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**THE EFFECT OF CONTINUOUS IMPROVEMENT TOOLS ON
ORGANIZATIONAL PERFORMANCE OF THE DUBAI POLICE:
THE MEDIATING ROLE OF INNOVATION CULTURE**



**Thesis submitted to
Othman Yeop Abdullah Graduate School of Business,
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Kolej Perniagaan
(College of Business)

Universiti Utara Malaysia

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Tandatangan
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(External Examiner)

Tandatangan
(Signature)

Pemeriksa Dalam : **Prof. Dr. Shahimi Mohtar**
(Internal Examiner)

Tandatangan
(Signature)

Tarikh: **30 June 2019**
(Date)

Nama Nama Pelajar
(Name of Student) : **Mohammed Saleh Qasem Alosani**

Tajuk Tesis / Disertasi
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Nama Penyelia/Penyelia-penyelia
(Name of Supervisor/Supervisors) : **Prof. Dr. Rushami Zien Yusoff**



Tandatangan



: **Dr. Ali Ali MUSAED AL-ANSI**

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Tandatangan

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ABSTRACT

The main objective of this study was to investigate the interaction effects of continuous improvement tools on the organisational performance of the Dubai Police. Specifically, it aims to investigate the mediating influence of innovation culture on the relationship between Six Sigma, Kaizen, benchmarking, and organisational performance. The motivation of this study was driven by the inconsistent findings related to the relationships between Six Sigma, Kaizen, benchmarking, and organisational performance. Due to inconsistent results, various propositions have emerged, pointing to the need to investigate possible mediating variables that could explain the inconsistencies. For that purpose, this study employed systems theory and the resource-based view theory to synchronize the possible relationships among the variables in the conceptual framework. A survey questionnaire was used, and the questionnaires were distributed randomly to 338 sections of the Dubai Police. Of the 252 returned questionnaires, 245 were useable for analysis. PLS-SEM was employed to analyse both direct and indirect relationships among the variables of the study. The findings demonstrated that Six Sigma and innovation culture are significant predictors of organisational performance. It also showed the mediating effect of innovation culture on the relationship between Six Sigma, Kaizen, benchmarking, and organisational performance, supporting the theoretical premises. This study contributes theoretically by bridging the current gap in studying Six Sigma, Kaizen and benchmarking in policing field and practically by contributing to managers in the Dubai Police about the importance using these tools to affect organizational performance positively and also the significant role of innovation culture for implementing these tools successfully.

Keywords: Continuous improvement tools, Six Sigma, Kaizen, benchmarking, innovation culture, Dubai Police.

ABSTRAK

Objektif utama kajian ini adalah untuk menyelidik kesan interaksi alat penambahbaikan yang berterusan ke atas prestasi organisasi Polis Dubai. Secara khusus, kajian ini bertujuan untuk menyiasat pengaruh pengantaraan budaya inovasi terhadap hubungan antara *Six Sigma*, *Kaizen*, penanda aras, dan prestasi organisasi. Motivasi bagi kajian ini didorong oleh penemuan yang tidak konsisten tentang hubungan antara *Six Sigma*, *Kaizen*, penanda aras, dan prestasi organisasi. Disebabkan oleh keputusan yang tidak konsisten ini, telah muncul pelbagai cadangan yang menunjukkan bahawa perlu untuk menyiasat tentang kemungkinan pemboleh ubah pengantara yang boleh menjelaskan ketidakkonsistenan ini. Bagi tujuan tersebut, kajian ini mengaplikasikan teori sistem dan teori berdasarkan sumber yang bertujuan untuk menyelaraskan kebarangkalian hubungan antara pemboleh ubah dalam kerangka konsep. Soal selidik kajian telah dijalankan dan soal selidik ini telah diedarkan secara rawak ke 338 bahagian Polis Dubai. Daripada 252 soal selidik yang dikembalikan, 245 soal selidik boleh digunakan untuk tujuan analisis. PLS-SEM telah digunakan untuk menganalisis hubungan langsung dan hubungan tidak langsung di antara pemboleh ubah kajian. Hasil kajian menunjukkan bahawa *Six Sigma* dan budaya inovasi adalah peramal yang signifikan terhadap prestasi organisasi. Hal ini juga menunjukkan kesan pengantara budaya inovasi terhadap hubungan antara *Six Sigma*, *Kaizen*, penanda aras dan prestasi organisasi bagi menyokong teori premis. Kajian ini menyumbang secara teoritis dengan merapatkan jurang semasa dalam mengkaji *Six Sigma*, *Kaizen* dan penanda aras dalam bidang kepolisan dan secara praktikal dengan menyumbang kepada pengurus di Polis Dubai tentang pentingnya menggunakan alat ini untuk mempengaruhi prestasi organisasi secara positif dan juga peranan penting budaya inovasi untuk melaksanakan alat-alat ini dengan jayanya.

Kata kunci: Alat peningkatan berterusan, *Six Sigma*, *Kaizen*, penanda aras, budaya inovasi, Polis Dubai

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List of Abbreviations

BSC	Balanced Scorecard
CMV	Common Method Variance
CR	Composite Reliability
CSFs	Critical Success Factors
CTQCs	Critical to Quality Characteristics
DMADV	Define, Measure, Analyse, Design, and Verify
DMAIC	Define, Measure, Analyse, Improve, and Control
DPMO	Defects Per Million Opportunities
DEGP	Dubai Government Excellence Program
EFA	Exploratory Factor Analysis
EU	European Union
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GoF	Goodness of Fit
ISO	International Organization for Standardization
KPI	Key Performance Indicator
KPIV	Key Process Input Variable
MOI	Ministry of Interior
NPM	New Public Management
PDCA	Plan, Do, Check, and Act.
PLS	Partial Least Squares

SEM	Structural Equation Modelling
SD	Standard Deviation
RBV	Resource-Based View
SSCCI	Six Sigma Centre for Continuous Improvement
SIPOC	Suppliers, Inputs, Process, Outputs, and Customers
SEM	Structural Equation Modelling
SKGEP	Sheikh Khalifa Government Excellence Program
SPSS	Statistical Package for Social Science
TPM	Total Productive Maintenance
TPS	Toyota Production System
TRADE	Term of references, Research, Acquire, Deploy, and Evaluate
TQM	Total Quality Management
UAE	United Arab Emirates
WEF	World Economic Forum

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The present chapter highlights the background and problem statement of the study. It also covers the significance, research questions and objectives, the problem statement, and the operational definition of the key terms, and the organisation of the thesis.

1.2 Background of the Study

In the past three decades, the United Arab Emirates (UAE) has experienced significant socio-historical changes, resulting in a substantial development in its economy (Choi, Khajavy, Raddawi, & Giles, 2019; Jones, 2019). The UAE has managed to transform its economy from one based on agriculture to the third largest in the Middle East and the third highest gross domestic product (GDP) per capita in the world (Al-mulali & Che Sab, 2018). Some of the favourable attributes that the UAE boasts include a safe environment, abridged procedures, and timings for taking the initiative in business and developing the private sector (Ahmed, 2015).

It is important for a developing economy to demonstrate that it utilizes its resources efficiently to create a value domestically as well as providing a safe and secure environment to ensure the continuation and consolidation of such development. Accordingly, the UAE is striving to maintain a stable business environment and invite international businesses to make long-term investments in the country (Bishr, 2019).

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APPENDIX A

DUBAI POLICE OVERVIEW

Introduction

The United Arab Emirates is a federal government, so it leaves much power to the emirates. There are local police in every emirate that has the power to control everything inside it. Also, the Ministry of Interior has limited power inside these emirates but has the rights to deal with external issues (Codrai, 1990; Taryam, 1987; Tomkinson, 1975).

The Dubai Police is one of the local police departments that come under the direction of H.H. Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai. The Dubai Police is a police agency in Dubai which is known as the Dubai Police Headquarters. It was established on June 1, 1956, in Naif Fort. In 1973, it moved to its present location in Al Tower area by the local government of Dubai with a small number of employees. Now, it is a large organisation with more than 24,000 employees (Abdulla, Djebarni & Mellahi, 2008; Busanad, 2016; Chu, 2017; EFQM, 2018). It makes the majority of the police strength not only in the United Arab Emirates but also in the Arab world. The Dubai Police is an integral part of the UAE Police Force. It has a vision and mission to improve the quality of life by operating with constitutional rights to apply the law and maintain the safety and security of the community and all people living in the country (The Dubai Police, 2017). It uses excellent performance standards and has highly defined descriptions of their duties, tasks, and jurisdictions.

The Dubai Police's Excellence and Quality

The Dubai Police applies the highest and the most precise operation in doing its work guided by performance indicators. It has efficient use of financial resources and strategic planning by avoiding bureaucratic procedures, implementing innovative initiatives, strengthening community partnership, and respecting excellence of personal and teamwork.

In its search for innovation, the Dubai Police uses the latest technologies and techniques not only to solve crimes and prevent them (Chu & Abdulla, 2014) but also in management and administration. Now, all police departments in the UAE and even the Ministry of Interior have begun to use the Dubai Police as a benchmark to get the best practices of the Dubai Police and apply them in their departments. The Dubai Police was the first department in the region that practised quality by establishing a Total Quality Department that focuses and maintains quality in all the Dubai Police departments and stations. It was also the first Arab police to apply DNA testing in criminal investigation; the first Arab force to use fingerprinting; the first in the Arab world that establishes a human rights department; the first in the Arab police institution to apply the concept of "Clean Desk Policy"; the first in the Arab department to implement a paperless department; and the first Arab police that uses GPS (Global Positioning System) (Chu & Abdulla, 2014). Additionally, the Dubai Police was first to utilise advanced technology in the mid 1980s such as the Automatic Vehicle Locator (AVL) and Loran C signals in the Gulf. Another achievement was the adoption of the Community Policing programme.

The Dubai Police is considered the most successful and advanced police in the regions because it implements and uses the latest technology in the world. Moreover, it applies

the best and most successful applied practices in the world by benchmarking. Additionally, the Dubai Police has won many prizes in quality and excellence from the government of Dubai and other external authorities and organisations, It has also received many first-place prizes in several competitions. These achievements were obtained when the leaders of the Dubai Police realised that they have to achieve the best in the world by using the last theories in management and quality and the last advanced technology (Chu & Abdulla, 2014).

The Dubai Police aims to enhance its role in human rights protection and freedom of all UAE residents in line with The Dubai Police 2015 strategy. Therefore, the Dubai Police has established a new department called the Human Rights Department that serves the community, protects their rights, and cares for their benefits by simplifying the procedures in receiving complaints and offering proper solutions. Furthermore, the UAE is the first Arab country to establish and enact a law on human trafficking based on Islamic and Arab values. The Dubai Police are engaged in forming the common Arab strategy to fight human trafficking. The Dubai Police was also the first department in the UAE to develop its electronic services, where it has set up its website and offers e-services even before the launch portal of the Dubai e-government (Sethi & Sethi, 2008).

The Dubai Police's Strategy

Policy: Policies and principles that govern the development of the strategic plan of the Dubai Police are (The Dubai Police, 2018):

Policies and principles that governed the development of the strategic plan of Dubai Police:

Dubai's Security is an integral part of the security of the United Arab Emirates.

Security is an acquired right of every citizen, resident and visitor.

Law is the arbitrator in dealing with each wrongdoer to the state or to any human being.

Citizens given the utmost priority as to recruitment and training.

Vision: Police Pioneering for a safe city.

Mission: We strive to make Dubai the safest and most secured city, through providing innovative smart services, global institutional excellence and professional development in alignment with modern technology utilized in an environment that promotes innovation and creativity aiming for community happiness.

Values: Transparency; Cooperation; Justice; Professionalism and Team Spirit.

Strategic goals: The Dubai Police has three strategic directions, each of which has strategic goals as follows:

Table a
Strategic Goals of Dubai Police

Strategic Directions	Strategic Goals
Society Happiness	Safety and Security Enrichment.
	Confidence in Police.
	Community Happiness.
Secure City	Safekeeping and Protection.
	Crises and Disaster Management.
	Crime Reduction Rate.
	Responding to Emergency Situations.
	Road Fatalities Reduction.
Innovation in Organization Capabilities	Managing the Human capital effectively and Efficiently.
	Managing the physical resources effectively and efficiently.
	Managing the Technical Resources effectively and efficiently.

Enhance institutional performance effectively and efficiently.

Commitments and Pledges:

- The Dubai Police pledges to answer your 999 calls within ten seconds.
- The Dubai Police pledges to arrive at urgent incidents within the specified time.
- The Dubai Police pledges to have a police officer in the following situations:
 - Disturbing reports.
 - Incidents of fatalities.
 - Critical casualties.
 - Strikes and riots.
 - Disasters and crises.
- The Dubai Police pledges to provide victims of crime on the preliminary status of cases within seven working days.
- The Dubai Police pledges to be transparent in publishing facts and information in appropriate time unless public benefit requires otherwise.
- The Dubai Police pledges to reply to your correspondences within five working days.
- The Dubai Police pledges to provide services to customers in a duration that does not exceed 30 minutes at customer happiness centres at police departments and stations.

- The Dubai Police pledges to respond to your electronic inquiries within two working days.
- The Dubai Police pledges to provide state-of-art highly efficient services aiming for customer happiness.

The Dubai Police's Organisational Structure

The Dubai Police consists of a unique hierarchy that has general departments and police stations. Each of these general departments contains of sub-departments, and each of police station contains sections. These general departments have unique tasks, objectives and responsibilities that are different from each other.

a) General Department of Administrative Affairs

The main goal of the General Department of Administrative Affairs is to link the General Headquarters of the Dubai Police with other departments and police stations in the Dubai Police internally and externally with the General Headquarters and federal ministries, the private sector, foreign bodies, and local departments (Abdulla, 2009). This department is also concerned with all incoming and outgoing transactions such as letters and messages, supervises knowledge projects and deploy them in the organisation, and meets requests for treatment of employees abroad.

b) General Department of Airports Security

Dubai is considered a centre and destination for most international airlines. It has three international airports that receive airlines from different countries. This development in Dubai airports enforces the Dubai Police to establish a special department that takes care of them. The General Department of Airports Security has more than 6500

employees working 24 hours to provide security inside the airports (The Dubai Police Annual report, 2015). It is responsible for inspecting aeroplanes and travellers. They also help travellers in the case of lost luggage. Moreover, this department provides training to its employees to enable them to deal with the newest cases and situation of inspections.

c) General Department of Criminal Investigation

The Criminal Investigation Department represents the backbone of security work in the Dubai Police. It is the front desk of other departments that deal directly with people in Dubai and supervise police stations. It aims to excel in spreading security and stability in the society. In other words, its role is to control crime in all forms by developing and employing ways to prevent them for the sake of social stability. It deals with all kinds of crimes such as daily crimes (quarrels, defamation, swearing), crimes that are dangerous (murder, robbery, rape, armed), and organised crimes (drug, money laundry, trafficking, wanted criminal). It also meets social services (lost and found, licenses of all kinds, certificate of good conduct), employs scientific evidence (forensic medicine, documents, fingerprints), and uses and develops crime prevention methods (follow-up, guidance, statistical projections, directives).

d) General Department of Punitive and Correctional Establishments

The General Department of Punitive and Correctional Establishments deals with convicted felons to receive criminal punishment, their reform, and remedy. The main responsibilities of the department are to implement the judgments issued by the competent courts and preparing and implementing plans and programmes for the rehabilitation of inmates of penal and correctional institutions.

e) General Department of Traffic

The General Department of Traffic is one of the most important departments in the Dubai Police. Its main responsibility is to provide police services to the community such as instructions pertaining to traffic, enforcement of law and regulations, traffic road and flow control, and increasing traffic control to reduce traffic accidents. For all these purposes, the traffic department employs up-to-date systems and technologies and servicing policies.

f) General Department of Anti Narcotic

The General Department of Anti Narcotic was established in the beginning under the Criminal Investigation Department. The Dubai Police' decision-makers realised the important role of the Dubai Police in anti-drugs; therefore they established a general department for this purpose. It is responsible for protecting society and its members from drugs, searching for sources of drugs, arresting suppliers of drugs, following up addicted people, and providing society with awareness programmes about drugs and their impact on people, families, and societies.

g) General Department of Operation

The General Department of Operation is considered the heart of the Dubai Police. It has different departments that deal around-the-clock with society such as controlling room. It also controls all police patrols' electronics and wireless devices whether in a police car, streets, air patrols, or sea patrols. Moreover, it protects significant commercial and community sites by using an advanced security system called an "early warning system". The Operation Department also supports coordination and cooperation with emerging states. In brief, it is the link between all departments and police stations via a controlling room with advanced technology and installations.

h) General Department of Organisations Protective Security and Emergency

The role of this department is to provide security to various organisations and agencies in Dubai, such as international organisations and their offices, and governmental and private buildings, and visitors such as presidents, kings, Sheikhs, ministers, and delegates. It also provides Dubai during demonstrations.

i) General Department of Human Rights in the Dubai Police

As community police, the Dubai Police believes in human rights. Therefore, it established the Human Rights Department in 1995. Its strategy is to preserve the rights of people among those with special needs. Its objectives are also to integrate the most care-needy groups in the society, providing these groups with physiological and social security, developing and enhancing their potential capabilities, and addressing the issues pertinent to them by providing the suitable solutions for those issues.

j) General Department of Finance

The main role of this department is managing accounting and financial transactions and reports of the Dubai Police such as controlling financial inflows and outflows, crediting salaries of employees to their bank accounts, controlling general ledger, following up fixed assets, generating financial reports that can be used by departments or decision makers, paying invoices to suppliers, and controlling the Dubai Police's budget.

k) General Department of Human Resources

Since the beginning, the Dubai Police has adopted an open-ended security strategy aligned with modernisation. This modernisation needs employees to be developed to

align with the development in policing. For this purpose, the Dubai Police has established an HR department to take care of its employees. Every employee in the Dubai Police has a personal file that contains all his or her employment history such as recruitment, retirement or resignation (Abdulla, 2009). The department manages employees in the Dubai Police including recruiting suitable candidates, ensuring that employee welfare and employee relations are positive, ensuring that the working environment is safe for employees, raising awareness of current workplace legislation, and overseeing employee appraisal.

l) General Department of Community Happiness

The role of the Dubai Police is not only to protect people and secure Dubai but also acts as a community organisation. Modern police should follow the new concept of community policing by providing services that can involve people into a police role. The General Department of Community Happiness is a link between the Dubai Police and people in society. It provides services and programmes that help community members to act with the Dubai Police as a security organisation that takes care of their security. The department has different sub-departments and sections such as an officer club, the Dubai Police's museum, library, and international training. Moreover, it has an annual programme called "Education Security" which focuses on students in schools where trainers from the Dubai Police visit the schools in Dubai weekly to give them talks about the role of security in the society and how to protect themselves.

m) General Department of Services and Supplies

The Services and Supplies Department was established in 1970 to provide a service facility such as supermarkets and clinics. Nowadays, its role is more than that. It now has many sub-departments that focus on providing services and supplies to other

departments. It consists of purchasing department, supplies and warehouse department, maintenance department, engineering department, police clinics, and others. These departments provide services to other department and employees of the Dubai Police. It also has the right to make a contract with suppliers. Moreover, it is responsible for establishing buildings and controlling accommodations.

n) General Department of Artificial Intelligence

The General Department of Artificial Intelligence is considered one of the most recent departments in the Dubai Police to align with the strategy of the Dubai Government to be an e-Government. The General Department of Artificial Intelligence has different roles and tasks such as supervising the transformation of an electronic government, supervising all technical issues such as software, computer, networks, and the Dubai Police's portal. It also provides IT services to other departments by internally developing the e-Services system or securing it externally. It also trains employees to use new equipment and systems.

o) General Department of Excellence and Pioneering

The Dubai Police has realised early the important role of TQM in public organisations. It was the first department that implements TQM. The role of this department is to promote awareness of TQM among employees. It is also responsible for benchmarking, best practices, participating in excellence awards, evaluating institutional performance, Six Sigma, strategic planning, and other roles.

p) The Dubai Police Academy

The Dubai Police Academy was founded in 1987 at the Dubai Police College. The Academy has different colleges and grants many certificates such as diploma, BA,

masters and PhD. It is also responsible for training new military employees such as officer candidates, constables, and those from other departments such as civil defence, immigration department, and other security companies.

q) Future Foresight and Decision-Making Support Centre

The Future Foresight and Decision Making Support Centre was opened in December 1990 to serve as a central information and decision support system in the Dubai Police. It aims to provide specialised studies and research and support and develop security policies.

r) General Department of Training

The General Department of Training is responsible for studying and analysing the needs and requirements of the police. It provides training courses, workshops and conferences to all employees of the Dubai Police. It also analyses the effectiveness of the training programmes offered.

s) Headquarters Regulatory Office

The Headquarters Regulatory Office contains six sub-departments responsible for transmitting orders, decisions and instructions issued by the commander to all members of the Dubai Police.

t) General Department of Transport and Rescue

The main role of this department is to conduct rescue operations such as aircraft crashes, natural disasters, weather fluctuations, building collapses and other emergency and daily accidents. The other role is to provide and supervise transportation to all employees in the Dubai Police.

u) Police Stations

The Dubai Police has eleven police stations under the assistant command for criminal investigation. These police stations are the front office that deals with people in society in Dubai. Their role is to receive reports and notification from people. They also deal with all issues under their controlling area such as controlling roads, investigating crimes, and catching and following up wanted criminals. The police stations are: Al Muraqabat Police Station, Bur Dubai Police Station, Al Rifa'a Police Station, Naif Police Station, Al Qusais Police Station, Al Rashidya Police Station, Hatta Police Station, Ports Police Station, Jabal Ali Police Station, Al Barshaa Police Station, and Nad Alsheba Police Station.



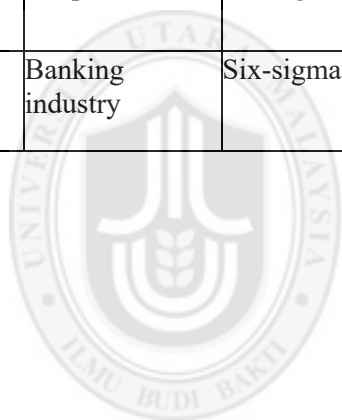
APPENDIX B-1
STUDIES OF SIX SIGMA AND ORGANIZATIONAL PERFORMANCE

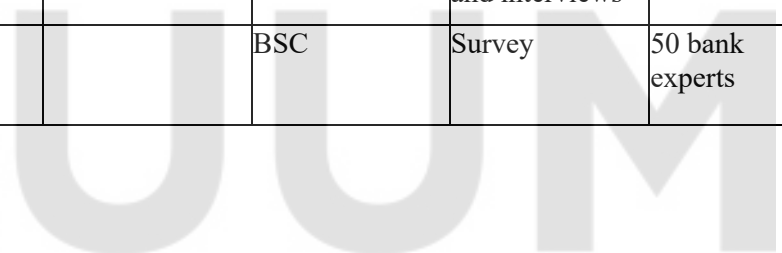
Author	Context		Variables			Methodology		Analysis Techniques	
	Country	Industry	IVs	Intervening Variables	DV	Res. design	Population	Unit of analysis	Technique
Hwang et al. (2017).	South Korea	General	Structured methods	Exploitation and exploration	Performance	Questionnaire	255	Organization	SEM
Gunawan and Karimah (2017).	Indonesia	Manufacturing companies	Six Sigma Criteria		Performance of accounting system	Questionnaire	80	Individual	Regression
Kumar et al. (2009)	UK	Manufacturing SMEs	Six Sigma		Organizational performance	Questionnaire	500	Organization	Descriptive analysis (mean)
Swink and Jacobs (2012).	General	Manufacture industries	Six Sigma		Operating performance	Using an event study methodology	200	Organization	(median)
Shah et al. (2008).	United States	Manufacturing	Six Sigma	Lean practices	Firm performance	Survey	2511	Organization	regression

Zu et al. (2008).	United States	Manufacturing plants	Top management Support Six Sigma	Quality information	Quality performance Business performance	Survey	226	Organization	Correlation and regression
Braunscheidel et al. (2011).	Anonymous	Manufacturing industries	Six sigma adoption	Six sigma implementation	Performance improvements	Case study (interviews)	7	Organization	Qualitative
Linderman et al. (2006).	None	High-tech manufacturing firm	Goals in improvement teams	Six Sigma	Performance	Questionnaire	One company (1500 projects) Black belt	Individual	Correlation and regression
Sin et al. (2015).	Malaysia	Manufacturing firms	Knowledge	Six Sigma Project Success	Organizational Performance	Survey	364	Organization	Correlation and regression
Mustafa and Jamaluddin, (2017)	Malaysia	manufacturing industry	Six Sigma		Organizational performance	Questionnaire	219	Organization	Correlation and regression
Patyal and Koilakuntla, (2017)	India	manufacturing organizations	TQM Six Sigma		Quality performance Business performance	Questionnaire	262	Organizational	Correlation and regression

Gutierrez Gutiérrez, Lloréns-Montes, and Bustinza Sánchez (2009).	European Countries	Manufacturing & services firms	Teamwork statistical process control in Six Sigma	Shared vision	Organizational Performance	Questionnaire	237 firms	Organization	Regression
Ali et al. (2016).	Malaysia	Manufacturing companies	Lean Six Sigma	Operational performance	Business performance: a. Financial performance b. Non-financial performance	Questionnaire	360	Individual	regression
Uluskan, et al. (2017).	United States	Textile and apparel industry	Process Management Employee relationship management Top management	Six Sigma Customer relationship management	Performance	Survey	115	Organization	SEM
Habidin and Yusof (2012).	Malaysia	Automotive Industry	Lean Six Sigma. Strategic control system	Moderator: ISO 14001	organizational performance	Survey	252	Organization	Regression

Jacobs et al. (2015).	General	Firms adopted Six Sigma	Six Sigma		Performance	Using an event study methodology	214	Organization	Regression
Ozkan et al. (2017).	General	Fortune 500 companies	Six Sigma		Operating performance	Collect data from reports	108	Organizational	Descriptive
Shafer and Moeller (2012).	General	Overall industry	Six Sigma		Corporate performance	Using an event study methodology	400	Organization	Descriptive
Hilton et al. (2008).	Australia	Hospitals	Six Sigma		Performance.	Questionnaires and interviews	17 hospitals	Organization	Correlation
Nayeri and Rostami (2016).	Iran	Banking industry	Six-sigma		BSC	Survey	50 bank experts	Organization	SEM



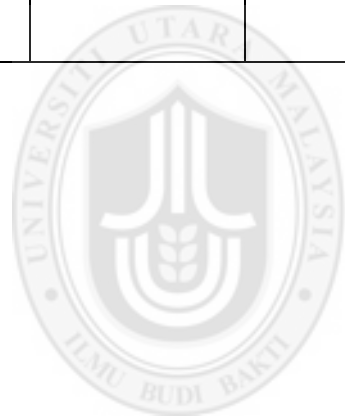

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APPENDIX B-2
STUDIES OF KAIZEN AND ORGANIZATIONAL PERFORMANCE

Author	Context		Variables			Methodology		Analysis Techniques	
	Country	Industry	IVs	Intervening Variables	DV	Res. design	Population	Unit of analysis	Technique
Zarinah et al. (2017).	Malaysia	Manufacturing firms	Lean production	Moderator: leadership style	Business performance	questionnaires	44	Organization	Correlation and Regression
Asaad et al. (2015).	Malaysia	Malaysian Automotive Company	5S Kaizen		Organizational performance	questionnaire	63 Automotive companies	Organization	Rasch model
Rahman et al. (2010).	Thailand	manufacturing firms	Lean		Operational performance	Questionnaire	187 companies	Organization	multiple regression
Anh et al. (2015).	Vietnam	Manufacturing companies	Kaizen Practices		Quality performance	Questionnaire	124 companies	Individual	Regression
Yasar et al. (2017).	Turkey	Manufacturing industry	Innovation	Continuous improvement	Financial performance	Questionnaire	384 manufacturing firms		Correlation and regression

Zhou (2016).	United States	SMEs	Lean tools		Performance	questionnaire	200 SMEs	Organization	A hierarchical cluster analysis
Hofer et al. (2012).	general	Operations, production, supply chain, logistics, and purchasing managers and executives	Lean Production Bundles	Inventory Leanness (moderator)	Financial Performance	Survey and secondary data	4288 APICS members	Organization	Correlation and COMPUSTAT
Fullerton et al. (2003).	United States	Manufacturing firms	Lean production implementation		Profitability, cash flow margin, ROA	Questionnaire and secondary data	253 firm	Organization	Regression and COMPUSTAT
Yang et al. (2011).	International	Manufacturing firms	Lean manufacturing	Mediator: Environmental Management Practices	Market Performance Environmental Performance Financial Performance	Survey	309 international manufacturing firms	Organization	SEM
Shah et al. (2017).	unknown	Food and Beverage Industries	Lean Practices		Organizational performance	Questionnaires and interview	Two companies	Organization	Descriptive analysis

Sajan et al. (2017).	India	Manufacturing SMEs	Lean practices		sustainability performances	Survey	252 manufacturing SMEs	Organization	SEM
Zailani et al. (2015).	Malaysia	Manufacturing industry	Kaizen		Organizational capabilities	Qualitative methodology through a semi-structured interview	Two organizations		



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APPENDIX B-3
STUDIES OF BENCHMARKING AND ORGANIZATIONAL PERFORMANCE

Author	Context		Variables			Methodology		Analysis Techniques	
	Country	Industry	IVs	Intervening Variables	DV	Res. design	Population	Unit of analysis	Technique
Zoakah et al., (2017).	Nigeria	Foods and beverage	Benchmarking		Financial Performance		One firm	Organization	Regression
Abazeed (2017).	Jordan	Industrial Companies	Benchmarking Culture		Operational Performance	Questionnaire	50 industrial companies 315 questionnaires	Individual	Regression
Kariuki and Ochiri (2017).	Kenya	Githunguri Dairy Cooperative Society	Human Resource Planning Mentoring Programs Benchmarking Programs		Organizational Productivity	Questionnaire	165 senior and middle level managers	Organizational	Regression

			Strategic Training Programs						
Salam and Smadi (2016).	Thailand	Consumer goods (FMCG) industry	Benchmarking Standardization	Purchasing Performance (mediator)	Business Performance	Questionnaire	583 purchasing executives and managers	Organizational	SEM
Mehralian et al. (2017)	Iran	Pharmaceutical distribution companies	TQM (13 dimensions including benchmarking)		BSC	Questionnaire	30 companies	Organizational	SEM
Carr and Smeltzer (1999).	general	National Association of Purchasing Management members	Benchmarking		Firm Performance Strategic Purchasing	Survey	2,260 members	Organizational	Correlation and regression
Drew (1997).	North American	Firms (general)	Benchmarking		Performance	Questionnaire	825 managers	Organization	Descriptive analysis
Sawasdiraksa, (2015).	Thailand	Food and beverage industry	benchmarking, standardization, and purchasing		Business performance	Survey	260	Organization	SEM
Voss et al. (1997).	European countries	Manufactures companies	Benchmarking		Operational and business performance	Structured interviews	660 planet sites	Organization	Regression

Sanchez-Rodriguez et al. (2003).	Spain	Manufacturing companies in Spain.	Benchmarking		Purchasing performance business performance	Questionnaire	1,182 purchasing managers	Organization	SEM
Attiany (2014).	Jordan	Jordanian industrial companies	Benchmarking		Competitive advantage	Questionnaire	228 managers	Organization	Regression
M'itonga (2017).	Kenya	Bamburi Cement Limited	Benchmarking Levels	Politics, Culture, Government legislation and regulations	Organization Development: (• Active support of senior team in OD activities • Consistent levels of teams • Return on investments • Awareness of OD values)	Questionnaire	500 employees of Bamburi Cement Limited,	Organization	Regression
Attiany (2009)	Jordan	Jordanian pharmaceutical firms	benchmarking		Institutional performance	Questionnaire	228	Organization	regression
Hashim et al. (2012a).	Malaysia	Local authorities	Benchmarking Process		Organizational Performance	Structured interviews	35 local authorities	Organization	correlation

Kerandi et al. (2014).	Kenya	Commercial Banks	Benchmarking Process		Organizational Performance	Semi-structured questionnaire	50 respondents of 25 banks	Organization	Correlation and regression
Jarrar and Zairi (2001).	UK	General	Benchmarking		Competitive advantage	Questionnaire	227 organizations	Organization	Descriptive analysis
Nyaoga et al. (2013).	Kenya	Public secondary schools in Nakuru Municipality	Benchmarking	Politics culture (Moderator)	Performance	Survey	152 respondents	Organization	Correlation
Maiga and Jacobs (2004).	United States	Manufacturing plants	Benchmarking	Control variables: Size Industry	Organizational Performance	Questionnaire	157	Organization	Correlation
Parast and Adams (2012).	Countries in the Middle East	Petroleum industry	Benchmarking Quality Citizenship		Internal quality results External quality results	Survey	61 companies	Organization	Correlation and regression

APPENDIX B-4
STUDIES OF INNOVATION CULTURE AND ORGANIZATIONAL PERFORMANCE

Author	Context		Variables			Methodology		Analysis Techniques	
	Country	Industry	IVs	Intervening Variables	DV	Res. design	Population	Unit of analysis	Technique
Lee et al (2017a).	India	Software organizations	Pro-innovation culture	Managerial ambidexterity	Performance outcomes	Questionnaire	416	Organization	Regression
Anderson et al. (2012).	Tunis	Tunisian small ICT companies	Innovation culture		Economic performance	Questionnaire	300 ICT firms	Organization	Regression
De Brentani and Kleinschmidt (2004).	North American	business to-business firms	Innovation culture		Performance	Survey	252 firms	Organization	Correlation
De Brentani, (2001).	Canada	business services	Company-related factors market-related factors product-related success factors		Incremental innovations Discontinuous innovations	Questionnaire	184 firms	Organization	Correlation and regression

			new product process factors						
Wei et al. (2012).	China	multinational company	Innovation culture	organizational transformational capability	Creativity and innovation performance	Questionnaire	280	Organization	Regression
Kuo and Tsai (2017).	General	Large steel company	Bureaucratic culture Innovative culture Supportive culture	Management maturity	Organizational performance	Questionnaire	9000 employees	Organization	Regression
Stock et al. (2013).	United States	Electronics, machinery, services, software/IT, and utilities	Innovation-oriented Cultural Values Innovation-oriented Cultural Norms Innovation-oriented Cultural Artifacts	Moderators: Market Dynamism Technological Turbulence Mediator: Product Program Innovativeness	Business Performance	Survey	1000 managers	Organization	SEM
Zhang and Huang (2010).	China	SMEs	Innovation culture	Transformational capabilities	Transformational performance	Questionnaire	275 SMEs	Organization	Regression

Naranjo-Valencia et al. (2016).	Spain	Industrial companies	Organizational culture innovation		Performance	Questionnaire	1600 companies.	Organization	Correlation and regression
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APPENDIX C-1
SIX SIGMA DIMENSIONS IN PERVIOUS STUDIES

Six Sigma Dimensions	Source	Context
<ul style="list-style-type: none"> • Top management support • Customer relationship • Supplier relationship • Workforce management • Quality information • Product/service design • Process management • Six Sigma role structure • Six Sigma structured improvement procedure • Six Sigma focus on metrics 	Ngo (2010)	Manufacturing firms in the New Zealand context
<ul style="list-style-type: none"> • Linking six sigma to business strategy • Customer focus • Project management skills • Management commitment and involvement • Organisational infrastructure • Understanding of six sigma methodology • Project selection and prioritisation 	Antony et al (2007)	UK service sector

<ul style="list-style-type: none"> • Integration of six sigma with financial accountability • Management of cultural change • Training and education • Project tracking and reviews • Incentive program • Company-wide commitment 		
<ul style="list-style-type: none"> • Leadership • Structured improvement procedure • Quality information and analysis • Supplier relationship • Just in time • Customer focus • Focus in metric 	<p>Habidin and Yusof (2013)</p>	<p>Malaysian automotive industry</p>
<ul style="list-style-type: none"> • Leadership • Structured improvement procedure • Quality information and analysis • Supplier relationship • Just in time • Customer focus • Focus in metric 	<p>Habidin et al. (2016)</p>	<p>Malaysian automotive industry</p>

<ul style="list-style-type: none"> • Top management support • Customer relationship • Supplier relationship • Workforce management • Quality information • Product/service design • Process management • Six Sigma role structure • Six Sigma structured improvement procedure • Six Sigma focus on metrics 	<p>Zu et al. (2010).</p>	<p>US manufacturing plants</p>
<ul style="list-style-type: none"> • Six Sigma role structure • Six Sigma structured improvement procedure • Six Sigma focus on metrics 	<p>Zu et al. (2008)</p>	<p>US manufacturing plants</p>
<ul style="list-style-type: none"> • Leadership • Costumer focus • Structured improvement procedure • Focus in metrics 	<p>Khaidir et al. (2013)</p>	<p>Malaysian Healthcare Industry</p>
<ul style="list-style-type: none"> • Management involvement and commitment • Cultural change • Communication 	<p>Brun (2011)</p>	<p>Italian companies</p>

<ul style="list-style-type: none"> • Organizational infrastructure and culture • Education and training • Linking six sigma to business strategy • Linking six sigma to customer • Linking six sigma to human resources • Linking six sigma to suppliers • Understanding tools and techniques within six sigma • Project management skills • Project prioritization and selection 		
<ul style="list-style-type: none"> • Top Management Support • Six Sigma Role Structure • Six Sigma Focus on Metrics • Six Sigma Improvement Procedure 	<p>Shafer and Moeller (2012).</p>	<p>General</p>
<ul style="list-style-type: none"> • Top management commitment • Education and training • Cultural change • Customer focus • Clear performance metrics • Attaching success to financial benefits • Organizational understanding of work processes 	<p>Chakrabarty and Chuan (2007)</p>	<p>Singapore service industries</p>

<ul style="list-style-type: none"> • Information utilization • Standardization • Promotion • CEO's will • Communication • Training • Policy 	<p>Choi et al. (2012)</p>	<p>Samsung company</p>
<ul style="list-style-type: none"> • Top management support and commitment • Six Sigma role structure • Information & data system • Six Sigma structured improvement procedure • Six Sigma focus on metrics 	<p>He et al. (2017)</p>	<p>Companies in China</p>
<ul style="list-style-type: none"> • Senior Management Commitment and Involvement, • Striving for Higher Quality Performance, • Six Sigma Team Management System, • Customer Focus, • Internal Quality System 	<p>Or (2008).</p>	<p>Manufacturing company</p>
<ul style="list-style-type: none"> • Management involvement and commitment • Cultural change • Communication 	<p>Coronado and Antony (2002)</p>	<p>General</p>

<ul style="list-style-type: none"> • Organization infrastructure • Training • Linking Six Sigma to business strategy • Linking Six Sigma to customers • Linking Six Sigma to human resources • Linking Six Sigma to suppliers • Understanding tools and techniques within Six Sigma • Project management skills • Project prioritization and selection 		
<ul style="list-style-type: none"> • Quantified functional impact • Continued top management support and enthusiasm • The emphasis on a quantitative and disciplined approach • The value placed on understanding and satisfying customer needs • Combining the right projects, the right people, and the right tools 	<p>Hahn, Hill, Hoerl, and Zinkgraf (1999).</p>	<p>Conceptual framework</p>
<ul style="list-style-type: none"> • Strong proactive support with required resources provided by top management • Acceptance and implementation of Six Sigma's basic disciplines by employees 	<p>Yun and Chua (2002)</p>	<p>Samsung corporation</p>

<ul style="list-style-type: none"> • Linkage with all innovative and infrastructure activities • Accurate and fair evaluation of all successful Six Sigma projects with meaningful recognition and rewards for employees 		
<ul style="list-style-type: none"> • Management commitment and visible support • Treatment of Six Sigma as a holistic concept • Investment of adequate resources • Focus on results • Customer orientation • Follow-up and communication of success stories • Focus on training and its content • Adaptation to an organization's situation and needs • Development of strategy to introduce Six Sigma • Prioritization and selection of projects • Development of uniform language and terminology • Responsiveness to external influences. 	<p>Sandholm and Sorqvist (2002)</p>	<p>Conceptual framework</p>

APPENDIX C-2
KAIZEN DIMENSIONS IN PERVIOUS STUDIES

Kaizen Dimensions	Source	Context
<ul style="list-style-type: none"> • Management Support • Goal Clarity • Goal Difficulty • Tool Quality • Action Orientation • Team Autonomy • Event Planning Process • Work Area Routineness • Team Leader Experience • Functional Heterogeneity • Tool Appropriateness • Team Kaizen Experience • Internal Processes • Affective Commitment to Change 	Farris (2006)	Manufacturing organizations
<ul style="list-style-type: none"> • Management Support • Goal Clarity • Goal Difficulty • Work Area Routineness 	Glover et al. (2011)	Manufacturing organizations

<ul style="list-style-type: none"> • Learning and Stewardship • Experimentation and Continuous Improvement • Institutionalizing Change • Improvement Culture • Performance Review • Avoiding Blame • Accepting Changes • Work Area Attitude and Commitment 		
<ul style="list-style-type: none"> • Training and education • Communication process • Documentation and evaluation • Workers integration and award • Management commitment • Costumer focus 	<p>Garcia, Rivera, and Iniesta (2013)</p>	<p>Manufacturing industries</p>
<ul style="list-style-type: none"> • Application of methodologies to understand customer's voice, • Resistance to change, • Consistent approach to improvement activities and development of structures to stop the bugs, • Make operating practices, • Establishment of long-term goals, 	<p>Landa (2009)</p>	

<ul style="list-style-type: none"> • Shaping a learning organization • Focus on development of critical processes and quality management systems 		
<ul style="list-style-type: none"> • Impact on work area • Impact on participant • Understand kaizen need 	<p>Norazlan, Habidin, Roslan and Zainudin (2014).</p>	<p>Malaysian Health Industry</p>
<ul style="list-style-type: none"> • Self-contained short-term intervention (typically three to five days), with a clearly defined, finite life • Focused on part of a specific value stream • Low capital intervention. • Team based, comprised of employees from targeted work area and support function • Action oriented • Goals are measurable • Designed to create a cycle continuous improvement 	<p>Melnyk et al. (1998)</p>	<p>American firms</p>
<ul style="list-style-type: none"> • Participation in decision making • Perception of communication • Training and education • Respect for top management • Employee involvement • Perceived quality performance 	<p>Venkataiah and Sagi (2012)</p>	<p>Indian Automobile Industry</p>

<ul style="list-style-type: none"> • Resource availability • Recognition of need for change • Culture that support change • Kaizen program champion quality • Team leader quality • Management support • Employee turnover • Communication quality • Measurement system alignment • Ability to financially justify even 	<p>Rich and Bateman (2003)</p>	<p>British automative manufacturing</p>
<ul style="list-style-type: none"> • Employee involvement • Job security • Training • Employee needs surveys • Standard operating procedures (SOPs) Follow-up reviews • Time for completion of action items • Strategic alignment • Knowledge sharing 	<p>Patil (2003)</p>	<p>Manufacturing organization</p>
<ul style="list-style-type: none"> • Attitude • Impact on work area • Impact on participant 	<p>Doolen et al. (2008)</p>	<p>Supplier and manufacturer comapany</p>

<ul style="list-style-type: none"> • Skill • Understanding need for change • Understanding need for Kaizen 		
<ul style="list-style-type: none"> • Follow-up Activities • Working Area Impact • Employee Skill and Effort 	Hashim et al. (2012b)	Malaysian automotive industry
<ul style="list-style-type: none"> • Experimentation and continuous improvement • Learning and stewardship • Institutionalizing change • Avoiding blame • Improvement culture • Performance review • Accepting changes • Impact on Area Post Implementation 	Glover et al. (2015).	Manufacturing organisations.

APPENDIX C-3
INNOVATION CULTURE DIMENSIONS IN PERVIOUS
STUDIES

Construct studied	Dimensions	Author	Context
Innovation culture	<ul style="list-style-type: none"> • Developing innovation Facilitating employees' innovative behaviours • The level of organizational culture favourable to exploring new opportunities 	Sattayaraksa and Boon (2016).	Manufacturing firms of five industries in Thailand
Innovation culture	<ul style="list-style-type: none"> • My organization promotes creativity, innovation and/or the development of new ideas, as cultural values. • My organization encourages experimentation and innovation in order to improve work processes. • A common system of values, beliefs and objectives exists in my organization, directed towards innovation. • In the last three years, the number of product innovations developed by my organization is higher than my competitors'. • The percentage of sales with respect to new products, on the 	Martin-de Castro et al. (2013)	High and medium-high technological manufacturing firms

	<p>total of sales, is higher than the one of my competitors.</p> <ul style="list-style-type: none"> • In the last 3 years, the number of new products with respect to my product portfolio is higher than the one of my competitors. 		
Innovation culture	<ul style="list-style-type: none"> • Market orientation • Collaborative sharing • Change consciousness • Risk-taking these six dimensions • Leading practice • Decision-making involvement 	Wei et al. (2012).	SMEs in China
Innovation culture	<ul style="list-style-type: none"> • Market orientation • Value orientation • Creativity and empowerment • Innovation propensity 	Dobni (2008)	Financial services industry
Innovation culture	<ul style="list-style-type: none"> • Strategy • Communication • Structure • Behaviors that encourage innovation • Support mechanisms 	Padilha and Gomes (2016)	Textile industry

Innovation culture	<ul style="list-style-type: none"> • Strategy • Communication • Structure • Behaviors that encourage innovation • Support mechanisms 	Martins and Terblanch (2003a).	Literature study
Innovation culture	<ul style="list-style-type: none"> • Power sharing • People and career development • Participative decision making • Support and collaboration 	Hurley (1995).	R &D agency
Innovation culture	<ul style="list-style-type: none"> • Encouraging creativity • Being receptive to new ideas • Decentralising decision-making • Encouraging open communication 	Deshpande et al. (1993) Scaling by O'Cass & Ngo (2007).	General
Innovation culture	<ul style="list-style-type: none"> • Encouraging new ideas • Creating inter-departmental teams • Decentralization of decision-making 	Olmos-Peñuela, García-Granero, Castro-Martínez, and D'Este (2017).	SMEs
Knowledge-cantered culture	<ul style="list-style-type: none"> • There has been a common language to support knowledge exchange and sharing between employees and departments. 	Donate and Guadamillas (2011)	Spanish companies

	<ul style="list-style-type: none"> • The employees demonstrate responsible behavior and a high learning disposition. • An effort is made to inform employees that mistakes are a learning consequence and are tolerated up to a certain limit. • An effort is made to encourage employees to experiment and implement new ideas in the working day. • Culture is based on confidence and openness. • All organizational members perceive the same purpose and feel bound to it. 		
<p>Innovativeness innovative culture</p>	<ul style="list-style-type: none"> • Innovation proposals are welcomed in the organization. • Management promotes and supports innovative ideas, experimentation and creative processes. • Innovation is not perceived as too risky and is not resisted. • People are not penalized for new ideas that do not work. • Innovation is supported to cope with competition. 	<p>Leticia Santos-Vijande, González-Mieres & Angel Lopez-Sanchez (2013).</p>	<p>Spanish KIBS</p>

	<ul style="list-style-type: none"> • Management actively seeks innovative ideas. 		
Determinants of organizational culture that influence creativity and innovation	<ul style="list-style-type: none"> • Structure • Conflict handling Communication • Freedom • Flexibility • Autonomy • Information technology • Decision making • Open communication • Cooperative teams and group interaction • Support mechanisms • Behavior that encourages innovation • Empowerment • Reward and recognition • Risk taking • Availability of resources • Continuous learning culture • Creative people • Mistake handling • Idea generating 	Martins and Terblanche (2003b)	Literature review

	<ul style="list-style-type: none"> • Competitiveness • Support for change • Time 		
Culture characteristics supporting innovation	<ul style="list-style-type: none"> • Learning and development • Market focus • Status differentials • Support and collaboration • Participative decision making • Power sharing • Tolerance for conflict and risk • Communication 	Hurley and Hult (1998)	Large agency of the U. S. federal government
Organizational culture as a component of Radical Product Innovation Capability	<ul style="list-style-type: none"> • Customer orientation • Competitor orientation, • Technological orientation • Adhocracy • Learning orientation • Willingness to cannibalize 	Slater, Mohr and Sengupta (2014)	Conceptual framework
Organizational culture that supports innovation	<p><u>Norms for Innovation Examples:</u></p> <p>-expectations of open communication about new ideas and approaches to solving problems</p> <p>-expectations of co-operation and team work in improving new ideas and new</p>	Hogan and Coote (2014)	Law firms

	<p>methods of dealing with work tasks</p> <p>Innovative</p> <p><u>Behaviors Examples:</u></p> <ul style="list-style-type: none"> -solve problems of customers in innovative ways -implement innovative marketing programs -innovate with software and technology <p><u>Values Supporting Innovation</u></p> <p><u>Examples:</u></p> <ul style="list-style-type: none"> -valuing open communication within the firm -valuing co-operation throughout the firm. 		
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APPENDIX D-1

QUESTIONNAIRE ENGLISH VERSION

Dear participant,

First of all, I would like to thank you for participating in this survey on "The Effect of Continuous Improvement Tools on Organizational Performance of the Dubai Police: The Mediating Role of Innovation Culture". This questionnaire contains six sections: Organizational Performance, 6 Sigma, Kaizen, Benchmarking, Innovation Culture, and Demographic Information.

This questionnaire is part of the requirements of the Ph.D. program in Management, Universiti of Utara Malaysia. I would like to ask you to answer the questionnaire according to your experience in this field because your opinion is very important.

This questionnaire will take approximately 5-10 minutes. Please fill in all the requirements by choosing the corresponding number for each statement as you see fit with your conviction.

Thank you and appreciates your participation in this study.

Yours faithfully,

Mohammed Saleh Alosani

Phone: 0555570401

Email: alosani@gmail.com

Section One

In this section, we are interested in your assessment of your section's performance based on BSC. Please read the following statements and circle the number that most accurately reflects your section's performance.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

PF1	Resources are managed efficiently.	1	2	3	4	5
PF2	The funds that are allocated to our section are sufficient.	1	2	3	4	5
PF3	Effective financial control measures are in place.	1	2	3	4	5
PF4	The overall financial performance of our section is good.	1	2	3	4	5
PF5	Our section is always able to meet its financial goals.	1	2	3	4	5
PC6	Our section is able to meet our internal\external client demands.	1	2	3	4	5
PC7	Most of our section's clients are satisfied	1	2	3	4	5
PC8	The time taken to deliver services in our section is quite acceptable.	1	2	3	4	5
PC9	Feedback from our clients is taken seriously.	1	2	3	4	5
PC10	Our section offers quality service.	1	2	3	4	5
PC11	Delivery performance to our clients is good.	1	2	3	4	5
PP12	The number of staffs leaving our section is small.	1	2	3	4	5
PP13	Communication flows easily throughout our section.	1	2	3	4	5
PP14	Programs are implemented speedily.	1	2	3	4	5
PP15	Divisions are not overloaded with activities.	1	2	3	4	5
PP16	Our section relates well with other sections.	1	2	3	4	5
PP17	Our section implements effective strategies.	1	2	3	4	5
PP18	The level of wastage in our section is low.	1	2	3	4	5
PG19	We have the chance to participate in training and section programs.	1	2	3	4	5
PG20	Our section adopts new technology regularly.	1	2	3	4	5
PG21	Innovation is encouraged in our section.	1	2	3	4	5
PG22	There is good teamwork in our section.	1	2	3	4	5

PG23	We have ample opportunities to make independent decisions.	1	2	3	4	5
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Section Two

In this section, we are interested in your SIX SIGMA practices in your section.

Please read the following statement and circle the number that most accurately reflects your opinion on each statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

SR1	We employ a black/green/yellow belt role structure for continuous improvement.	1	2	3	4	5
SR2	We use a black/green/yellow belt role structure to prepare and deploy individual employees for continuous improvement programs.	1	2	3	4	5
SR3	The black/green/yellow belt role structure helps our section to recognize the depth of employees' training and experience.	1	2	3	4	5
SR4	In our section, members of a quality improvement team have their roles and responsibilities specifically identified.	1	2	3	4	5
SR5	Our section uses differentiated training so that employees who have different roles in the black/green/yellow belt role structure (or equivalent structure) can obtain the necessary knowledge and skills to fulfil their job responsibilities.	1	2	3	4	5
SS6	In our section, Six Sigma projects are conducted by following a formalized procedure.	1	2	3	4	5
SS7	We use a structured approach to manage quality improvement activities.	1	2	3	4	5
SS8	We have a formal planning process to decide the major quality improvement projects.	1	2	3	4	5
SS9	We keep records about how each Six Sigma project is conducted.	1	2	3	4	5
SS10	All improvement projects are reviewed regularly during the process.	1	2	3	4	5
SS11	In our section, the service design process follows a formalized procedure.	1	2	3	4	5
SF12	Our section has a comprehensive goal-setting process for quality.	1	2	3	4	5

SF13	Quality goals are clearly communicated to employees in our section.	1	2	3	4	5
SF14	In our section, quality goals are clear and specific.	1	2	3	4	5
SF15	Our section translates customers' needs and expectation into quality goals.	1	2	3	4	5
SF16	In our section, measures for quality performance are connected with the organization's strategic quality goals.	1	2	3	4	5
SF17	Our section systematically uses a set of measures (such as defects per million opportunities, sigma level, process capability indices, defects per unit, and yield) to evaluate process improvements.	1	2	3	4	5
SU18	We understand fully ALL steps of the DMAIC methodology.	1	2	3	4	5
SU19	Our section has adapted with Six Sigma methodology.	1	2	3	4	5
SU20	We use simple tools and techniques during Six Sigma implementation.	1	2	3	4	5

Section Three

In this section, we are interested in your KAIZEN practices in your section. Please read the following statement and circle the number that most accurately reflects your opinion on each statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

KA1	Kaizen activities increase our interest in work.	1	2	3	4	5
KA2	We like being part of continuous improvement activities.	1	2	3	4	5
KA3	Kaizen activities motivate us to perform better.	1	2	3	4	5
KA4	We would like to be a part of Kaizen activities in the future.	1	2	3	4	5
KS5	We can communicate new ideas about improvements to work area as result of our participation in kaizen activities.	1	2	3	4	5
KS6	We have gained new skills as a result of our participation in Kaizen activities.	1	2	3	4	5
KS7	We are comfortable working with others to identify improvement in this work area.	1	2	3	4	5

KU8	We understand how Kaizen can be applied in the work area.	1	2	3	4	5
KU9	We understand the objectives of implementing Kaizen.	1	2	3	4	5
KU10	We understand our role in Kaizen.	1	2	3	4	5
KU11	We understand what Kaizen is.	1	2	3	4	5
KM12	Kaizen activities have the support from senior management.	1	2	3	4	5
KM13	Management has provided enough resources for the Kaizen activities.	1	2	3	4	5
KM14	Management champions the value of Kaizen activities.	1	2	3	4	5
KM15	Management in our section allows employees in the work area to participate in Kaizen activities’.	1	2	3	4	5
KP16	In our section, the team of Kaizen regularly reviews performance data related to Kaizen goals’.	1	2	3	4	5
KP17	In our section, the team of Kaizen conducts regular audits on changes made due to the Kaizen.	1	2	3	4	5
KP18	In our section, the team of Kaizen informs higher-level management of issues with follow-up and sustaining results from the Kaizen.	1	2	3	4	5
KC19	In our section, management accepts the changes made as a result of the Kaizen	1	2	3	4	5
KC20	In our section, employees accept the changes made as a result of the Kaizen.	1	2	3	4	5
KC21	In our section, employees in the work area accepts the changes made as a result of the Kaizen.	1	2	3	4	5

Section Four

In this section, we are interested in your BENCHMARKING practices in your section.

Please read the following statement and circle the number that most accurately reflects your opinion on each statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

BA1	We are open to changes and other new ideas.	1	2	3	4	5
BA2	We have a comprehensive quality program (e.g. Total Quality Management).	1	2	3	4	5

BA3	We conduct internal benchmarking.	1	2	3	4	5
BA4	We truly know and understand our own operations.	1	2	3	4	5
BA5	We are aware that a portfolio of learning opportunities existed.	1	2	3	4	5
BE6	We have a dedicated project steering committee.	1	2	3	4	5
BE7	Employees fully understand the benchmarking project's objectives and benefits.	1	2	3	4	5
BE8	Employees are educated and trained in benchmarking.	1	2	3	4	5
BE9	Employees are willing to participate in the benchmarking projects.	1	2	3	4	5
BB10	We monitor competitors to find out the best pricing industry practices.	1	2	3	4	5
BB11	Benchmarking is our strategy to achieve a better competitive position.	1	2	3	4	5
BB12	In our section, we conduct research to find out the best practices of other local and international organizations.	1	2	3	4	5
BB13	It is always emphasized that benchmarking is our strategy to achieve a better competitive position.	1	2	3	4	5
BP14	We are willing to share results with our benchmarking partners.	1	2	3	4	5
BP15	There is a great understanding of benchmarking process in the section.	1	2	3	4	5
BP16	Benchmarking is formally implemented.	1	2	3	4	5
BP17	The benchmarking process is well planned.	1	2	3	4	5
BP18	The benchmarking process is completely carried out.	1	2	3	4	5

Section Five

In this section, we are interested in INNOVATION CULTURE practices in your section. Please read the following statement and circle the number that most accurately reflects your opinion on each statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

IC1	When we find out something important about a customer or competitor that may affect others in the section, we know what to do with that information.	1	2	3	4	5
IC2	We have a good understanding of the value chain and vital interests concerning our section.	1	2	3	4	5
IC3	We are encouraged to flush out information on what most would consider the “not so obvious” or even obscure.	1	2	3	4	5
IC4	Knowledge generation is strategic in that we have a reliable and valid process that surveys stakeholders on a consistent basis, and that knowledge is used to direct plans.	1	2	3	4	5
IC5	We co-define value with our customers.	1	2	3	4	5
IC6	There is a consensus amongst employees about what creates value for customers/stakeholders.	1	2	3	4	5
IC7	We actively search for new ideas and investigations at all stages of service development.	1	2	3	4	5
IC8	We get the information we need to make value added decisions	1	2	3	4	5
IC9	We understand what systems/processes we must excel at to deliver customers/stakeholders value	1	2	3	4	5
IC10	Innovation in our section is more likely to succeed if employees are allowed to be unique and express this uniqueness in their daily activities.	1	2	3	4	5
IC11	We view uncertainty as opportunity and not as a risk.	1	2	3	4	5
IC12	This section uses out creativity to its benefits, that is, it uses it in a good way.	1	2	3	4	5
IC13	We are given the time/opportunity to develop our creative potential.	1	2	3	4	5
IC14	We are prepared to do things differently if given the chance to do so.	1	2	3	4	5
IC15	Innovation is an underlying culture and not just a word.	1	2	3	4	5
IC16	Our business model is premised on the basis of strategic intent.	1	2	3	4	5
IC17	Our senior managers are able to effectively cascade the innovation message throughout the organization.	1	2	3	4	5
IC18	We have an innovation vision that is aligned with projects, platforms, or initiatives.	1	2	3	4	5
IC19	This management team is diverse in their thinking in that they have different views as to how things should be done.	1	2	3	4	5
IC20	There is a coherent set of innovation goals and objectives that have been articulated.	1	2	3	4	5
IC21	Innovation is a core value in this section.	1	2	3	4	5

Section Six

Sex:	Male <input type="checkbox"/>	Female <input type="checkbox"/>		
Qualification:	Under High School <input type="checkbox"/>	High School <input type="checkbox"/>		
	College Degree <input type="checkbox"/>	Graduate Studies (Master/PhD) <input type="checkbox"/>		
Experiences:	0-5 Years <input type="checkbox"/>	6-10 Years <input type="checkbox"/>	More Than 10 Years <input type="checkbox"/>	
Did you get training in	Six Sigma	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	Kaizen	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
	Benchmarking	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Department's name:				



APPENDIX D-2 QUESTIONNAIRE ARABIC VERSION

عزيزي المشارك،،،

بداية نشكرك على المشاركة في هذه الدراسة الاستقصائية عن " تأثير أدوات التحسين المستمر والثقافة الابتكارية على الأداء في شرطة دبي". يحتوي هذا الاستبيان على ستة أقسام وهي الأداء التنظيمي، 6 سيجماء، كايزن، المقارنة المرجعية، وثقافة الابتكار بالإضافة الى المعلومات الديموغرافية. هذا الاستبيان جزء من متطلبات برنامج الدكتوراه، في الإدارة، جامعة اوتارا ماليزيا. أرجو تفضلكم بالإجابة على الاستبيان وفقاً لخبرتكم في هذا المجال كون رأيكم مهم للغاية. يأخذ الاستبيان من وقتكم الثمين 5-10 دقائق تقريباً. يرجى التكرم بتعبئة جميع المتطلبات، من خلال اختيار الرقم المقابل لكل عبارة حسب ما ترونه متفقاً مع قناعتكم.



شاكراً ومقدراً مشاركتكم في هذه الدراسة البحثية وتفضلوا بقبول فائق التقدير والاحترام

UUM
Universiti Utara Malaysia

محمد صالح العوساني

هاتف رقم: 0555570401

طالب دكتوراه في الادارة

بريد الكتروني: alosani@gmail.com

جامعة اوتارا ماليزيا

القسم الأول

في هذا القسم من الاستبيان نرغب في معرفة رأيك حول أداء وحدتك التنظيمية. الرجاء قراءة العبارات التالية ووضع دائرة حول الرقم الذي يعكس تقييمك لكل عبارة.

5	4	3	2	1
موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة

5	4	3	2	1	
					PF1 يتم إدارة الموارد (البشرية، المادية، المالية) بكفاءة عالية.
					PF2 الميزانية المخصصة لوحدتنا التنظيمية كافية.
					PF3 توجد مؤشرات فعالة لقياس الرقابة المالية.
					PF4 بشكل عام الأداء المالي لوحدتنا التنظيمية جيد.
					PF5 وحدتنا التنظيمية قادرة دائماً على تحقيق أهدافها المالية (مثل: الالتزام ببندود الميزانية، تحقيق وفر مالي، خفض التكاليف... الخ)
					PC6 وحدتنا التنظيمية قادرة على تلبية متطلبات المتعاملين (الداخليين او الخارجيين).
					PC7 معظم المتعاملين (الداخليين او الخارجيين) عن وحدتنا التنظيمية راضون.
					PC8 الوقت المستغرق لتقديم الخدمات للمتعاملين (الداخليين او الخارجيين) في وحدتنا التنظيمية جيد.
					PC9 التغذية الراجعة من متعاملينا (الداخليين او الخارجيين) يتم التعامل معها بجدية.
					PC10 تقدم وحدتنا التنظيمية خدمات ذات جودة عالية.
					PC11 أداء الخدمات المقدمة لمتعاملينا (الداخليين او الخارجيين) جيدة.
					PP12 عدد الموظفين الذين يتركون وحدتنا التنظيمية قليل.
					PP13 الاتصالات والتواصل في جميع أنحاء وحدتنا التنظيمية تحدث بسلاسة.
					PP14 يتم تنفيذ البرامج والمشاريع والمبادرات بسرعة.
					PP15 الشعب الإدارية في وحدتنا التنظيمية غير مثقلة بالأنشطة.
					PP16 وحدتنا التنظيمية ترتبط بشكل جيد مع الوحدات التنظيمية الأخرى.
					PP17 وحدتنا التنظيمية تنفذ استراتيجيات فعالة.
					PP18 مستوى الفاقد (مثل الوقت، الموارد، الجهد...) في وحدتنا التنظيمية منخفض.
					PG19 لدينا فرصة للمشاركة في أنشطة التدريب المختلفة.
					PG20 تتبنى وحدتنا التنظيمية التكنولوجيا الجديدة بشكل دائم.
					PG21 تشجع وحدتنا التنظيمية على الابتكار.
					PG22 هناك فرق عمل جيدة في وحدتنا التنظيمية.
					PG23 لدينا الكثير من الفرص لاتخاذ قرارات مستقلة.

القسم الثاني

في هذا الجزء من الاستبيان نرغب في معرفة رأيك حول ممارسات 6 سيجما في وحدتك التنظيمية. الرجاء قراءة العبارات التالية ووضع دائرة حول الرقم الذي يعكس تقييمك لكل عبارة.

5	4	3	2	1
موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة

5	4	3	2	1	نطبق نظام الأزممة (السوداء، الخضراء، الصفراء) في عملية التحسين المستمر.	SR1
5	4	3	2	1	نستخدم نظام الأزممة (السوداء، الخضراء، الصفراء) لتجهيز وإعداد الموظفين لتنفيذ برامج التحسين المستمر.	SR2
5	4	3	2	1	نظام الأزممة (السوداء، الخضراء، الصفراء) يساعد وحدتنا التنظيمية للتعرف بعمق على مستوى التدريب والخبرة لدى الموظفين.	SR3
5	4	3	2	1	هناك أدوار ومسؤوليات محددة بوضوح لأعضاء فريق التحسين في وحدتنا التنظيمية.	SR4
5	4	3	2	1	تنفذ وحدتنا التنظيمية تدريباً متميزاً بغرض تمكين الموظفين الذين لديهم أدوار مختلفة في نظام الأزممة (السوداء، الخضراء، الصفراء) للحصول على المعرفة والمهارات اللازمة للقيام بمسؤولياتهم الوظيفية.	SR5
5	4	3	2	1	في وحدتنا التنظيمية، يتم تنفيذ مشاريع 6 سيجما من خلال اتباع إجراءات معتمدة وواضحة.	SS6
5	4	3	2	1	نحن نستخدم منهج منظم لإدارة أنشطة تحسين الجودة.	SS7
5	4	3	2	1	لدينا عملية تخطيط معتمدة لتحديد مشاريع التحسين.	SS8
5	4	3	2	1	يتم الاحتفاظ بسجلات موثقة عن مشاريع 6 سيجما المنفذة.	SS9
5	4	3	2	1	تتم مراجعة جميع مشاريع التحسين بانتظام خلال عملية التحسين.	SS10
5	4	3	2	1	عملية تصميم الخدمة في وحدتنا التنظيمية تتبع إجراءات رسمية موثقة ومعتمدة.	SS11
5	4	3	2	1	لدينا منهج لكيفية تحديد أهداف العمليات للوصول إلى الجودة المطلوبة.	SF12
5	4	3	2	1	يتم توعية وإيصال أهداف الجودة الموضوعة بوضوح للموظفين في وحدتنا التنظيمية.	SF13
5	4	3	2	1	أهداف الجودة في وحدتنا التنظيمية واضحة ومحددة.	SF14
5	4	3	2	1	يتم استيعاب احتياجات المتعاملين وتوقعاتهم في أهداف الجودة.	SF15
5	4	3	2	1	ترتبط مؤشرات جودة الأداء في وحدتنا التنظيمية بالأهداف الاستراتيجية للجودة للمؤسسة.	SF16
5	4	3	2	1	تستخدم وحدتنا التنظيمية بشكل منهجي مجموعة من المقاييس (مثل العيوب لكل مليون فرصة، ومستوى سيجما، ومؤشرات قدرة العمليات، وعيوب كل وحدة...) لتقييم عملية التحسين.	SF17
5	4	3	2	1	لدينا معرفة تامة بجميع خطوات منهجية DMAIC	SU18
5	4	3	2	1	وحدتنا التنظيمية تكيفت تماماً مع منهجية 6 سيجما.	SU19
5	4	3	2	1	نستخدم أدوات وتقنيات سهلة وخالية من التعقيد أثناء تنفيذ مشاريع 6 سيجما	SU20

القسم الثالث

في هذا القسم من الاستبيان نرغب في معرفة رأيك ممارسات كايزن في وحدتك التنظيمية. الرجاء قراءة العبارات التالية ووضع دائرة حول الرقم الذي يعكس تقييمك لكل عبارة.

5	4	3	2	1
موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة

5	4	3	2	1	أنشطة كايزن ترفع من مستوى اهتمامنا بالعمل.	KA1
5	4	3	2	1	لدينا الرغبة في أن نكون جزءًا من أنشطة التحسين المستمر.	KA2
5	4	3	2	1	أنشطة كايزن تساعدنا لتقديم أداء أفضل.	KA3
5	4	3	2	1	نرغب في المشاركة بأنشطة كايزن في المستقبل.	KA4
5	4	3	2	1	يمكننا توصيل أفكار جديدة حول التحسينات في مجال العمل كنتيجة لمشاركتنا في أنشطة كايزن.	KS5
5	4	3	2	1	لقد اكتسبنا مهارات جديدة كنتيجة لمشاركتنا في أنشطة كايزن.	KS6
5	4	3	2	1	نشعر بالارتياح للعمل مع الآخرين لتحديد مجالات التحسين في وحدتنا التنظيمية.	KS7
5	4	3	2	1	لدينا الفهم بكيفية تطبيق مشاريع كايزن في مجال العمل.	KU8
5	4	3	2	1	ندرك تماما الهدف من تنفيذ مشاريع كايزن.	KU9
5	4	3	2	1	لدينا الوعي الكافي بأهمية دورنا في مشاريع كايزن.	KU10
5	4	3	2	1	لدينا الوعي بمنهجية كايزن ودورها في عملية التحسين.	KU11
5	4	3	2	1	تحظى مشاريع كايزن بدعم الإدارة العليا.	KM12
5	4	3	2	1	توفر الإدارة الموارد الكافية لتنفيذ مشاريع كايزن.	KM13
5	4	3	2	1	تعترف الإدارة بأهمية وقيمة مشاريع كايزن في عملية التحسين.	KM14
5	4	3	2	1	تسمح الإدارة في وحدتنا التنظيمية للموظفين المعنيين بعملية التحسين بالمشاركة في مشاريع كايزن .	KM15
5	4	3	2	1	يقوم فريق كايزن في وحدتنا التنظيمية بمراجعة بيانات الأداء المتعلقة بأهداف كايزن بانتظام.	KP16
5	4	3	2	1	يقوم فريق كايزن في وحدتنا التنظيمية بإجراء عملية تدقيق منتظمة على التغييرات التي تمت نتيجة تطبيق مشاريع كايزن.	KP17
5	4	3	2	1	يقوم فريق كايزن في وحدتنا التنظيمية بإبلاغ الإدارة العليا بالمشاكل المتعلقة بإجراءات المتابعة والحفاظ على النتائج المتحققة من مشاريع كايزن.	KP18
5	4	3	2	1	في وحدتنا التنظيمية، نتقبل (الإدارة) التغييرات التي تم إجراؤها نتيجة لتنفيذ مشاريع كايزن.	KC19
5	4	3	2	1	في وحدتنا التنظيمية، يتقبل (الموظفين) التغييرات التي تم إجراؤها نتيجة لتنفيذ مشاريع كايزن.	KC20
5	4	3	2	1	في وحدتنا التنظيمية، يتقبل الموظفون (المعنيين في منطقة التحسين) التغييرات التي تم إجراؤها نتيجة لتنفيذ مشاريع كايزن.	KC21

القسم الرابع

في هذا القسم من الاستبيان نرغب في معرفة رأيك ممارسات المقارنات المرجعية في وحدتك التنظيمية. الرجاء قراءة العبارات التالية ووضع دائرة حول الرقم الذي يعكس تقييمك لكل عبارة.

5	4	3	2	1
موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة

5	4	3	2	1	BA1	وحدتنا التنظيمية منفتحة وتتقبل التغييرات والأفكار الجديدة.
5	4	3	2	1	BA2	لدينا برنامج لتطوير الجودة (على سبيل المثال، إدارة الجودة الشاملة).
5	4	3	2	1	BA3	أجرينا العديد من المقارنات المرجعية الداخلية.
5	4	3	2	1	BA4	لدينا المعرفة والفهم الكافي بعملياتنا الإدارية.
5	4	3	2	1	BA5	ندرك وجود مجموعة من فرص التعلم من خلال المقارنة المرجعية.
5	4	3	2	1	BE6	لدينا لجنة مختصة بالإشراف على مشاريع المقارنات المرجعية.
5	4	3	2	1	BE7	لدى الموظفين المعرفة الكافية بأهداف ومزايا المقارنة المرجعية.
5	4	3	2	1	BE8	يتم تعليم وتدريب الموظفين على المقارنة المرجعية.
5	4	3	2	1	BE9	لدى الموظفين الرغبة في المشاركة في مشاريع المقارنات المرجعية.
5	4	3	2	1	BB10	يتم متابعة المنافسين بهدف الحصول على أفضل الممارسات في مجال العمل.
5	4	3	2	1	BB11	المقارنة المرجعية هي استراتيجية للحصول على أفضل موقع ريادي.
5	4	3	2	1	BB12	في وحدتنا التنظيمية يتم إجراء البحث لايجاد أفضل الممارسات المحلية والعالمية.
5	4	3	2	1	BB13	مؤسستنا تؤكد بشكل دائم على ان المقارنة المرجعية هي الاستراتيجية لتحقيق افضل موقع ريادي.
5	4	3	2	1	BP14	ليس لدينا مانع في مشاركة نتائجنا مع شركاؤنا.
5	4	3	2	1	BP15	هناك فهم كافي لعملية المقارنة المرجعية في وحدتنا التنظيمية.
5	4	3	2	1	BP16	يتم تطبيق المقارنة المرجعية بشكل رسمي ومعتمد.
5	4	3	2	1	BP17	عملية المقارنة المرجعية يتم التخطيط لها بشكل جيد.
5	4	3	2	1	BP18	يتم تنفيذ عملية المقارنة المرجعية بشكل كامل في وحدتنا التنظيمية.

القسم الخامس

في هذا القسم من الاستبيان نرغب في معرفة رأيك حول الثقافة الابتكارية في وحدتك التنظيمية. الرجاء قراءة العبارات التالية ووضع دائرة حول الرقم الذي يعكس تقييمك لكل عبارة.

5	4	3	2	1
موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة

5	4	3	2	1	IC1	عندما يتم اكتشاف شيئاً مهماً يتعلق بعمل أو منافس معين، والذي ربما قد يؤثر على وحدتنا التنظيمية، فإننا نعرف ما يجب ان نقوم به تجاه تلك المعلومات.
5	4	3	2	1	IC2	لدينا فهم جيد بالاهتمامات الرئيسية والحيوية المتعلقة بوجدتنا التنظيمية.
5	4	3	2	1	IC3	نشجع على البحث عن المعلومات المتعلقة بالمواضيع غير الواضحة او الغامضة في مجال العمل.
5	4	3	2	1	IC4	توليد المعرفة أمر استراتيجي في وحدتنا الإدارية من حيث أن لدينا عملية موثقة وصحيحة تقوم باستطلاع رأي أصحاب المصلحة على أساس ثابت، وأن تلك المعرفة تستخدم لتوجيه الخطط.
5	4	3	2	1	IC5	نحن نشرك عملائنا في تعريف القيمة المضافة.
5	4	3	2	1	IC6	هناك إجماع بين الموظفين حول ما يخلق القيمة المضافة للمتعاملين/ أصحاب المصلحة.
5	4	3	2	1	IC7	نحن نبحث بجدية عن أفكار وتحقيقات جديدة في جميع مراحل تطوير الخدمات.
5	4	3	2	1	IC8	نحصل على المعلومات التي نحتاجها لاتخاذ قرارات ذات قيمة مضافة
5	4	3	2	1	IC9	لدينا الفهم بماهية الأنظمة/العمليات التي يجب علينا التفوق فيها لتقديم قيمة مضافة للمتعاملين/أصحاب المصلحة.
5	4	3	2	1	IC10	من المرجح أن ينجح الابتكار في قسمنا إذا سمح للموظفين بأن يكونوا متميزين وأن يعبروا عن تميزهم من خلال أنشطتهم اليومية.
5	4	3	2	1	IC11	نحن نعتبر عدم التأكد فرصة وليس خطراً.
5	4	3	2	1	IC12	توظف وحدتنا الإدارية الابتكار لتحقيق اهدافها، أي أنها توظف هذا الابتكار بطريقة جيدة.
5	4	3	2	1	IC13	يتم منحنا الوقت/الفرصة لتطوير إمكاناتنا الإبداعية.
5	4	3	2	1	IC14	نحن مستعدون للقيام بأعمالنا بشكل مختلف إذا أتيحت لنا الفرصة للقيام بذلك.
5	4	3	2	1	IC15	الابتكار هو ثقافة كامنة وليس مجرد كلمة.
5	4	3	2	1	IC16	نموذج الاعمال لدينا يركز على اهداف استراتيجية واضحة.
5	4	3	2	1	IC17	مداؤنا قادرون على توصيل ونشر رسالة الابتكار في المؤسسة.
5	4	3	2	1	IC18	لدينا رؤية ابتكارية تتماشى مع المشاريع والبرامج والمبادرات.
5	4	3	2	1	IC19	يتنوع فريق إدارة هذه المؤسسة في تفكيرهم في أن لديهم وجهات نظر مختلفة حول كيفية القيام بالاعمال.
5	4	3	2	1	IC20	هناك ترابط بين الغاية من الابتكار والاهداف الاستراتيجية للمؤسسة.
5	4	3	2	1	IC21	وحدتنا الإدارية تعتبر الابتكار مصدر قيم و اساسي يتم الارتكاز عليه.

القسم السادس

<input type="checkbox"/> ذكر	<input type="checkbox"/> انثى	الجنس:
<input type="checkbox"/> دون الثانوية	<input type="checkbox"/> ثانوية عامة	المؤهل العلمي:
<input type="checkbox"/> جامعي	<input type="checkbox"/> دراسات عليا	
<input type="checkbox"/> 0-5 سنوات	<input type="checkbox"/> 6-10 سنوات	الخبرة:
هل حصلت على تدريب في:	سنة سيجما	<input type="checkbox"/> نعم <input type="checkbox"/> لا
	كايزن	<input type="checkbox"/> نعم <input type="checkbox"/> لا
	المقارنات المرجعية	<input type="checkbox"/> نعم <input type="checkbox"/> لا
		اسم الإدارة:



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APPENDIX E
TEST OF NON-RESPONDENT BIAS

Group Statistics

Bias		N	Mean	Std. Deviation	Std. Error Mean
Organizational Performance	Early	221	3.9821	0.55635	0.03742
	Late	31	3.9480	0.78200	0.14045
Six Sigma	Early	221	4.0582	0.59153	0.03979
	Late	31	3.9081	0.85558	0.15367
Kaizen	Early	221	3.8458	0.64165	0.04316
	Late	31	3.9263	0.67409	0.12107
Benchmarking	Early	221	4.1999	0.61584	0.04143
	Late	31	4.0484	0.91070	0.16357
Innovation Culture	Early	221	4.0985	0.61859	0.04161
	Late	31	3.9908	0.81236	0.14590

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Organizational Performance	Equal variances assumed	1.101	0.295	-0.671	243	0.503	-0.07437	0.11087	-0.29276	0.14403
	Equal variances not assumed			-0.606	34.025	0.548	-0.07437	0.12265	-0.32361	0.17487
Six Sigma	Equal variances assumed	5.298	0.022	0.446	243	0.656	0.05215	0.11700	-0.17832	0.28262
	Equal variances not assumed			0.360	32.418	0.721	0.05215	0.14490	-0.24285	0.34715
Kaizen	Equal variances assumed	0.039	0.844	-0.638	243	0.524	-0.08001	0.12544	-0.32710	0.16708
	Equal variances not assumed			-0.618	35.287	0.540	-0.08001	0.12943	-0.34269	0.18267
Benchmarking	Equal variances assumed	1.691	0.195	0.738	243	0.461	0.08744	0.11848	-0.14594	0.32082

	Equal variances not assumed			0.601	32.521	0.552	0.08744	0.14552	-0.20878	0.38366
Innovation Culture	Equal variances assumed	0.617	0.433	0.231	243	0.817	0.02677	0.11578	-0.20128	0.25482
	Equal variances not assumed			0.209	34.052	0.835	0.02677	0.12787	-0.23307	0.28661



APPENDIX F
CASE PROCESSING SUMMARY (MISSING VALUES) (BEFORE
REPLACED)

Item	Missing		Item	Missing		Item	Missing	
	N	Percent		N	Percent		N	Percent
PF1	0	0.0%	SF13	1	0.4%	BE7	1	0.4%
PF2	0	0.0%	SF14	2	0.8%	BE8	0	0.0%
PF3	0	0.0%	SF15	2	0.8%	BE9	2	0.8%
PF4	2	0.8%	SF16	3	1.2%	BB10	2	0.8%
PF5	1	0.4%	SF17	4	1.6%	BB11	0	0.0%
PC6	1	0.4%	SU18	7	2.8%	BB12	1	0.4%
PC7	3	1.2%	SU19	6	2.4%	BB13	2	0.8%
PC8	3	1.2%	SU20	5	2.0%	BP14	8	3.2%
PC9	2	0.8%	KA1	6	2.4%	BP15	1	0.4%
PC10	0	0.0%	KA2	3	1.2%	BP16	1	0.4%
PC11	4	1.6%	KA3	5	2.0%	BP17	0	0.0%
PP12	4	1.6%	KA4	5	2.0%	BP18	1	0.4%
PP13	0	0.0%	KS5	7	2.8%	IC1	1	0.4%
PP14	1	0.4%	KS6	7	2.8%	IC2	1	0.4%
PP15	4	1.6%	KS7	7	2.8%	IC3	4	1.6%
PP16	5	2.0%	KU8	6	2.4%	IC4	1	0.4%
PP17	0	0.0%	KU9	14	5.6%	IC5	3	1.2%
PP18	2	0.8%	KU10	8	3.2%	IC6	2	0.8%
PG19	2	0.8%	KU11	7	2.8%	IC7	2	0.8%
PG20	3	1.2%	KM12	6	2.4%	IC8	4	1.6%
PG21	2	0.8%	KM13	9	3.6%	IC9	4	1.6%
PG22	0	0.0%	KM14	6	2.4%	IC10	1	0.4%
PG23	0	0.0%	KM15	6	2.4%	IC11	5	2.0%
SR1	5	2.0%	KP16	9	3.6%	IC12	4	1.6%

SR2	5	2.0%	KP17	9	3.6%	IC13	3	1.2%
SR3	4	1.6%	KP18	8	3.2%	IC14	2	0.8%
SR4	2	0.8%	KC19	7	2.8%	IC15	3	1.2%
SR5	4	1.6%	KC20	7	2.8%	IC16	2	0.8%
SS6	5	2.0%	KC21	6	2.4%	IC17	2	0.8%
SS7	2	0.8%	BA1	0	0.0%	IC18	3	1.2%
SS8	1	0.4%	BA2	0	0.0%	IC19	3	1.2%
SS9	6	2.4%	BA3	2	0.8%	IC20	3	1.2%
SS10	3	1.2%	BA4	0	0.0%	IC21	4	1.6%
SS11	2	0.8%	BA5	0	0.0%			
SF12	6	2.4%	BE6	0	0.0%			



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APPENDIX G
REMOVING OUTLIERS (MAHALANOBIS)

Respondent	MAH 1	Probability MD	Outlier	Respondant	MAH 1	Probability MD	Outlier
1	7.11	0.13	0.00	127	0.32	0.99	0.00
2	2.11	0.72	0.00	128	0.30	0.99	0.00
3	0.32	0.99	0.00	129	0.32	0.99	0.00
4	3.61	0.46	0.00	130	13.76	0.01	0.00
5	3.06	0.55	0.00	131	1.35	0.85	0.00
6	1.85	0.76	0.00	132	1.90	0.75	0.00
7	2.77	0.60	0.00	133	0.84	0.93	0.00
8	3.33	0.50	0.00	134	1.60	0.81	0.00
9	1.62	0.81	0.00	135	3.38	0.50	0.00
10	1.35	0.85	0.00	136	4.10	0.39	0.00
11	1.96	0.74	0.00	137	12.86	0.01	0.00
12	2.94	0.57	0.00	138	3.41	0.49	0.00
13	2.94	0.57	0.00	139	3.41	0.49	0.00
14	1.26	0.87	0.00	140	3.03	0.55	0.00
15	2.94	0.57	0.00	141	1.56	0.82	0.00
16	0.93	0.92	0.00	142	9.04	0.06	0.00
17	0.32	0.99	0.00	143	10.27	0.04	0.00
18	6.28	0.18	0.00	144	4.70	0.32	0.00
19	3.52	0.48	0.00	145	3.41	0.49	0.00
20	4.08	0.40	0.00	146	3.33	0.50	0.00
21	0.41	0.98	0.00	147	1.33	0.86	0.00
22	5.48	0.24	0.00	148	1.04	0.90	0.00
23	0.32	0.99	0.00	149	52.75	0.00	1.00
24	2.21	0.70	0.00	150	1.44	0.84	0.00
25	3.67	0.45	0.00	151	2.83	0.59	0.00
26	3.67	0.45	0.00	152	3.28	0.51	0.00
27	3.67	0.45	0.00	153	2.25	0.69	0.00
28	1.07	0.90	0.00	154	2.55	0.64	0.00
29	4.30	0.37	0.00	155	0.51	0.97	0.00
30	4.74	0.32	0.00	156	0.32	0.99	0.00
31	0.56	0.97	0.00	157	2.35	0.67	0.00
32	1.49	0.83	0.00	158	2.95	0.57	0.00
33	0.40	0.98	0.00	159	2.83	0.59	0.00
34	2.84	0.58	0.00	160	20.44	0.00	1.00
35	0.37	0.99	0.00	161	2.24	0.69	0.00
36	4.35	0.36	0.00	162	3.41	0.49	0.00
37	3.15	0.53	0.00	163	0.67	0.95	0.00
38	1.91	0.75	0.00	164	2.83	0.59	0.00

39	9.44	0.05	0.00	165	6.39	0.17	0.00
40	13.68	0.01	0.00	166	7.95	0.09	0.00
41	1.35	0.85	0.00	167	5.27	0.26	0.00
42	2.01	0.73	0.00	168	4.47	0.35	0.00
43	6.26	0.18	0.00	169	0.32	0.99	0.00
44	6.34	0.18	0.00	170	2.36	0.67	0.00
45	0.43	0.98	0.00	171	1.82	0.77	0.00
46	1.66	0.80	0.00	172	1.69	0.79	0.00
47	3.95	0.41	0.00	173	3.68	0.45	0.00
48	1.28	0.87	0.00	174	8.90	0.06	0.00
49	0.90	0.92	0.00	175	6.86	0.14	0.00
50	3.58	0.47	0.00	176	30.92	0.00	1.00
51	2.69	0.61	0.00	177	3.25	0.52	0.00
52	2.74	0.60	0.00	178	0.82	0.94	0.00
53	1.16	0.88	0.00	179	6.28	0.18	0.00
54	3.41	0.49	0.00	180	2.31	0.68	0.00
55	1.22	0.87	0.00	181	0.32	0.99	0.00
56	4.48	0.35	0.00	182	22.18	0.00	1.00
57	0.33	0.99	0.00	183	1.69	0.79	0.00
58	4.63	0.33	0.00	184	1.59	0.81	0.00
59	3.12	0.54	0.00	185	24.69	0.00	1.00
60	0.19	1.00	0.00	186	6.93	0.14	0.00
61	2.31	0.68	0.00	187	3.17	0.53	0.00
62	9.78	0.04	0.00	188	4.89	0.30	0.00
63	5.12	0.28	0.00	189	6.01	0.20	0.00
64	0.32	0.99	0.00	190	3.29	0.51	0.00
65	2.89	0.58	0.00	191	4.34	0.36	0.00
66	3.14	0.53	0.00	192	14.14	0.01	0.00
67	5.16	0.27	0.00	193	4.39	0.36	0.00
68	4.27	0.37	0.00	194	3.29	0.51	0.00
69	9.55	0.05	0.00	195	2.64	0.62	0.00
70	1.35	0.85	0.00	196	13.29	0.01	0.00
71	10.95	0.03	0.00	197	3.41	0.49	0.00
72	3.63	0.46	0.00	198	6.10	0.19	0.00
73	0.33	0.99	0.00	199	5.31	0.26	0.00
74	4.69	0.32	0.00	200	2.08	0.72	0.00
75	0.47	0.98	0.00	201	4.22	0.38	0.00
76	1.03	0.90	0.00	202	0.68	0.95	0.00
77	1.72	0.79	0.00	203	1.30	0.86	0.00
78	5.61	0.23	0.00	204	4.04	0.40	0.00
79	2.91	0.57	0.00	205	0.99	0.91	0.00
80	2.98	0.56	0.00	206	0.47	0.98	0.00
81	4.20	0.38	0.00	207	0.82	0.94	0.00
82	2.51	0.64	0.00	208	4.73	0.32	0.00
83	10.60	0.03	0.00	209	1.30	0.86	0.00

84	4.54	0.34	0.00	210	1.61	0.81	0.00
85	6.41	0.17	0.00	211	1.41	0.84	0.00
86	1.61	0.81	0.00	212	0.81	0.94	0.00
87	0.73	0.95	0.00	213	1.01	0.91	0.00
88	1.14	0.89	0.00	214	1.71	0.79	0.00
89	2.23	0.69	0.00	215	4.29	0.37	0.00
90	4.90	0.30	0.00	216	1.82	0.77	0.00
91	1.64	0.80	0.00	217	4.98	0.29	0.00
92	0.55	0.97	0.00	218	3.97	0.41	0.00
93	14.42	0.01	0.00	219	9.81	0.04	0.00
94	0.32	0.99	0.00	220	0.33	0.99	0.00
95	0.32	0.99	0.00	221	0.42	0.98	0.00
96	0.32	0.99	0.00	222	0.11	1.00	0.00
97	0.66	0.96	0.00	223	2.80	0.59	0.00
98	1.06	0.90	0.00	224	7.64	0.11	0.00
99	6.89	0.14	0.00	225	1.06	0.90	0.00
100	1.96	0.74	0.00	226	0.39	0.98	0.00
101	10.85	0.03	0.00	227	26.03	0.00	1.00
102	4.36	0.36	0.00	228	3.66	0.45	0.00
103	3.60	0.46	0.00	229	2.83	0.59	0.00
104	2.11	0.72	0.00	230	3.52	0.48	0.00
105	0.96	0.92	0.00	231	2.98	0.56	0.00
106	5.23	0.26	0.00	232	0.29	0.99	0.00
107	0.24	0.99	0.00	233	1.72	0.79	0.00
108	0.32	0.99	0.00	234	3.41	0.49	0.00
109	0.93	0.92	0.00	235	0.52	0.97	0.00
110	2.17	0.70	0.00	236	5.99	0.20	0.00
111	0.46	0.98	0.00	237	2.44	0.66	0.00
112	1.67	0.80	0.00	238	5.05	0.28	0.00
113	4.29	0.37	0.00	239	3.32	0.51	0.00
114	0.32	0.99	0.00	240	3.30	0.51	0.00
115	6.40	0.17	0.00	241	1.85	0.76	0.00
116	0.73	0.95	0.00	242	2.34	0.67	0.00
117	0.84	0.93	0.00	243	30.08	0.00	1.00
118	2.05	0.73	0.00	244	2.43	0.66	0.00
119	0.39	0.98	0.00	245	3.33	0.50	0.00
120	3.02	0.55	0.00	246	18.31	0.00	0.00
121	3.41	0.49	0.00	247	0.52	0.97	0.00
122	3.24	0.52	0.00	248	3.35	0.50	0.00
123	3.03	0.55	0.00	249	0.32	0.99	0.00
124	4.02	0.40	0.00	250	1.33	0.86	0.00
125	3.36	0.50	0.00	251	2.12	0.71	0.00
126	2.35	0.67	0.00	252	4.84	0.30	0.00

APPENDIX H
LOADINGS AND CROSS LOADINGS (BEFORE DELETION)
(ORIGINAL MODEL)

	Benchmarking	Innovation Culture	Kaizen	Organizational Performance	Six Sigma
BA1	0.754	0.701	0.456	0.609	0.594
BA2	0.728	0.650	0.411	0.507	0.556
BA3	0.766	0.657	0.451	0.541	0.589
BA4	0.757	0.680	0.483	0.588	0.604
BA5	0.809	0.660	0.490	0.557	0.628
BB10	0.839	0.693	0.504	0.587	0.645
BB11	0.756	0.633	0.476	0.480	0.549
BB12	0.837	0.716	0.552	0.601	0.669
BB13	0.839	0.698	0.533	0.569	0.625
BE6	0.749	0.598	0.498	0.462	0.600
BE7	0.804	0.644	0.527	0.539	0.624
BE8	0.753	0.598	0.552	0.556	0.651
BE9	0.768	0.648	0.569	0.543	0.611
BP14	0.718	0.666	0.436	0.554	0.544
BP15	0.818	0.658	0.504	0.569	0.628
BP16	0.819	0.649	0.485	0.574	0.631
BP17	0.825	0.677	0.531	0.632	0.636
BP18	0.766	0.667	0.526	0.626	0.638
IC1	0.656	0.752	0.481	0.575	0.539
IC10	0.629	0.738	0.481	0.547	0.537
IC11	0.493	0.579	0.434	0.445	0.456
IC12	0.662	0.781	0.494	0.592	0.625
IC13	0.567	0.737	0.456	0.592	0.567

IC14	0.637	0.775	0.475	0.559	0.511
IC15	0.591	0.739	0.432	0.517	0.494
IC16	0.731	0.839	0.529	0.643	0.613
IC17	0.638	0.753	0.506	0.587	0.566
IC18	0.666	0.803	0.544	0.610	0.642
IC19	0.628	0.772	0.508	0.555	0.629
IC2	0.736	0.811	0.539	0.625	0.626
IC20	0.630	0.763	0.502	0.605	0.597
IC21	0.688	0.781	0.546	0.584	0.599
IC3	0.652	0.753	0.425	0.507	0.506
IC4	0.717	0.826	0.531	0.615	0.650
IC5	0.638	0.765	0.527	0.595	0.562
IC6	0.608	0.740	0.567	0.532	0.549
IC7	0.705	0.807	0.497	0.569	0.605
IC8	0.633	0.788	0.569	0.607	0.627
IC9	0.634	0.754	0.587	0.629	0.614
KA1	0.560	0.561	0.748	0.507	0.575
KA2	0.520	0.497	0.628	0.394	0.524
KA3	0.569	0.576	0.750	0.495	0.572
KA4	0.504	0.494	0.638	0.392	0.540
KC19	0.492	0.539	0.828	0.570	0.618
KC20	0.525	0.546	0.828	0.586	0.645
KC21	0.457	0.553	0.829	0.568	0.612
KM12	0.494	0.538	0.815	0.509	0.580
KM13	0.437	0.512	0.816	0.506	0.595
KM14	0.464	0.513	0.821	0.500	0.563
KM15	0.476	0.506	0.837	0.529	0.598
KP16	0.449	0.448	0.823	0.530	0.574
KP17	0.451	0.463	0.814	0.498	0.577
KP18	0.548	0.558	0.843	0.580	0.621

KS5	0.583	0.594	0.723	0.466	0.639
KS6	0.444	0.469	0.757	0.433	0.592
KS7	0.510	0.547	0.656	0.523	0.634
KU10	0.430	0.410	0.750	0.460	0.531
KU11	0.458	0.442	0.759	0.506	0.563
KU8	0.459	0.486	0.786	0.494	0.596
KU9	0.476	0.432	0.748	0.440	0.554
PC10	0.590	0.652	0.505	0.753	0.626
PC11	0.568	0.641	0.500	0.790	0.583
PC6	0.477	0.525	0.421	0.724	0.485
PC7	0.465	0.485	0.447	0.698	0.470
PC8	0.460	0.515	0.476	0.738	0.507
PC9	0.560	0.644	0.455	0.714	0.559
PF1	0.477	0.475	0.417	0.658	0.487
PF2	0.359	0.361	0.415	0.644	0.427
PF3	0.481	0.487	0.503	0.686	0.512
PF4	0.473	0.468	0.453	0.709	0.475
PF5	0.470	0.457	0.414	0.723	0.516
PG19	0.550	0.544	0.477	0.699	0.613
PG20	0.443	0.467	0.468	0.661	0.573
PG21	0.529	0.563	0.459	0.693	0.603
PG22	0.528	0.573	0.463	0.699	0.592
PG23	0.520	0.518	0.520	0.696	0.619
PP12	0.430	0.445	0.320	0.554	0.369
PP13	0.566	0.569	0.475	0.720	0.563
PP14	0.548	0.558	0.433	0.714	0.525
PP15	0.343	0.411	0.370	0.549	0.384
PP16	0.534	0.541	0.417	0.725	0.510
PP17	0.570	0.586	0.530	0.781	0.642
PP18	0.470	0.487	0.447	0.690	0.516

SF12	0.595	0.598	0.590	0.654	0.778
SF13	0.678	0.636	0.615	0.667	0.820
SF14	0.693	0.635	0.594	0.674	0.834
SF15	0.619	0.605	0.578	0.610	0.739
SF16	0.611	0.600	0.501	0.551	0.697
SF17	0.584	0.591	0.606	0.540	0.716
SR1	0.516	0.526	0.496	0.451	0.675
SR2	0.551	0.540	0.593	0.529	0.766
SR3	0.587	0.594	0.596	0.587	0.765
SR4	0.536	0.537	0.583	0.591	0.759
SR5	0.549	0.566	0.580	0.556	0.740
SS10	0.605	0.546	0.537	0.584	0.781
SS11	0.600	0.595	0.541	0.616	0.777
SS6	0.648	0.582	0.589	0.605	0.826
SS7	0.665	0.620	0.619	0.634	0.829
SS8	0.658	0.655	0.605	0.661	0.819
SS9	0.595	0.554	0.555	0.584	0.784
SU18	0.471	0.453	0.632	0.453	0.637
SU19	0.552	0.525	0.596	0.517	0.766
SU20	0.584	0.552	0.639	0.567	0.763

APPENDIX I
TEST OF HARMAN'S SINGLE FACTOR

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	46.171	44.826	44.826	46.171	44.826	44.826
2	5.916	5.744	50.570			
3	3.954	3.839	54.409			
4	2.954	2.868	57.276			
5	2.243	2.177	59.453			
6	2.152	2.089	61.543			
7	1.800	1.747	63.290			
8	1.668	1.619	64.909			
9	1.548	1.503	66.413			
10	1.319	1.280	67.693			
11	1.266	1.229	68.922			
12	1.198	1.163	70.085			
13	1.181	1.147	71.232			
14	1.067	1.036	72.268			
15	1.057	1.026	73.295			
16	1.024	0.994	74.289			
17	0.965	0.937	75.226			
18	0.946	0.918	76.144			
19	0.888	0.862	77.006			
20	0.849	0.824	77.830			
21	0.806	0.782	78.612			
22	0.778	0.755	79.368			

23	0.744	0.722	80.090
24	0.735	0.713	80.803
25	0.715	0.694	81.497
26	0.692	0.672	82.169
27	0.678	0.658	82.827
28	0.637	0.618	83.446
29	0.618	0.600	84.045
30	0.607	0.589	84.634
31	0.565	0.549	85.183
32	0.539	0.523	85.706
33	0.534	0.519	86.225
34	0.520	0.505	86.730
35	0.511	0.497	87.227
36	0.489	0.475	87.702
37	0.472	0.458	88.160
38	0.465	0.451	88.612
39	0.452	0.439	89.051
40	0.432	0.420	89.470
41	0.420	0.408	89.879
42	0.405	0.393	90.272
43	0.395	0.383	90.655
44	0.386	0.375	91.030
45	0.366	0.356	91.386
46	0.351	0.341	91.727
47	0.342	0.332	92.059
48	0.321	0.312	92.371
49	0.320	0.310	92.681
50	0.301	0.292	92.974
51	0.293	0.285	93.258
52	0.288	0.280	93.538

53	0.276	0.268	93.807
54	0.270	0.262	94.069
55	0.264	0.257	94.325
56	0.260	0.252	94.578
57	0.254	0.247	94.824
58	0.245	0.238	95.062
59	0.240	0.233	95.295
60	0.230	0.223	95.518
61	0.228	0.222	95.740
62	0.211	0.205	95.945
63	0.204	0.199	96.143
64	0.199	0.193	96.336
65	0.190	0.184	96.520
66	0.183	0.177	96.698
67	0.181	0.176	96.874
68	0.169	0.164	97.037
69	0.162	0.157	97.194
70	0.158	0.154	97.348
71	0.153	0.148	97.496
72	0.148	0.144	97.640
73	0.138	0.134	97.775
74	0.134	0.130	97.904
75	0.128	0.124	98.029
76	0.121	0.117	98.146
77	0.120	0.116	98.262
78	0.113	0.109	98.372
79	0.111	0.108	98.479
80	0.107	0.104	98.583
81	0.105	0.102	98.685
82	0.100	0.097	98.782

83	0.093	0.090	98.873
84	0.088	0.086	98.958
85	0.083	0.081	99.039
86	0.081	0.078	99.117
87	0.080	0.078	99.195
88	0.076	0.074	99.269
89	0.072	0.070	99.339
90	0.072	0.070	99.409
91	0.069	0.067	99.475
92	0.064	0.062	99.537
93	0.062	0.060	99.598
94	0.061	0.059	99.656
95	0.057	0.055	99.712
96	0.046	0.044	99.756
97	0.045	0.044	99.800
98	0.044	0.043	99.843
99	0.042	0.041	99.884
100	0.034	0.033	99.917
101	0.033	0.032	99.949
102	0.027	0.027	99.975
103	0.025	0.025	100.000

Extraction Method: Principal Component Analysis.