2006). A framework for business continuity management. *International Journal of Information Management*, 26(2), 128–141. Retrieved from <http://www.sciencedirect.com/science/article/B6VB4-4JN2P51-1/2/57980f789e3c81f88a500981a33a3b45>
- Gillies, A. (2011). Improving the quality of information security management systems with ISO27000. *The TQM Journal*, 23(4), 367–376. doi:10.1108/17542731111139455
- Ginn, R. D. (1999). *Continuity Planning Preventing, Surviving and Recovering from Disaster*. Oxford, England: Elsevier Science Ltd.
- Glazer, R. (1991). Information- Marketing in an Intensive Environment : Strategic of Implications Knowledge as an Asset. *Journal of Marketing*, 55(4), 1–19.
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: an organizational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185–214.
- Govind-Menon, A. (2008). Revisiting dynamic capability. *IIMB Management Review*, 20(1), 22–33.
- Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, 33, 37–40.
- Green, K. W., & Inman, R. A. (2007). The impact of JIT-II-selling on organizational performance. *Industrial Management & Data Systems*, 107(7), 1018–1035. doi:10.1108/02635570710816720
- Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Educational Evaluation and Policy Analysis*, 11(3), 255–274.
- Guadagnoli, E., & Velicer, W. (1998). Relation of sample size to the stability of components patterns. *Psychological Bulletin*, 265–275.
- Gupta, V. K. (2012). Flexible strategic framework for managing forces of continuity and change in retail banking business processes in India. *Business Process Management Journal*, 18(4), 553–575. doi:10.1108/14637151211253729
- Guyon, B., Sheridan, C., & Donnellan, B. (2012). Developing a Sustainable IT Capability : Lessons From Intel's. *MIS Quarterly Executive*, 11(2), 61–74.
- Hägerfors, A., Samuelsson, S., & Lindström, J. (2010). Business continuity planning methodology. *Disaster Prevention and Management*, 19(2), 243–255. doi:10.1108/09653561011038039

- Hair, J., Babin, B., Money, A., & Samouel, P. (2003). *Essentials of Business Research Methods*. Wiley.
- Hair, J., Black, W. C., Babin, B. J., Andersen, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Hair, J., Black, W. C., Babin, B. J., Andersen, R. E., & Tatham, R. L. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Hair, J., Money, A. H., Page, M., & Samouel, P. (2007). *Editors, Research Methods for Business*. West Sussex, England: John Wiley & Sons.
- Hammer, M., & Champy, J. (1993). *Reengineering the Corporation*. (1st, Ed.). New York, USA: Harper Collins Inc.
- Hansen, G. S., & Wernerfelt, B. (1989). Determinant of firm performance in relative importance of economic and organizational factors. *Strategic Management Journal*, 36(10), 1246–1255.
- Hashim, S. (2010a). Business Continuity Management : Public Sector BCM Implementation.
- Hashim, S. (2010b). Info EG: Business Continuity Management.
- Hau, K. T., & Marsh, H. W. (2004). The use of item parcels in structural equation modelling: non-normal data and small sample sizes. *The British Journal of Mathematical and Statistical Psychology*, 57(Pt 2), 327–51. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15511312>
- Healey, M. (2005). Linking research and teaching to benefit student learning. *Journal of Geography in Higher Education*, 29(1), 183–201.
- Hecht, J. (2002). Business Continuity Management. *Communications of the Association for Information Systems*, 10, 444–450.
- Hendricks, K. B., & Singhal, V. R. (2005). Association Between Supply Chain Glitches and Operating Performance. *Management Science*, 51(5), 695–711. doi:10.1287/mnsc.1040.0353
- Heng, G. M. (1996). Developing a suitable business continuity planning methodology. *Information Management & Information Security*, 4(2), 11–13.
- Heng, G. M. (2012). *Business Continuity Management Specialist Series: A Manager's Guide to ISO 22301 Standard for Business Continuity Management System* (1st ed.). Singapore: GMH Pte Ltd.



- Henri, J., Laval, U., Hoque, Z., Maurice, J., Séguin, F., & Thibodeau, N. (2004). Performance Measurement and Organizational Effectiveness : Bridging the Gap. *Managerial Finance*, 30(6).
- Herbane, B. (2010a). Small business research: Time for a crisis-based view. *International Small Business Journal*, 28(1), 43–64. doi:10.1177/0266242609350804
- Herbane, B. (2010b). The evolution of business continuity management: A historical review of practices and drivers. *Business History*, 52(6), 978–1002. doi:10.1080/00076791.2010.511185
- Herbane, B., Elliott, D., & Swartz, E. M. (2004). Business Continuity Management: time for a strategic role? *Long Range Planning*, 37(5), 435–457. doi:10.1016/j.lrp.2004.07.011
- Hermann, C. F. (1963). Some Consequences of Crisis Which Limit the Viability of Organizations. *Administrative Science Quarterly*, 8(1), 61. doi:10.2307/2390887
- Hillman, A. J., & Keim, G. D. (2001). Shareholder Value, Stakeholder Management, and Social Issues. *Strategic Management Journal*, 22(2), 125–139.
- Hitt, L. M., & Brynjolfsson, E. (1996). Productivity, Profit, and Consumer Welfare: Three Different Measures of Information Technology. *MIS Quarterly*, 20(2), 121–142.
- Hoong, L. L. (2011). Factors Influencing the Success of the Disaster Recovery Planning Process : A Conceptual Paper. In *Research and Innovation in Information Systems (ICRIIS), 2011 International Conference*.
- Hoong, L. L., & Marthandan, G. (2013). Enablers of Successful Business Continuity Management Process, 7(10), 86–97.
- Hoong, L. L., & Marthandan, G. (2014). Critical Dimensions of Disaster Recovery Planning. *International Journal of Business and Management*, 9(12), 145–158. doi:10.5539/ijbm.v9n12p145
- Hox, J., & Boeije, H. (2005). Data Collection, Primary vs. Secondary.pdf. *Encyclopedia of Social Measurement*, 1, 593–599.
- Hughes, G. D. (1969). Some Confounding Effects of Forced-Choice Scales. *Journal of Marketing Research*, 6, 223–226.
- Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal*, 20(2), 195–204.

- Hurley-Hanson, A. E. (2006). Organizational responses and adaptations after 9-11. *Management Research News*, 29(8), 480–494. doi:10.1108/01409170610692806
- Hussey, J., & Hussey, R. (1997). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. Palgrave: Basingstoke.
- Idris, F. (2011). Total quality management (TQM) and sustainable company performances: Examining the relationship in Malaysian firms. *International Journal of Business and Society*, 12(1), 31–52.
- ISO. (2009). International Organization for Standardization: Managing for the sustained success of an organization - A quality management approach. Geneva: ISO.
- ISO. (2012). ISO 22301:2012. International Standard Organization.
- Israel, G. D. (2009). Determining Sample Size. University of Florida.
- Ivancevich, D. M., Hermanson, D. R., & Smith, L. M. (1998). The Association of Perceived Disaster Recovery Plan Strength with Organizational Characteristics. *Journal of Information Systems*, 12(1), 31.
- Jacks, T., Palvia, P., Schilhavy, R., & Wang, L. (2011). A framework for the impact of IT on organizational performance. *Business Process Management Journal*, 17(5), 846–870. doi:10.1108/14637151111166213
- Jackson, C. (1999). Reengineering the Business Continuity Planning Process. *Data Security Management*.
- Jafari, M., Chadegani, A., & Biglari, V. (2011). Effective risk management and company's performance: investment in innovations and intellectual capital using behavioural and practical approach. *International Research Journal of Finance and Economics*, 3(15), 780–786. doi:10.5897/JEIF11.123
- Jalil, S. A. (2009). Raising Business Continuity Management Awareness in Malaysia.
- Jang, W.-Y., & Lin, C.-I. (2008). An integrated framework for ISO 9000 motivation, depth of ISO implementation and firm performance: The case of Taiwan. *Journal of Manufacturing Technology Management*, 19(2), 194–216. doi:10.1108/17410380810847918
- Järveläinen, J. (2013). IT incidents and business impacts: Validating a framework for continuity management in information systems. *International Journal of Information Management*, 33(3), 583–590. doi:10.1016/j.ijinfomgt.2013.03.001
- Jelinek, G. a, Mountain, D., O'Brien, D., Rogers, I. R., Wilkes, G., Wenban, J., ... Martin, P. J. (1999). Re-engineering an Australian emergency department: can we

- measure success? *Journal of Quality in Clinical Practice*, 19(3), 133–8. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10482320>
- Jordan, E. (1999). IT contingency planning: management roles. *Information Management & Computer Security*, 7(5), 232–238. doi:10.1108/09685229910292853
- Kalla, S. (2010). Statistical validity. Retrieved from <http://www.experiment-resources.com/statistical-validity.html>
- Kamal, R., & Agrawal, D. (1997). Re-engineering the Direct Marketing Organization Structure. *Journal of Direct Marketing*, 11(2), 59–69.
- Kane, G. C., & Alavi, M. (2007). Information Technology and Organizational Learning: An Investigation of Exploration and Exploitation Processes. *Organization Science*, 18(5), 796–812. doi:10.1287/orsc.1070.0286
- Kanji, G. K. (2002). *Measuring Business Excellence*. London: Routledge.
- Kaplan, R. M., & Saccuzzo, D. P. (2009). *Psychological testing: Principles, applications, and issues* (7th ed.). United States: Wadsworth Cengage Learning.
- Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard--measures that drive performance. *Harvard Business Review*, 70(1), 71–9. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10119714>
- Kaplan, R. S., & Norton, D. P. (1996). *The Balanced Scorecard: Translating Strategy into Action* (1st ed.). Boston, MA: Harvard Business Review Press.
- Karakasidis, K. (1997). A Project Planning Process for Business Continuity. *Information Management and Computer Security*, 5(2), 72–78.
- Karim, A. J. (2011). Business Disaster Preparedness: An Empirical Study for measuring the Factors of Business Continuity to face Business Disaster. *International Journal of Business & Social Science*, 2(18), 183–192. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=66726542&site=ehost-live>
- Kenny, J. (2006). Strategy and the learning organization: a maturity model for the formation of strategy. *The Learning Organization*, 13(4), 353–68.
- Ketokivi, M. A., & Schroeder, R. G. (2004). Perceptual measure of performance: Fact of fiction. *Journal of Operation Management*, 22(3), 247–264.
- Kirvan, P. (2009). Are mandatory business continuity management standards good business? Search Compliance. Retrieved from

<http://searchcompliance.techtarget.com/tip/Are-mandatory-business-continuity-management-standards-good-business>

- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: The Guilford Press.
- KPMG. (2006). Information Security and Business Continuity: When Business is Not as Usual!
- KPMG. (2012). *2011 - 2012 KPMG LLP Global Business Continuity Management Program Benchmarking Study*.
- KPMG. (2014). *The 2013-2014 Continuity Insights and KPMG LLP Global Business Continuity Management (BCM) Program Benchmarking Study*.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Education and Psychological Measurement, 30*, 607–610.
- Krell, E. (2006). Business Continuity: Creating a Framework for Success. *CMA Management, 79*(8), 30–33.
- Krosnick, J. A., & Fabrigar, L. R. (1997). *Survey measurement and process quality*. New York: John Wiley & Sons, Inc.
- Kubitscheck, V. (2001). Business Discontinuity-A Risk Too Far. *Balance Sheet, 9*(3), 33–38.
- Kudyba, S., & Diwan, R. (2002). Research Report: Increasing Returns to Information Technology. *Information Systems Research, 13*(1), 104–111.
- Landauer, T. K. (1995). *The Trouble with Computers*. Cambridge, MA: MIT Press.
- Laurent, W. (2007). Business Continuity Dashboards. *DM Review, 17*(6), 30.
- Lee, N., & Lings, I. (2008). *Doing Business Research: A Guide to Theory and Practice* (1st ed.). Sage.
- Li, E. Y., Chen, J. S., & Huang, Y. H. (2006). A framework for investigating the impact of IT capability and organisational capability on firm performance in the late industrialising context. *International Journal of Technology Management, 36*(1/2/3), 209. doi:10.1504/IJTM.2006.009969
- Li, M. L., & Ye, L. R. (1999). Information technology and firm performance: linking with environmental, strategic and managerial. *Information & Management, 35*(1), 43–51.

- Liang, T. P., You, J. J., & Liu, C. C. (2010). A resource-based perspective on information technology and firm performance: a meta analysis. *Industrial Management & Data Systems*, 110(8), 1138–1158. doi:10.1108/02635571011077807
- Lim, J., Richardson, V. J., & Roberts, T. L. (2004). Information Technology Investment and Firm Performance : A Meta-Analysis. In *Proceedings of the 37th Hawaii International Conference on System Sciences - 2004* (Vol. 00, pp. 1–10).
- Lin, O. A. (2008). Business Continuity Planning: A Global Overview & Status in Malaysia. In *Pre-Conference for the 3rd Asian Ministerial Conference on Disaster Risk Reduction*.
- Lindström, J., Samuelsson, S., & Hägerfors, A. (2010). Business continuity planning methodology. *Disaster Prevention and Management*. doi:10.1108/09653561011038039
- Lingeswara, R., & Tammineedi, S. (2012). Key Issues, Challenges and Resolutions in Implementing Business Continuity Projects. *ISACA Journal*, 1, 20–23.
- Liu, P., Lei, L., & Zhang, X. F. (2004). Comparison Study of Missing Value Processing Methods. *Computer Science*, 31(10), 155–156.
- Lodge, M. (2009). The public management of risk: The case for deliberating among worldviews. *Review of Policy Research*, 26(4), 395–408.
- Lomas, E. (2010). Information governance: information security and access within a UK context. *Records Management Journal*, 20(2), 182–198. doi:10.1108/09565691011064322
- Low, S. P., Liu, J., & Sio, S. (2010). Business continuity management in large construction companies in Singapore. *Disaster Prevention and Management*, 19(2), 219–232. doi:10.1108/09653561011038011
- Luftman, J., & Zadeh, H. S. (2011). Key information technology and management issues 2010–11: an international study. *Journal of Information Technology*, 26(3), 193–204. doi:10.1057/jit.2011.3
- Lyles, M. a, & Salk, J. E. (1996). Knowledge Acquisition from Foreign Parents in International Joint Ventures: An Empirical Examination in the Hungarian Context. *Journal of International Business Studies*, 27(4), 877–903. doi:10.1057/palgrave.jibs.8490155
- Mahmood, M. A., & Mann, G. J. (1993). Measuring the Organizational Impact of Information Technology Investment: An Exploratory Study. *Journal of Management Information Systems*, 10(1), 98–122.

- Mahoney, J. T., & Pandian, R. (1992). The Resource- Based View Within the Conversation of Strategic Management. *Strategic Management Journal*, 13, 363–380.
- Malhotra, A., Gosain, S., & El Sawy, O. A. (2005). Absorptive capacity configurations in supply chains: Gearing for partner-enabled market knowledge creation. *MIS Quarterly*, 29(1), 145–187.
- Malhotra, N. K., Hall, J., Shaw, M., & Oppenheim, P. (2006). *Marketing research: An applied orientation* (3rd ed.). Frenchs Forest: Prentice Hall.
- MAMPU. Pelaksanaan dan Pensijilan ISMS Dalam Sektor Awam. Surat Pekeliling Am Bil. 3 Tahun 2010 MAMPU.BPICT.700-4/3/5 Jld. 2 (6) (2010).
- MAMPU. Surat Pekeliling Pelaksanaan PKP sektor Awam (2010).
- Manheim, J. B., & Rich, R. C. (1995). *Empirical Political Analysis: Research Methods in Political Science*. Longman. Retrieved from <http://books.google.com.my/books?id=y8mBAAAAMAAJ>
- Marsh. (2010). *2010 EMEA Business Continuity Benchmark Report*.
- Martin, W. J. (1988). *The information society*. London: Aslib. Retrieved from <http://books.google.com.my/books?id=-g3bAAAAMAAJ>
- Maskell, B. (1992). Performance measurement for world class manufacturing. *Management Accounting*, 32–33.
- Maxwell, J. (1996). *Qualitative Research Design: An Interactive Approach*. Thousand Oaks, CA: Sage Publications.
- McBurney, D. H., & White, T. L. (2010). *Research Methods* (8th ed.). Belmont, CA: Wadsworth.
- Mcloughlin, R. (2008). What one must know about achieving BS25999-2 certification, 3(2), 105–111.
- Melville, N., Kraemer, K. and Gurbaxani, V. (2004). Information technology and organizational performance: an integrative model of IT business value. *MIS Quarterly*, 28(2), 283–322.
- Meso, P., & Smith, R. (2000). A resource-based view of organizational knowledge management systems. *Journal of Knowledge Management*, 4(3), 224–234. doi:10.1108/13673270010350020

- Mills, J., Platts, K., & Bourne, M. (2003). Applying resource-based theory: Methods, outcomes and utility for managers. *International Journal of Operations & Production Management*, 23(2), 148–166. doi:10.1108/01443570310458429
- Mitcham, C., & Mackey, R. (1983). *Philosophy and Technology: Readings in the Philosophical Problems of Technology*. New York: The Free Press.
- Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS Quarterly*, 35(1), 237–256.
- Mitra, S., & Chaya, A. K. (1996). Analyzing Cost-Effectiveness of Organizations: Impact of Information Technology Spending. *Journal of Management Information Systems*, 13(2), 29–57.
- Mitroff, I. I. (2001). Crisis Leadership. *Executive Excellence*, 18(8), 19.
- Mitroff, I. I. (2004). Think like a sociopath, act like a saint. *Journal of Business Strategy*, 25(5), 42–53. doi:10.1108/02756660410558933
- Mohan, L., & Rai, S. (2006). Business Continuity Model : A Reality Check for Banks in India. *Journal of Internet Banking and Commerce*, 11(2), 1–5.
- Moore, T., & Lakha, R. (2006). *Tolley's Handbook of Disaster Management: Principles and Practice* (Third.). Oxford: LexisNexis.
- Morwood, G. (1998). Business continuity: awareness and training programmes. *Information Management & Computer Security*, 6(1), 28–32. doi:10.1108/09685229810207425
- Mostafa, M. M., Sheaff, R., Morris, M., & Ingham, V. (2004). Strategic preparation for crisis management in hospitals: empirical evidence from Egypt. *Disaster Prevention and Management*, 13(5), 399–408. doi:10.1108/09653560410568525
- MOSTI. (2013, October). Blueprint for the Implementation of Strategic ICT Roadmap for Malaysia. doi:10.1093/toxsci/kft059
- Namasivayam, K., & Zhao, X. (2007). An investigation of the moderating effects of organizational commitment on the relationships between work-family conflict and job satisfaction among hospitality employees in India. *Tourism Management*, 28(5), 1212–1223.
- Naveh, E., & Marcus, a. (2004). When Does the ISO 9000 Quality Assurance Standard Lead to Performance Improvement? Assimilation and Going Beyond. *IEEE Transactions on Engineering Management*, 51(3), 352–363. doi:10.1109/TEM.2004.830864

- Neely, A. (2002). *Business Performance Measurement: Theory and Practice*. Cambridge: Cambridge University Press.
- Neuman, W. L. (2006). *Social research methods qualitative and quantitative approaches* (6th ed.). Boston: Pearson.
- Noel Capon, & Glazer, R. (1987). Technology : Marketing A Strategic Coalignment. *Journal of Marketing*, 51(3), 1–14.
- Norusis, M. J. (1999). *Guide to data analysis*. New Jersey: Prentice Hall.
- NST. (2013). Powering Putrajaya And Cyberjaya. *News Straits Times*, p. 37. Retrieved from [http://www.putrajaya.gov.my/community/news/powering\\_putrajaya\\_and\\_cyberjaya](http://www.putrajaya.gov.my/community/news/powering_putrajaya_and_cyberjaya)
- Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). New York: McGraw-Hill.
- Nura, A. A., & Osman, N. H. (2012). A Toolkit on effective decision making measurement in organizations. *International Journal of Humanities and Social Science*, 2(4), 296–303.
- Pallant, J. (2001). *SPSS Survival Manual: A Step by step guide to data analysis using SPSS for windows* (3rd ed.). England: McGraw Hill Open University Press.
- Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for Windows*. Sydney: Allen & Unwin.
- Pallant, J. (2007). *A Step-by-Step Guide to Data Analysis Using SPSS for Windows* (3rd ed.). Sydney: Allen and Unwin.
- Panko, R. R. (1987). Directions And Issues in End User Computing. *Infor*, 25(3), 181–197.
- Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005). E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality. *Journal of Service Research*, 7(3), 213–233. doi:10.1177/1094670504271156
- ParvizRad, P. (2002). From performance measurement to performance management. In *3rd international conference on performance management*. Tehran.
- Payne, C. F. (1999). Contingency plan exercises. *Disaster Prevention and Management Volume*, 8(2), 111–117.
- Pearson, C. M., & Clair, J. A. (1998). Reframing Crisis Management. *The Academy of Management Review*, 23(1), 59–76. doi:10.2307/259099



- Pearson, G., & Woodman, P. (2012). The 2012 Business Continuity Management Survey. Chartered Management Institute.
- Permatasari, S., & Hin, C. T. (2008). Bursa Malaysia Shares Fall After Worst Systems Glitch. *Bloomberg*. Retrieved from <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=azyDBBICCjEs>
- Peteraf, M. A. (1993). The cornerstone of competitive advantage: a resource-based view. *Strategic Management Journal*, 14(3), 179–191.
- Peterson, C. A. (2009). Business continuity management & guidelines. 2009 *Information Security Curriculum Development Conference on - InfoSecCD '09*, 114. doi:10.1145/1940976.1940999
- Petroni, A. (1999). Managing information systems' contingencies in banks: a case study. *Disaster Prevention and Management*, 8(2), 101–110. doi:10.1108/09653569910266139
- Phillips, R., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. *Business Ethics Quarterly*, 13(4), 479–502.
- Pitt, M. (2010). Coughs, Sneezes and the Progress of Diseases. *Human Resource Management International Digest*, 18(1).
- Pitt, M., & Goyal, S. (2004). Business continuity planning as a facilities management tool. *Facilities*, 22(3/4), 87–99. doi:10.1108/02632770410527824
- Pollard, D., & Hotho, S. (2006). Crises, scenarios and the strategic management process. *Management Decision*, 44(6), 721–736. doi:10.1108/00251740610673297
- Powell, T. C., & Dent-Micallef, A. (1997). Information Technology as Competitive Advantage: The Role of Human, Business, and Technology Resources. *Strategic Management Journal*, 18(5), 375–405.
- Prahalad, C. K., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 68(3), 79–92.
- Prasad, V. K., Ramamurthy, K., & Naidu, G. M. (2001). The Influence of Internet – Marketing Integration on Marketing Competencies. *Journal of International Marketing*, 9(4), 82–110.
- Rai, A., Patnayakuni, R., & Patnayakuni, N. (1997). Technology Investment and Business Performance. *Communication of ACM*, 40(7), 89–97.

- Rai, A., Pavlou, P. A., Im, G., & Du, S. (2012). Interfirm IT Capability Profile And Communications For Cocreating Relational Value: Evidence From The Logistics Industry. *MIS Quarterly*, 36(1), 233–262.
- Raj, C. (2008). Of technical glitches & conspiracy theories. *Malaysian Business*.
- Randeree, K. (2012). A business continuity management maturity model for the UAE banking sector. *Business Process Management Journal*, 18(3), 472–492. doi:10.1108/14637151211232650
- Randeree, K., Mahal, A., & Narwani, A. (2012). A business continuity management maturity model for the UAE banking sector. *Business Process Management Journal*, 18(3), 472–492. doi:10.1108/14637151211232650
- Rasmussen, J. L. (1988). Evaluating Outlier Identification Tests: Mahalanobis D Squared and Comrey Dk. *Multivariate Behavioral Research*, 23(2), 189–202.
- Reardon, J., Hasty, R., & Coe, B. (1996). The Effect of Information Technology on Productivity in Retailing. *Journal of Retailing*, 72(4), 445–461.
- Remenyi, D., Williams, B., Money, A., & Swartz, E. (1998). *Doing Research in Business and Management: An Introduction to Process and Method*. London: Sage Publications.
- Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring Organizational Performance: Towards Methodological Best Practice. *Journal of Management*, 35(3), 718–804.
- Ringim, K. J. (2012). The Moderating Effect of IT Capability on the Relationship between Business Process Reengineering Factors and Organizational Performance of Banks. *Journal of Internet Banking and Commerce*, 17(2).
- Robbins, S. P., & Coulter, M. (2012). *Management* (11th ed.). New Jersey: Pearson Prentice Hall.
- Rockart, J. F. (1979). Chief executives define their own data needs. *Harvard Business Review*, 57(2), 81–93. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/10297607>
- Rogers, E. W., & Wright, P. M. (1998). *Measuring Organizational Performance in Strategic Human Resource Management : Looking Beyond the Lamppost*. Cornell University ILR School.
- Rohde, R., & Haskett, J. (1990). Disaster Recovery Planning For Academic Computing Centers. *Communications of the ACM*, 33(6), 652–657.

- Roscoe, J. T. (1975). *Fundamental Research Statistics for the Behavioural Sciences* (2nd ed.). New York: Holt, Reinhart & Winston.
- Rosenthal, P. H., & Sheniuk, G. (1993). Business Resumption Planning: Exercising the Disaster Management team. *Journal of Systems Management*, 44(6), 12–16.
- Ross, J. W., Mathis, C., & Dale, B. (1996). Develop Long-Term Competitiveness through IT Assets. *Sloan Management Review*, 38(1), 31–42.
- Rosso, A. (2011, August). ISO 27001 Primer. *Collector*, 77(1), 31–35.
- Rothberg, M. L. (1989). Disaster Plans: Added Complexity. *Computer Decisions*, 21(2), 16.
- Ruighaver, A. B., Ahmad, A., & Hadgkiss, J. (2012). Incident response teams – Challenges in supporting the organisational security function. *Computers & Security*, 31(5), 643–652. doi:10.1016/j.cose.2012.04.001
- Russ, F. A., & McNeilly, K. M. (1995). Links among satisfaction, commitment, and turnover intentions: The moderating effect of experience, gender, and performance. *Journal of Business Research*, 34, 57–65.
- Said, J., Hui, W. S., Taylor, D., & Othman, R. (2009). Customer-Focused Strategies And Information Technology capabilities : Implications For Service Quality Of Malaysian Local Authorities. *International Review of Business Research Papers*, 5(3), 241–256.
- Salant, P., & Dillman, D. (1994). *How to conduct your own survey*. USA: John Wiley & Sons.
- Saleem, S. (2011). Do effective risk management affect organizational performance. *European Journal of Business and Management*, 3(3), 258–268.
- Santhanam, R., & Hartono, E. (2003). Issues in Linking Information Technology Capability to Firm Performance. *MIS Quarterly*, 27(1), 125–153.
- Saunders, M., Lewis, P., & Thornhill, A. (2000). *Research Methods for Business Students* (2nd ed.). Harlow, England: Prentice Hall.
- Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business Students* (4th ed.). Harlow, England: FT Prentice Hall.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (Fifth.). Harlow, England: Pearson Education Limited.

- Savage, M. (2002). Business continuity planning. *Work Study*, 51(5), 254–261.  
doi:10.1108/00438020210437277
- Sawalha, I. H. S. (2013a). Crisis and disaster management in Jordanian hotels: practices and cultural considerations. *Disaster Prevention and Management*, 22(3), 210–228.  
doi:10.1108/DPM-09-2012-0101
- Sawalha, I. H. S. (2013b). Organisational performance and business continuity management: a theoretical perspective and a case study. *Journal of Business Continuity & Emergency Planning*, 6(4), 360–73. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/23835428>
- Saxby, C. L., Parker, K. R., Nitse, P. S., & Dishman, P. L. (2002). Environmental scanning and organizational culture. *Marketing Intelligence & Planning*, 20(1), 28–34. doi:10.1108/02634500210414747
- Schnitt, D. L. (1993). Reengineering the Organization Using Information Technology. *Journal of Systems Management*, 44, 14–20.
- Sekaran, U. (2000). *Research methods for business: A skill-building approach* (3rd ed.). New York, NY: John Wiley & Sons, Inc.
- Sekaran, U. (2003). *Research methods for business: A skill building approach* (4th ed.). New York, NY: John Willey & Sons.
- Sekaran, U., & Bougie, R. (2010). *Research methods for business: A skill building approaches*. Chichester: John Wiley & Sons Ltd.
- Selden, S., & Perks, S. (2007). How a structured BIA aligned business continuity management with Gallaher ' s strategic objectives. *Journal of Business Continuity & Emergency Planning*, 1(4), 348–355.
- Sener, I., Varoglu, A., & Aren, S. (2011). Board composition and organizational performance: environmental characteristics matter. *Journal of Global Strategic Management*, 5(2), 124–136.
- Seow, K. (2009). Gaining senior executive commitment to business continuity: Motivators and reinforcers. *Journal of Business Continuity & Emergency Planning*, 3(3), 201–208.
- Shaluf, I. M., Ahmadun, F., & Said, A. M. (2003). A review of disaster and crisis. *Disaster Prevention and Management*, 12(1), 24–32.  
doi:10.1108/09653560310463829
- Shao, Z., Feng, Y., Choudrie, J., & Liu, Y. (2010). The Moderating effect of a chief information officer's competence on IT investment and firm performance. In *Paper*

- presented at the Pacific Asia Conference on Information Systems (pp. 1112–1123). Taipei, Taiwan.
- Sharma, S., Durand, R. M., & Gur-arie, O. (1981). Identification and Analysis of Moderator Variables. *Journal of Marketing Research*, 18(August), 291–300. doi:10.2307/3150970
- Sheffi, Y., & Rice, J. B. (2005). A Supply Chain View of the Resilient Enterprise A Supply Chain View of the Resilient Enterprise. *MIT Sloan Management Review*, 47(1).
- Sink, S. (1985). *Productivity Management: Planning, Measurement and Evaluation, Control and Improvement*. Hoboken, NJ.: John Wiley and Sons, Inc.
- SIRIM. MS 1970 Business Continuity Management - Framework (2007).
- SIRIM. (2014). Management Certification Online Search. Retrieved from <http://www.malaysian-certified.com.my/MgmtCertification.aspx>
- Škrinjar, R., Bosilj-Vukšić, V., & Indihar-Štemberger, M. (2008). The impact of business process orientation on financial and non-financial performance. *Business Process Management Journal*, 14(5), 738–754. doi:10.1108/14637150810903084
- Socka, G. (1998). When disaster strikes. *CMA Magazine*, 72(9), 12. Retrieved from <http://eserv.uum.edu.my/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=1389349&site=ehost-live&scope=site>
- Solms, R. Von, & Botha, J. (2004). A cyclic approach to business continuity planning. *Information Management & Computer Security*. doi:10.1108/09685220410553541
- Song, M., Benedetto, C. A., & Nanson, R. W. (2007). Capabilities and financial performance: The moderating effect of strategic type. *Journal of Academic Marketing Science*, 35(1), 18–34.
- SPRING Singapore. (2005). TR19 Technical Reference for Business Continuity Management. Singapore.
- Starr, R., Newfrock, J., & Delurey, M. (2003). Enterprise Resilience : Managing Risk in the Networked Economy. *Strategy and Business*, 30, 73–79.
- Steven, J. (1996). *Applied Multivariate Statistics for the Social Science*. New Jersey: Lawrence Erlbaum Associates.
- St-Germain, R., Aliu, F., Lachapelle, E., & Dewez, P. (2012). Whitepaper: Societal Security Business Continuity Management System. Professional Evaluation and Certification Board.

- Sun, H. (2000). Total quality management, ISO 9000 certification and performance improvement. *International Journal of Quality & Reliability Management*, 17(2), 168–179.
- SunGard. (2012). ISO 22301 : A Framework for Business Process Definition.
- Swartz, E., Elliott, D., & Herbane, B. (1995). Out of sight, out of mind: the limitations of traditional information systems planning. *Facilities*, 13(9/10), 15–21.  
doi:10.1108/02632779510095581
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (5th ed.). New York: Allyn and Bacon.
- Tamineedi, R. L. (2010). Business Continuity Management: A Standards-Based Approach. *Information Security Journal: A Global Perspective*, 19(1), 36–50.  
doi:10.1080/19393550903551843
- Tangem, S. (2004). Performance measurement: from philosophy to practice. *International Journal of Productivity and Performance Management*, 53(8), 726–737.
- Terziovski, M., Samson, D., & Dow, D. (1997). The business value of quality management systems certification. Evidence from Australia and New Zealand. *Journal of Operations Management*, 15(1), 1–18.
- The Star. (2006). Hong Leong Bank trying to fix computer glitch. *18th October*. Retrieved from <http://www.thestar.com.my/story/?file=/2006/10/18/nation/15756974&sec=nation>
- Tippins, M. J., & Sohi, R. S. (2003). IT Competency and Firm Performance: Is Organizational Learning a Missing Link? *Strategic Management Journal*, 761(March), 745–761.
- Toigo, J. W. (1996). *Disaster Recovery Planning: For Computers and Communication Resources* (1st ed.). New York: John Wiley & Sons.
- Vaid, R. (2008). How are Operational Risk and Business Continuity Coming Together as a Common Risk Management Spectrum? *Journal of Business Continuity & Emergency Planning*, 2, 330–340.
- Van, B., Gerrit, H., Gary, L., & Kacker, M. (2002). Informants in Organizational Marketing Research : Why Use Multiple Informants and How to Aggregate Responses. *Journal of Marketing Research*, 39(4), 469–478.

- Van Dalen, D. B. (1979). *Understanding educational research: an introduction*. McGraw-Hill. Retrieved from <http://books.google.com.my/books?id=k5p27w2IjhMC>
- Vancoppenolle, G. (2007). *The Definitive Handbook of Business Continuity Management Second Edition*. (A. Hiles, Ed.). England: John Wiley & Sons Ltd.
- Venclova, K., Urbancova, H., & Vydrova, H. V. (2013). Advantages and Disadvantages of Business Continuity Management. *International Science Index*, 7(4), 134–138.
- Venkatraman, N., & Ramunujam, V. (1986). *Measurement of Business Economic Performance: An Examination of Method Convergence*. Massachusetts.
- Viner, P. (2007). *Operational Risk Management IN: The Definitive Handbook Of Business Continuity Management*. (A. Hiles, Ed.) (2nd ed.). England: John Wiley & Sons Ltd.
- Wade, M., & Hulland, J. (2004). The Resource-Based View and Information Systems Research: Review, Extension and Suggestions for Future Research. *MIS Quarterly*, 28(1), 107–142.
- Wan, S. (2009). Service impact analysis using business continuity planning processes. *Campus-Wide Information Systems*, 26(1), 20–42. doi:10.1108/10650740910921546
- Weick, K. E. (1988). Enacted Sensemaking in Crisis Situation. *Journal of Management Studies*, Vol. 25(4), 305–317.
- Weill, P. (1992). The Relationship between Investment in Information Technology and Firm Performance: A Study of the Value Manufacturing Sector. *Information Systems Research*, 3(4), 307–333.
- Wong, N. W. (2009). Journal of Business Continuity & Emergency Planning. *Henry Stewart Publications*, 4(1), 62–68.
- Wong, W. N. Z. (2009). The strategic skills of business continuity managers: putting business continuity management into corporate long-term planning. *Journal of Business Continuity & Emergency Planning*, 4, 62–68.
- Woodman, P. (2007). *Business Continuity Management*. Chartered Management Institute.
- Woodman, P. (2008). *Business Continuity Management 2008*. London: Chartered Management Institute.
- Woodman, P., & Hutchings, P. (2010). *Disruption & Resilience: The 2010 Business Continuity Management Survey*. Chartered Management Institute.

- Yammarino, F. J., Skinner, S. J., & Childers, T. L. (1991). Understanding Mail Survey Response Behavior. *Public Opinion Quarterly*, 55(4), 613–639.
- Yen, D. C., Chou, D. C., & Hawkins, S. M. (2000). Disaster recovery planning: a strategy for data security. *Information Management & Computer Security*. doi:10.1108/09685220010353150
- Yiu, K., & Tse, Y. Y. (1995). A Model for Disaster Recovery Planning. *IS Audit & Control Journal*, 5, 45–51.
- Yongmei, L. I. U., Hongjian, L. U., & Junhua, H. U. (2008). IT Capability as Moderator Between IT Investment and Firm Performance. *Tsinghua Science and Technology*, 13(3), 329–336.
- Zhang, M., Sarker, S., & McCullough, J. (2008). Measuring Information Technology Capability of Export-Focused Small or Medium Sized Enterprises in China. *Journal of Global Information Management*, 16(3), 1–25. doi:10.4018/jgim.2008070101
- Zhang, M., Sarker, S., & Sarker, S. (2008). Unpacking the effect of IT capability on the performance of export-focused SMEs: a report from China. *Information Systems Journal*, 18(4), 357–380. doi:10.1111/j.1365-2575.2008.00303.x
- Zikmund, W. G. (1991). *Business Research Methods* (3rd ed.). Orlando, FL: Dryden.
- Zikmund, W. G. (2003). *Business research methods* (7th ed.). Thompson.
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2010). *Business research methods* (9th ed.). Canada: South-Western Cengage Learning.