

EVALUATING THE USER'S SATISFACTION LEVEL ON GATE CONTROL  
SYSTEM IN TANJUNG PUTERI CUSTOMS COMPLEX

JEGEN A/L JOHN PETER

A project report submitted in partial fulfillment of the requirements for the award of a  
Master of the degree of Masters of Science in Transport Planning

Faculty of Built Environment

Universiti Teknologi Malaysia

JUNE 2013

To my beloved family and honorable Royal Malaysian Customs

## **ACKNOWLEDGEMENT**

In the process of fulfilling this research, I am grateful to have the guidance, assistance and support from many people, Customs officers, academicians, and forwarding agents that contributed in many ways in helping me in completing this dissertation. In particular, I wish to express my sincere appreciation to my research supervisor, Dr. Muhammad Zaly Shah Bin Muhammad Hussein for his invaluable advice guidance, understanding and assistance throughout this study.

I wish to express my deepest thanks and sincere gratitude to all my friends especially to G.Logeswaran, R.Sathisvaran, P.Gobinath and their support not only for their time and encouragement for me in completing this study but also in reviewing my research.

I also extended my gratitude to my father John Peter Saveri, my mother Selvaranie Arasamuthu, my sister Rajeswari John Peter and my soul mate Bhavani Sivaperumal, who have endlessly given me their unconditional love and sincere support, encouragement and motivation throughout the entire course of this study.

Last but not least, I want to express my gratitude to Lord Shiva, for giving me the strength, opportunity, patience and guidance in completing this dissertation.

## **ABSTRACT**

Fundamental of this study is the subject of Gate Control System. It is acknowledged that the presence and use of Gate Control System play important roles in control and verify declared cargo moving out (Export) or coming in (Import) through Customs check points. User`s behaving normally, will seek reliable, integrated and timely system which is easily to accessible to them. The Automated Lane Barriers with Smart Card Access Control very important for a Customs Complex to minimize curb, eradicate irregularities in cargo operations with minimal human intervention. The Gate Control System which located in Border very important to protect the country from eradicate irregularities occur in cargo movement into the country. However, there were increases of error in this system contribute inefficiency on performing automatically. This research discusses the shipping and forwarding agents perspective as users on this current implementation. The objective of this research is to determine whether this system performed with efficiently, identify the cause of the inefficiency and also to provide suggestion and recommendation on future upgrading. Results which obtained from this study with determine the satisfaction level of user`s on Gate Control System in Tanjung Puteri Customs Complex. By viewing this situation, it is hoped that the results able to change the current situation.

## ABSTRAK

Tumpuan utama kajian ini adalah mengenai Sistem Kawalan Pintu @ *Gate Control Sistem*. Pengenal Sistem secara automatik ini berpotensi untuk mengawal dan mengesahkan kargo yang diisytiharkan bergerak keluar (Eksport) atau membawa masuk (Import) melalui laluan kastam. Pengguna masa kini lebih mencari sesuatu sistem yang boleh dipercayai, bersepadu dan tepat pada masanya yang mudah untuk diakses oleh mereka. Palang automatic dengan kawalan Kad Pintar sangat penting bagi Kompleks Kastam untuk membasmi dan membendung penyelewengan dalam operasi kargo serta dapat mengurangkan campur tangan manusia dalam kuantiti yang minimum. Sistem kawalan Pintu yang berpusat di Sempadan amat penting untuk melindungi Negara daripada berlakunya penyelewengan ke dalam Negara ini. Walaubagaimanapun, terdapat peningkatan kesilapan dalam sistem ini menyumbang kepada pelaksanaan ketidakcekapan dalam operasi berbentuk automatik. Kajian ini membincangkan perspektif ejen perkapalan dan ejen penghantaran sebagai pengguna mengenai pelaksanaan semasa ini. Objektif kajian ini adalah untuk menentukan sama ada sistem ini dilakukan dengan cekap, mengenal pasti punca ketidakcekapan dan juga untuk memberi cadangan dan syor kepada peningkatan masa depan. Keputusan yang diperolehi daripada kajian ini dengan menentukan tahap kepuasan pengguna Sistem Kawalan Pintu di Tanjung Puteri Kompleks Kastam. Dengan melihat keadaan ini, adalah diharapkan bahawa keputusan boleh mengubah keadaan semasa.

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## GLOSSARY OF TERMS

SMK	-	Sistem Maklumat Kastam
GCS	-	Gate Control System
LCS	-	Lane Control System
KGJB2	-	Vehicle Release Control
PINTASAN	-	<b>Professionals In Technology, Advance Systems And Network</b>
IT	-	Information Technology
CIQ	-	Custom & Immigration Quarantine
JOFFA	-	Johor Freight Forwarders Association
K1	-	Declaration of Goods Imported
K2	-	Declaration of Goods Exported
GST	-	Goods and Sales Tax
ISO	-	International Organization for Standardization
PET	-	Polyester
OCR	-	Optical Character Recognition
LED	-	Light Emitting Diode

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## REFERENCES

Afandi, M., (2010). *Measuring the Performance of Customs Information Systems (CIS) in Malaysia*. World Customs Journal Vol.4(2) pages 89-103.

Armstrong, G. & Kotler, P. (1996), *Principles of Marketing* (sevent edn.), Prentice Hall, India.

Azizi Y., Shahrin H., Jamaludin R., Yusuf Boon., and Abdul R. H., (2006). *Menguasai Penyelidikan Dalam Pendidikan: Teori, Analisis and Interpretasi Data*, PTS Professional Publishing Sdn. Bhd. Pages 68-89.

Bitner, M. J., & Hubbert, A. R. (1994). *Encounter satisfaction versus overall satisfaction versus quality: The customer's voice*. In R. T. Rust & R. L. Oliver (Eds.), *Service quality: New directions in theory and practice* (pp. 72–94).

Bitner, M. J. & Zeithaml, V. A. (2003). *Service Marketing* (3rd ed.), Tata McGraw Hill, New Delhi.

Cannon, J. A. (1994) “*Why IT Applications Succeed or Fail*” *Industry and Commercial Training*, Vol. 26, No. 1, pp 10-15.

Davis, F.D. (1993). *User acceptance of information technology: system characteristics, user perceptions and behavioural impact*. *International Journal of Man- Machine Studies* 38, pages 475-487.

Dunleavy, P., Margetts, H., Bastow, S. and Tinkler, J. (2006) “*New Public Management is dead. Long live digital-era governance*”, *Journal of Public Administration Research and Theory*, 16(3): 467-494.

Grönroos, C. (1994). *From marketing mix to relationship marketing: Towards a paradigm shift in marketing*. *Management Decision*, 32 (2), 4–20.

Homburg, C. and Rudolph, B. (2001), ``Customer satisfaction in industrial markets: dimensional and multiple role issues'', *Journal of Business Research*, Vol. 52, pp. 15-33.

Infante, D.A, Rancer, A.S., & Womack, D.F. (1997). *Building communication theory*, 3<sup>rd</sup> Ed. Waveland Press, Inc.

Krejcie, R. V., and Morgan, D. W. (1970). *Determining sample size for research activities*. *Educational and Psychological Measurement*, 30, 607-610.

Moore, S.A. and Schlegelmilch, B.B. (1994), ``Improving service quality in an industrial setting'', *Industrial Marketing Management*, February, Vol. 23 No.1, pp. 83-92.

Morris, M. and Davis, D. (1992), ``Measuring and managing customer service in industrial firms'', *Industrial Marketing Management*, Vol. 21, pp. 343-53.

Peterson, R.A. and Wilson, W.R. (1992), ``Measuring customer satisfaction: fact and artifact'', *Journal of the Academy of Marketing Science*, Vol. 20 No. 1, pp. 61-71.

Oliver, R.L., (1981). *Measurement and evaluation of satisfaction processes in retail settings*. *Journal of Retailing* 57, 255-48.

Sheth, J. N., & Parvatiyar, A. (Eds.). (1994). *Relationship marketing: Theory, methods and applications*. Atlanta: Emory University.

Swan, J.E., Powers, T.L. and Hansen, S.W. (1995), ``The industrial buyer complaint process: an ethnography of finding and fixing vendor mistakes'', *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, Vol. 8, pp. 1-10.

Swan, J.E. and Trawick, F.W. (1993), ``*Consumer satisfaction research 1983 to 1992: accomplishments and future directions*’’, *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, Vol. 6, pp. 28-33.

Venkatesh, V. and Brown, S.A. (2001). *A Longitudinal investigation of Personal Computers in Homes: Adoption Determinants and Emerging Challenges*, *MIS Quarterly* (25:1), pages 71-102.

Venkatesh, V. and Davis, F.D. (2000). *A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies*. *Management Science*, 46(2), pages 186-204.

Zeithamal, V.A. and Bitner, M.J. (2004). *Services marketing 3<sup>rd</sup> Edition: Intergrating Customer Focus across the Firm*. New York: Mcgraw-Hill.