

A Study of e-Government Business Model with Customer Relationship Management Driven in Taiwan

Shan-yan Huang^{1*}

¹Department of International Trade, Overseas Chinese University, Taichung, Taiwan

*Correspondence: Shan-yan Huang, Department of International Trade, Overseas Chinese University, 100, Chiao Kwang Rd., Taichung, 40721, Taiwan. E-mail: hsy1118@ocu.edu.tw

DOI: 10.12735/jbm.v4i2p32

URL: <http://dx.doi.org/10.12735/jbm.v4i2p32>

Abstract

The study examined the relationship among customer relationship management (CRM) readiness, e-government (e-Gov) business model and customer equity to indicate the advisable actions on citizen-centric e-Gov business model. Based on the benchmarking concept, the study used the questionnaire to analyze the influences of CRM readiness (blueprint management, change management, human resource, process management, ICT resource) on e-Gov business model (administration innovation, customer interface, service infrastructure, resources allocation) and the effect of citizen-centric e-Gov business model through customer equity (value, brand, relationship). The results can identify the level of CRM readiness in Taiwanese leading departments/agencies and improve the service process for e-Gov business model with a CRM perspective. The study found that: 1. Governments can enhance the effects of e-Gov business model through CRM readiness examining. 2. The sustainable customer equity can be transformed through e-Gov business model. 3. CRM participation and experience sharing could be broadened through the mechanisms of life-long learning for public servants further.

JEL Classifications: H41, M15

Keywords: customer relationship management, business model; customer equity, e-government

1. Introduction

In the Internet age, the best practices of Internet business are often reported and investigated that let the Internet business model (iBM) become much attention (Afuah & Tucci, 2003; Eisenmann, 2002). Many business transactions have transformed the physical store front into the virtual Internet. With the innovation in iBM, governments (departments, agencies, and non-departmental public bodies) have exploited the multi-channel and information communication technology (ICT) to interact with their stakeholders. Chiefs can align the configuration from strategy, resource and ICT (Osterwalder, 2004) to enhance value for existing services or provide innovative services that could create the customer service value and the administration benefit.

e-Government (e-Gov) business model, an Internet business model (iBM), refers to the structures and processes of government in which information and communication technologies are utilized (Anttiroiko & Mälkiä, 2007). However, the results of the American Customer Satisfaction Index, done by the University of Michigan present the administration satisfaction often lower than information satisfaction in American Government (Tsai, 2007, 2008). This represents e-Gov

business model lacks key-driven factors to enhance the administration performance. Customer relationship management (CRM) can forecast and feedback the customers' needs through the information integration with the existing and potential customers to provide the appropriate service for their stakeholders (citizen, business, government, employee) and enhance the administration satisfaction. It is a critical government imperative that no department/agency can afford to ignore CRM (Cohen & Moore, 2000; Krammer, 2001).

Unfortunately, CRM implementation still has a high in failure (Anttiroiko & Malkia, 2007; Badgett, Ballou, & LaValle, 2004; Baran, Galka, & Strunk, 2008, pp. 60-64; Payne, 2006). The major cause is lack of the professional consultation and support (Badgett *et al.*, 2004; The Economist, 2005). The cognition and endeavor of CRM are also insufficient for staffs (Liu & Chen, 2008; Tsai, 2008). Readiness is the state or degree of being ready or prepared for use or action (Armenakis, Harris, & Mossholder, 1993; UN, 2005) becomes the key issue for CRM implementation (Ayanso, Chatterjee, & Cho, 2011; Liu & Fang, 2009). A CRM readiness assessment can examine the resource configuration and capability to identify the goal of CRM project clear. Organizations can redesign and execute the customer-centric strategy as well as more-effective relationships with customers to maximize the stakeholder value (Hansotia, 2002; Moncla, 2004).

The programming of e-service is toward citizen-centric development (Anttiroiko & Malkia, 2007; Research and Markets, 2008), hence Taiwan Government actively encouraged all level of government departments/agencies to implement CRM into their services websites (NICI, 2002, pp.12-19). This study develops a research framework of CRM readiness on e-Gov business model. Key-driven factors to CRM are assimilated to reflect a questionnaire of CRM readiness. The influences of CRM readiness on e-Gov business model and the effects of e-Gov business model through customer equity are recognized based on the questionnaire survey. The result of this study can identify the barriers when CRM is implemented with e-Gov business model to improve the service processes toward citizen-centric e-Gov business model in the public sector.

2. Literature Review

Governments have turned to CRM to provide their citizens with better electronic initiatives. However, the segments in the value chain should be focused and considered (Hunter & Shine, 2001; Badgett *et al.*, 2004; Currie, 2004; Gentle, 2002, pp. 7-8; Swift, 2001, pp. 26-28; White, 2007, pp. 164-166). CRM readiness assessment can assist the action decision in the value chain (Craig & Jutla, 2001, p. 18; Gentle, 2002, pp. 49-64; Payne, 2006, p. 330), and the effects of customer relationship value can be measured with customer equity (Rust, Zeithaml, & Lemon, 2000; Ryals, 2008, pp. 131-133). It is important to highlight the relationship among CRM, e-Gov and customer equity as an important line of research in the public sector.

2.1. CRM Readiness

CRM involves a series of change process in structure, culture, process, ICT, and human that creates the organizational milieu in which CRM can flourish (Ocker & Mudambi, 2003). The trouble with practitioners is that CRM projects often end in failure (Payne, 2006) and are done right less than 15 percent of the time across the globe in a survey. Organizations can exploit CRM readiness to enhance the probability of CRM implementation success (Badgett *et al.*, 2004; Moncla, 2004). Several directions of alignment including strategy, structure, planning, culture, stakeholder interactions, domain knowledge, CRM application, IT capability, and knowledge management could be considered to review the resource deployment and existing capabilities on CRM readiness (Ocker & Mudambi, 2003). Moreover, Gentle (2002) examines the CRM readiness from the maturity assessments of four dimensions including culture, process, human and system. Based on

the literature review within the key driver factors for CRM (Badgett *et al.*, 2004; Brendler & Loyle, 2001; Chen & Chen, 2004; Ocker & Mudambi, 2003; Payne, 2006, pp. 330-345; Pedraza, 2000; Reynolds, 2002; Swift, 2001; Thompson, 2001; Wixom & Watson, 2001), there are five dimensions including blueprint management readiness, change management readiness, human resource readiness, process management readiness and ICT resource readiness could be categorized into CRM readiness (Liu & Huang, 2014). The result of the categorization also reflects a conclusion of the multi-national research in CRM (Badgett *et al.*, 2004).

- Blueprint management readiness is composed of setting the project team, adjusting the performance policy, regarding the stakeholder voice and delivering the service vision can align the goal of CRM.
- Change management readiness is composed of chief supporting, leadership and communication with concerted efforts, a common consensus for CRM and shaping the citizen-centric culture can align the goal of CRM.
- Human resource readiness is composed of developing the service skills, adjusting the citizen-centric training programs and engaging the professional consultation can align the goal of CRM.
- Process management readiness is composed of re-engineering the processes, integrating the cross-processes and managing the feedback channels can align the goal of CRM.
- ICT resource readiness is composed of planning the ICT framework, holding the extension of ICT and reviewing the complete functions of ICT can align the goal of CRM.

2.2. iBM and e-Gov Business Model

e-Gov business model is an Internet business model (iBM) refers to the fundamental questions of a business, specifically how an enterprise delivers a product or service with a set of processes on the Internet (Lumpkin & Dess, 2004; Osterwalder, 2004). The design of e-Gov business model should emphasize the automation service to the need of stakeholders (citizen, business, government, employee), and then could obtain a high value and long-term relationship with customers. CRM in government is an extension of e-Gov business model in the sense that it seeks to provide citizens with greater access to information and public services via the Internet (White, 2007, p. 165). Governments could be engaged in shaping CRM-related initiatives into e-Gov business model that best generate high stakeholder value and be most cost efficient (Washrille, 2001). A success business model attaches importance to customer value proposition, profit formula, key resources, and key processes (Johnson, Christensen, & Kagermann, 2008). Therefore, e-Gov business model based on CRM-driven, in order to provide a 360-degree view, must reflect the entirety of business cycle in an iBM (profitable), the set of activities by translating resources and capabilities into products and services on the Internet from the perspective of the business model ontology (Osterwalder, 2004; Osterwalder & Pigneur, 2003; Osterwalder, Pigneur, & Tucci, 2005). There are four dimensions including administration innovation management, customer interface management, service infrastructure management and resources allocation management to present the construct of e-Gov business model.

- Administration innovation management is composed of encouraging the employees with licenses, setting the integration of inter-agency services, adopting the new management tools and implementing the innovation applications of ICT.
- Customer interface management is composed of providing the main business services in the interaction channel, providing the different service for different customer groups and providing the diversified channels for customer needs.

- Service infrastructure management is composed of having the trusty partners, owning the information systems with robust service capabilities and exploiting ICT for service innovation.
- Resources allocation management is composed of shooting for the project funds or ICT equipments, fulfilling the service needs with resources allocation, adjusting the human resources with ICT and rightsizing the service processes with ICT.

2.3. Customer Equity

From the lifelong value of customer relationship, customer equity can reflect the entire outcomes (potential and existent) for a customer-centric organization (Holehonnur, Raymond, Hopkins, & Fine, 2009; Lemon, Rust, & Zeithaml, 2001; Pitt, Ewing, & Berthon, 2000; Rust *et al.*, 2000; Ryals, 2008, pp. 127-128) and present the organization asset derives from the retention of customer relationship (Rust, Moorman, & Bhalla, 2010; Rust & Chung, 2006; Vogel, Evanschitzky, & Ramaseshan, 2008). Three equity drivers including value equity, brand equity, and relationship equity are specific, incisive actions, or levers constitute the construct of customer equity. Customer equity provides a proxy to enable executives to evaluate the stakeholder value (Rust *et al.*, 2010). Therefore, the different customer needs with value equity, brand equity, relationship equity, or a mix of them are respected in order to understand the intention of stakeholders. Organizations can exploit customer equity to improve the customers' cognition for service value and strengthen the relationship linkage for long-term benefits (Hansotia, 2004; Rust, Lemon, & Narayandas, 2005, pp. 2-5). Through the customer equity assessment, citizen-centric e-Gov business model can deliver the best combination of value and take to enhance its overall customer equity. The administration performance and citizen benefit could be obvious embodiment when the drivers of customer equity are significant effects.

- Value equity in e-Gov business model could derive from the convenient information systems, the efficient service processes and the satisfied administrations.
- Brand equity in e-Gov business model could derive from the publicity of public services through channels or information media, the advertisement activities and a cordial service environment.
- Relationship equity in e-Gov business model could derive from the public praise, the flexible services for different customer groups and the satisfaction assessment.

3. Research Methodology

CRM is an important strategy to build a long-term customer relationship of mutual benefit for profit-making or non-profit institutions towards a vision of sustainable development. The recent research shows that nearly 20% of the award-winning governments plan to implement CRM or apply CRM by way of diverse approaches (Liu & Fang, 2009). Based on the benchmarking concept of e-Gov (Snijkers, Rotthier, & Janssen, 2007), this study tries to analyze the influences of CRM readiness on e-Gov business model from the viewpoint of customer equity. Furthermore, the results could indicate the guideline to develop citizen-centric e-Gov business model with a CRM perspective, as shown in Figure 1.

e-Gov business model is based on the vision of offering greater convenient services to citizens. CRM is an extension of e-Gov business model to establish contact with the public and serve the public's interests, but with a high ratio of failure in CRM implementation. Examining the readiness of CRM development can assist the government agencies to focus on the inherent factors of

implemented foundation. This study assumes that the maturity of CRM readiness results in the effects of e-Gov business model, as shown in H1.

H1: CRM readiness positively affects e-Gov business model.

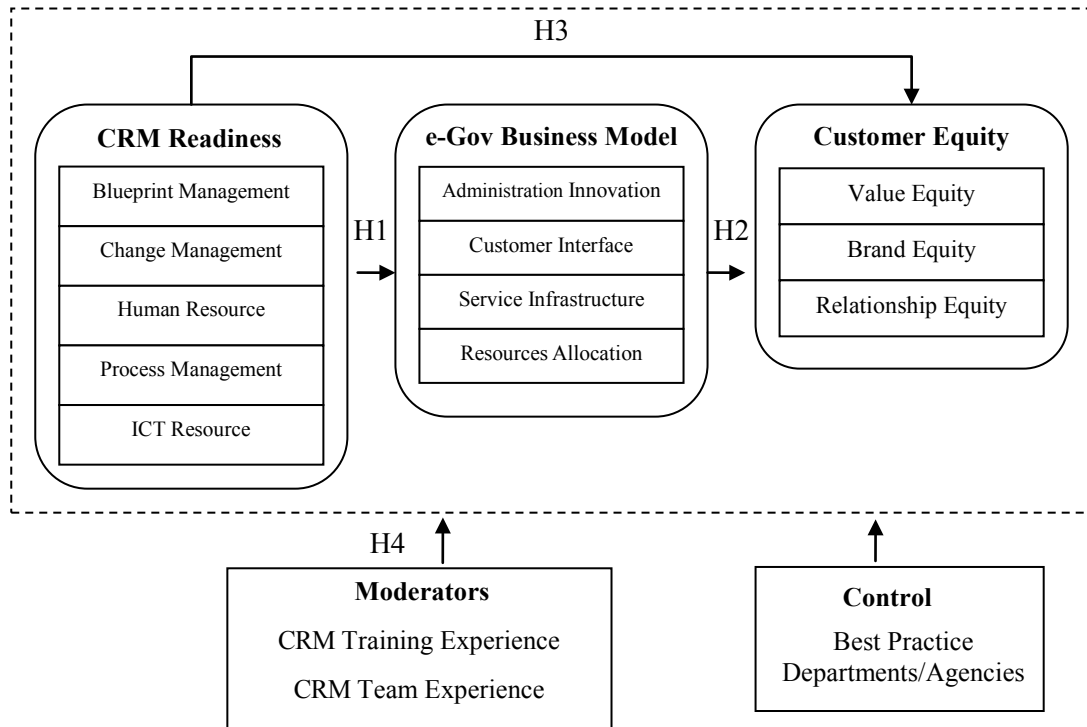


Figure 1. Research framework and research hypotheses

CRM enables e-Gov business model towards citizen-centric development and plan to create the innovative value and the competitive advantage. By way of strategy development and resource integration, e-Gov business model provides more valuable, comprehensive and seamless services for customers. Customer equity that measures both the objective and subjective value can assess the administration performance of e-Gov business model. This study assumes that the robustness of e-Gov business model can bring customer equity significant effects, as shown in H2.

H2: e-Gov business model positively affects customer equity.

The drivers of CRM readiness can reduce the risk and uncertainty to CRM implementation. Thus the proactive examination into CRM capabilities also could align the goal of citizen-centric e-Gov business model, and then may influence the effects of customer equity further. This study assumes that the maturity of CRM readiness results in the effects of customer equity, as shown in H3.

H3: CRM readiness positively affects customer equity.

The customer orientation training can increase the ability and value cognition to serve customers (Korunka *et al.*, 2007; Paarlberg, 2007; Woodcock, Stone, & Ekinci, 2008). The attitude and action with customer orientation would be appeared when employees identify themselves with the citizen-centric consensus (Badgett *et al.*, 2004; Baran *et al.*, 2008, pp. 398-399; Reynold, 2002, p. 65; Peccei & Rosenthal, 1997). Therefore, it is necessary to test the responsible employee’s CRM-related experience (CRM training experience and CRM team experience) moderates the effects among CRM readiness, e-Gov business model, and customer equity.

H4: CRM-related experience moderates the effects among CRM readiness, e-Gov business model, and customer equity.

4. Data Analysis

A total of 2,050 questionnaires were distributed by way of 250 department/agencies and 531 responses were collected. Among them, the complete and usable questionnaires were received from 478 respondents with a valid response rate of 23.3%.

4.1. Profile of Respondents

The number of respondents from central agencies and non-central agencies was 151 and 327 respectively. 71.1% and 54.2% of respondents had the major business for citizens and came from the agency's scale for more than 200 public servants. In samples of the 478 respondents, nearly 44.5% and 54.6% of the respondents were heads or managers and were involved in e-Gov projects. And of those, 74.2% stated that they had served the government for more than 10 years. 26.4% and 73.6% of respondents worked in front-office and back-office respectively that could reflect the operation and development on e-Gov. 40.8% and 24.7% of respondents had participated in CRM training and CRM team respectively that represented Taiwan Government should intensify the level of CRM-related experience for public servants continuously.

4.2. Reliability and Validity

To examine the reliability and validity between the constructs and their indicators, this study assessed the questionnaire by conducting internal consistency, convergent validity and discriminant validity, as shown in Table 1 and Table 2. The instrument demonstrates a satisfactory internal consistency, convergent validity, and discriminant validity.

Table 1. Reliability and convergent validity of constructs

Construct	MLE		CR	AVE	Cronbach α
	Loading	Error			
CRM Readiness (CR)			0.912	0.677	0.722
Blueprint Management (BMR)	0.649 ^{***}	0.269			0.824
Change Management (CMR)	0.559 ^{***}	0.207			0.808
Human Resource (HRR)	0.548 ^{***}	0.179			0.839
Process Management (PMR)	0.747 ^{***}	0.149			0.808
ICT Resource (IRR)	0.691 ^{***}	0.182			0.833
GFI = 0.957, RMR = 0.025, NFI = 0.947, CFI = 0.987, ^{***} p<0.001					
e-Gov business model (BM)			0.936	0.785	0.781
Administration Innovation (AIM)	0.679 ^{***}	0.165			0.866
Customer Interface (CFM)	0.724 ^{***}	0.176			0.809
Service Infrastructure (SIM)	0.840 ^{***}	0.110			0.835
Resources Allocation (RCM)	0.761 ^{***}	0.170			0.814
GFI = 0.960, RMR = 0.023, NFI = 0.957, CFI = 0.982, ^{***} p<0.001					
Customer Equity (CE)			0.952	0.868	0.817
Value Equity (VUE)	0.858 ^{***}	0.105			0.836
Brand Equity (BDE)	0.878 ^{***}	0.074			0.820
Relationship Equity (RSE)	0.807 ^{***}	0.149			0.841
GFI = 0.967, RMR = 0.019, NFI = 0.964, CFI = 0.982, ^{***} p<0.001					

Table 2. Discriminant validity for constructs

Construct	Mean	SD	CR	BM	CE
CRM Readiness (CR)	4.69	0.62	0.722	0.584***	0.605***
e-Gov business model (BM)	4.75	0.68		0.781	0.744***
Customer Equity (CE)	4.82	0.64			0.817

***p<0.001

4.3. Research Hypotheses Test

Figure 2 demonstrates the results for path estimates of the proposed model through AMOS software.

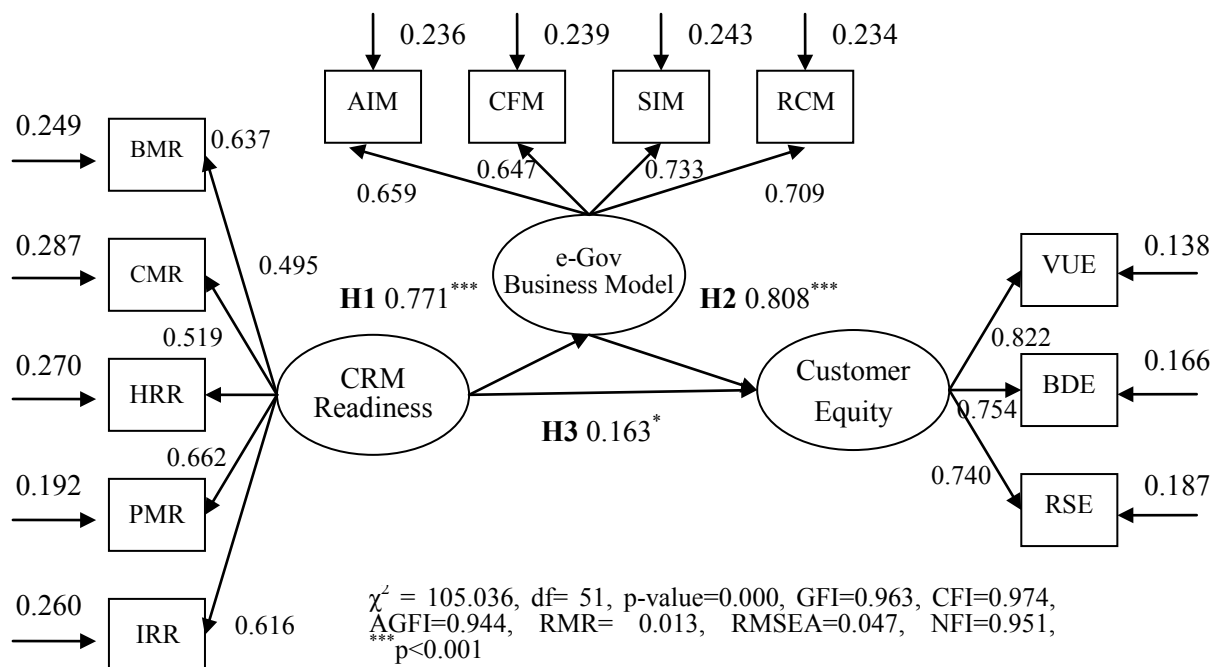


Figure 2. SEM path of the research model

As predicted by H1, CRM readiness is significant and positively affects e-Gov business model. H2 is also supported since e-Gov business model is significant and positively affects customer equity. Moreover, CRM readiness positively affects customer equity even if the intensity of H3 is less significant than H1 and H2. As revealed in the statistical results, the present study confirms the causal relationships that include a direct and indirect influence from one category to another. CRM readiness is the exogenous variable in overall model has a direct impact and indirect influences (through e-Gov business model) on customer equity. It plays the key role in the study framework and drives e-Gov business model to create customer equity. The results reflect a high level of acceptability or preparation with CRM readiness can improve the service processes on e-Gov business model and enhance the overall customer equity further.

As predicted by H4, Table 3 shows the test for moderation effects on CRM-related experience. The results show that CRM training experience could obtain the well effects ($0.253 > 0.131$) on CR to CE path, but the effects ($0.767 < 0.806$) on BM to CE path is disappointed. Otherwise, CRM team experience could transform the well effects ($0.829 > 0.803$) on BM to CE path, but the effects ($0.486 < 0.803$) on CR to BM path is also disappointed. One possible explanation, as in a viewpoint of study (Crook, Simmonds, & Rohleder, 2003), is that the employees in Taiwanese leading departments/agencies have gap between attitude and action. They might have only CRM training experience or CRM team experience. Taiwan Government needs to reinforce the CRM education and knowledge sharing in communication, training, and implementation simultaneously. Hence, there is support for H4.

Table 3. Testing for moderation effects on CRM-related experience

CRM Training (MANOVA)	CR	BM	CE
Wilk's Lambda	0.970*	0.948***	0.955***
Moderation Effects on CRM Training	Yes	No	t-value
Path Coefficient			
CR → BM	0.704***	0.789***	3.215***
BM → CE	0.767***	0.806***	- 1.439
CR → CE	0.253*	0.131	- 0.554
$\chi^2 = 192.148$, d.f. = 102, p-value = 0.000, GFI = 0.936, CFI = 0.955, AGFI = 0.901, RMR = 0.018, NFI = 0.910, *p<0.05, ***p<0.001			
CRM Team (MANOVA)	CR	BM	CE
Wilk's Lambda	0.963**	0.942***	0.931***
Moderation Effects on CRM Team	Yes	No	t-value
Path Coefficient			
CR → BM	0.486**	0.803***	4.470***
BM → CE	0.829***	0.803***	- 1.455
CR → CE	0.239	0.146	- 0.307
$\chi^2 = 173.904$, d.f. = 102, p-value = 0.000, GFI = 0.941, CFI = 0.963, AGFI = 0.910, RMR = 0.018, NFI = 0.917, **p<0.01, ***p<0.001			

5. Conclusion and Implication

Citizen-centric government is a direction of new government shaping in Taiwan to establish better service function and improve customer satisfaction continuously. Taiwan Government makes efforts in e-Taiwan initiative and the e-related plans or programs are implemented to enhance the readiness capabilities for citizen-centric services gradually. CRM becomes a turning point to maintain the competitive advantage in e-Gov business model. The best practice departments/agencies of public services in Taiwan transform a principle of CRM to shape citizen-centric e-Gov business model in the public sector. Toward a benchmark on citizen-centric e-Gov business model, the influences of CRM readiness on e-Gov business model and the effects of e-Gov business model through customer equity are recognized in this study to address the managerial implications of the goal aligning. The causal relationships were justified by empirical analysis, as shown in Table 4.

Table 4. Study results on e-Gov business model with CRM driven

Hypotheses	Result
H1: CRM readiness positively affects e-Gov business model.	Supported
H2: e-Gov business model positively affects customer equity.	Supported
H3: CRM readiness positively affects customer equity.	Supported
H4: CRM-related experience moderates the effects among CRM readiness, e-Gov business model, and customer equity.	Supported

5.1. Enhancing the Effects of e-Gov Business Model through CRM Readiness Examining

Based on the benchmarking concept of e-Gov, the cause-and-effect relationship among CRM readiness, e-Gov business model, and customer equity is explored in the empirical study that could guide the Taiwanese Government to develop citizen-centric e-Gov business model. According to the analysis results, CRM readiness positively affected e-Gov business model and customer equity. Organizations should have the diversified assessments with CRM readiness including blueprint management, change management, human resource, process management, and ICT resource. The results also reflect CRM is an approach of strategic cross-functional processes (Huang & Liu, 2009; Liu & Lai, 2004; Payne & Frow, 2006). The key missions from strategy to implementation are addressing a CRM vision and establishing cross-functional collaboration. Moreover, blueprint management and process management become a good starting point to shape e-Gov business model with a CRM perspective. Governments should initiate CRM from its readiness construct and assessment for risk aversion.

5.2. Transforming the Sustainable Customer Equity through e-Gov Business Model

As the whole effects of customer equity, e-Gov business model can deliver the service value to customers and positively affects the customers' cognition. The factor loadings among the four dimensions of e-Gov business model provide the governance circumstances. The departments/agencies could exploit service infrastructure management (0.733) to deliver service value rather than others. Governments can exploit budgets arrangement or shoot for more project funds to strengthen the ICT deployment and CRM application. Meanwhile, the outsourcing could deal properly with the weakness of service infrastructure management, especially in the lack of ICT deployment and information service capability. The factor loading of relationship equity is a little lower than brand equity and value equity. The result indicates CRM implementation has shortened the relationship gaps gradually between Taiwan Government and its stakeholders. Further, giving an impetus to community management, customization services or loyalty programs (citizen digital certificate) could broaden the benefit of relationship equity in e-Gov business model.

5.3. Broadening CRM Participation and Experience Sharing

CRM-related experience could enable employees with knowledge and skills to give an impetus on citizen-centric e-Gov business model. In Table 3, CRM training experience could obtain the well effects on customer equity through CRM readiness directly, but the outcome of e-Gov business model is disappointed. Otherwise, CRM team experience could transform the well effects on customer equity through e-Gov business model directly, but CRM readiness couldn't bring the well effects on e-Gov business model. The results reflect the gap between knowing and doing for public servants in Taiwan. Employees play the key role to implement CRM including interaction with customers or CRM value delivering. Besides the CRM education or CRM training, organizations also need to examine the human deployment in CRM project. CRM team experience could reduce

barriers to the next stage of the CRM project. In order to reinforce CRM education and knowledge sharing in communication, training, and implementation simultaneously, CRM participation and experience sharing could be broadened through the mechanisms of life-long learning for public servants further.

References

- [1] Afuah, A., & Tucci, C. L. (2003). *Internet business models and strategies: Text and cases* (2nd ed.). NY: McGraw-Hill.
- [2] Anttiroiko, A.-V., & Mälkiä, M. (2007). *Encyclopedia of digital governemen*. Hershey, PA: IGI Global.
- [3] Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993). Creating readiness for organizational change. *Human Relations*, 46(6), 681-703.
- [4] Ayanso, A., Chatterjee, D., & Cho, D. I. (2011). E-government readiness index: A methodology and analysis. *Government Information Quarterly*, 28(4), 522-532.
- [5] Badgett, M., Ballou, S., & LaValle, S. (2004). *Doing CRM right: What it takes to be successful with CRM*. Somers, NY: IBM Business Consulting Services.
- [6] Baran, R. J., Galka, R. J., & Strunk, D. P. (2008). *Principles of customer relationship management*. Mason, OH: Thomson.
- [7] Brendler, W. F., & Loyle, D. (2001). 8 critical factors that make or break CRM. *Target Marketing*, 24(4), 57-61.
- [8] Chen, Q., & Chen, H. M. (2004). Exploring the success factors of eCRM strategies in practice. *Journal of Databases Marketing & Customer Strategy Management*, 11(4), 333-343.
- [9] Cohen, S., & Moore, J. (2000). Today's buzzword: CRM (customer relationship management). *Public Management (US)*, 82(4), 10-13.
- [10] Craig, J., & Jutla, D. (2001). *E-business readiness: A customer-focused framework*. Upper Saddle River, NJ: Addison-Wesley.
- [11] Crook, P., Simmonds, A., & Rohleder, S. J. (2003). *CRM in government: Bridging the gaps*. Accenture.
- [12] Currie, W. L. (2004). Value creation from e-business models: Issues and perspectives. In W. L. Currie (Ed.), *Value creation from e-business models* (pp. 3-10). Burlington, MA: Elsevier Butterworth-Heinemann.
- [13] Eisenmann, T. R. (2002). *Internet business models: Text and cases*. New York: McGraw-Hill.
- [14] Gentle, M. (2002). *The CRM project management handbook: Building realistic expectations and managing risk*. London: Kogan Page.
- [15] Hansotia, B. (2002). Gearing up for CRM: Antecedents to successful implementation. *Journal of Database Marketing*, 10(2), 121-132.
- [16] Hansotia, B. (2004). Customer metrics and organizational alignment for maximizing customer equity. *Journal of Database Marketing & Customer Strategy Management*, 12(1), 9-20.
- [17] Holehonnur, A., Raymond, M. A., Hopkins, C. D., & Fine, A. C. (2009). Examining the customer equity framework from a consumer perspective. *Journal of Brand Management*, 17(3), 165-180.

- [18] Huang, S. Y., & Liu, H. Y. (2009, August 25-27). *Applying double-loop knowledge management model on customer Self-service Systems for Taiwan's e-government*. Paper presented at the Fifth International Joint Conference on INC, IMS and IDC, 2009. NCM '09. Seoul, Korea: IEEE. doi: 10.1109/NCM.2009.49
- [19] Hunter, D. R., & Shine, S. (2001). *Customer relationship management: A blueprint for government*. Accenture.
- [20] Johnson, M. W., Christensen, C. M., & Kagermann, H. (2008). Reinventing your business model. *Harvard Business Review*, 86(12), 50-59.
- [21] Korunka, C., Scharitzer, D., Carayon, P., Hoonakker, P., Sonnek, A., & Sainfort, F. (2007). Customer orientation among employees in public administration: A transnational, longitudinal study. *Applied Ergonomics*, 38(3), 307-315.
- [22] Krammer, M. (2001). *Survey reveals e-business staffing and investments*. Research Note com-13-8148, Stamford, Connecticut: Gartner Group.
- [23] Lemon, K. N., Rust, R. T., & Zeithaml, V. A. (2001). What drives customer equity? *Marketing Management*, 10(1), 20-25.
- [24] Liu, H. Y., & Chen, C. H. (2008, March 28). *A Study on behavioral intention of implementing customer relationship management for Taiwan's e-government*. Paper presented at 2008 International Joint Conference on e-Commerce, e-Administration, e-Society and e-Education. Bangkok, Thailand: International Business Academics Consortium.
- [25] Liu, H. Y., & Fang, S. Y. (2009, August 25-27). *An approach to explore effective customer-centric e-government*. Paper presented at INC, IMS and IDC, 2009. NCM '09. Fifth International Joint Conference on. Seoul, Korea. doi: 10.1109/NCM.2009.176
- [26] Liu, H. Y., & Huang, S. Y. (2014). Fostering a customer-centric e-government through customer relationship management readiness assessment. *International Journal of Business and Systems Research*, 8(1), 51-71.
- [27] Liu, H., & Lai, P. (2004). Managing process-centred e-government in Taiwan: A customer relationship management approach. *Electronic Government*, 1(4), 398-419.
- [28] Lumpkin, G. T., & Dess, G. G. (2004). E-business strategies and Internet business models: How the internet adds value. *Organizational Dynamics*, 33(2), 161-173.
- [29] Moncla, B. (2004). *How can we determine our CRM readiness?* Retrieved from <http://www.destinationcrm.com/Articles/ReadArticle.aspx?ArticleID=44007>.
- [30] NICI (National Information and Communication Initiative, Executive Yuan, Republic of China) (2002). *2002 electronic business white paper in Taiwan*. Taipei: Ministry of Economic Affairs, Department of Industrial Technology.
- [31] Ocker, R. J., & Mudambi, S. M. (2003, January, 6-9). *Assessing the readiness of firms for CRM: A literature review and research model*. Paper presented at the 36th Annual Hawaii International Conference on System Sciences. doi: 10.1109/HICSS.2003.1174390.
- [32] Osterwalder, A. (2004). *The business model ontology—A proposition in a design science approach* (PhD thesis). Switzerland: University of Lausanne.
- [33] Osterwalder, A., & Pigneur, Y. (2003, June 9-11). Modelling customer relationships in e-business. Paper presented at the 16th Bled Electronic Commerce Conference eTransformation. Slovenia: Bled.

- [34] Osterwalder, A., Pigneur, Y., & Tucci, C. L. (2005). Clarifying business models: Origins, present, and future of the concept. *Communications of the Association for Information Systems*, 16, 1-25.
- [35] Paarlberg, L. E. (2007). The impact of customer orientation on government employee performance. *International Public Management Journal*, 10(2), 201-231.
- [36] Payne, A. (2006). *Handbook of CRM: Achieving excellence in customer management*. Burlington, UK: Butterworth-Heinemann.
- [37] Payne, A., & Frow, P. (2006). Customer relationship management: from strategy to implementation. *Journal of Marketing Management*, 22(1-2), 135-168.
- [38] Peccei, R., & Rosenthal, P. (1997). The antecedents of employee commitment to customer service: Evidence from a UK service context. *International Journal of Human Resource Management*, 8(1), 66-86.
- [39] Pedraza, M. (2000). 12 principles of CRM success. *B to B*, 85(2), 52-53.
- [40] Pitt, L. F., Ewing, M. T., & Berthon, P. (2000). Turning competitive advantage into customer equity. *Business Horizons*, 43(5), 11-18.
- [41] Research and Markets. (2008). *CRM and the move to constituent—Centric government (strategic focus)*. Dublin, Ireland: Research and Markets.
- [42] Reynolds, J. (2002). *A practical guide to CRM: Building more profitable customer relationships*. New York: CMP Books.
- [43] Rust, R. T., & Chung, T. S. (2006). Marketing models of service and relationships. *Marketing Science*, 25(6), 560-580.
- [44] Rust, R. T., Lemon, K. N., & Narayandas, D. (2005). *Customer equity management*. Upper Saddle River, NJ: Prentice Hall.
- [45] Rust, R. T., Moorman, C., & Bhalla, G. (2010). Rethinking marketing. *Harvard Business Review*, 88(1), 94-101.
- [46] Rust, R. T., Zeithaml, V. A., & Lemon, K. N. (2000). *Driving customer equity: How customer lifetime value is reshaping corporate strategy*. New York: Free Press.
- [47] Ryals, L. (2008). *Managing customers profitably*. New York: John Wiley & Sons.
- [48] Snijkers, K., Rotthier, S., & Janssen, D. (2007). *Critical review of e-government benchmarking studies*. In D. Griffin, P. Trevorrow, & E. Halpin (Eds.), *Developments in e-government: A critical analysis* (pp. 73-85). Amsterdam: IOS Press.
- [49] Swift, R. S. (2001). *Accelerating customer relationships: Using CRM and relationship technologies*. Upper Saddle River, NJ: Prentice Hall.
- [50] The Economist. (2005, April 9). The cart pulling the horse? *The Economist*, 51. Retrieved from <http://www.economist.com/node/3849921>.
- [51] Thompson, B. (2001). Five insights for CRM success. *Target Marketing*, 24(7), 64-65.
- [52] Tsai, J. (2007, September 25). e-Gov: Continued vote of no confidence. Retrieved from <http://www.destinationcrm.com/Articles/CRM-News/CRM-Featured-News/E-Gov-Continued-Vot-e-of-No-Confidence-42877.aspx>.
- [53] Tsai, J. (2008, December 23). *Federal government improves, but still trails private sector*. Retrieved from <http://www.destinationcrm.com/Articles/CRM-News/%20Daily-News/Federal-Government-Improves,-But-Still-Trails-Private-Sector-52010.aspx>.

- [54] UN (United Nations). (2005). *UN global e-government readiness report 2005: From e-government to e-inclusion*. New York: United Nations. Retrieved from <http://unpan3.un.org/egovkb/Portals/egovkb/Documents/un/2005-Survey/Complete-survey.pdf>.
- [55] Vogel, V., Evanschitzky, H., & Ramaseshan, B. (2008). Customer equity drivers and future sales. *Journal of Marketing*, 72(6), 98-108.
- [56] Washrille, N. A. (2001, October 31). Selects pivotal e-business and CRM software to streamline government processes; Pivotal joints forces with link to implement innovative government solution. *Canadian Corporate News*.
- [57] White, J. D. (2007). *Managing information in the public sector*. Armonk, NY: M.E. Sharpe.
- [58] Wixom, B. H., & Watson, H. J. (2001). An empirical investigation of the factors affecting data warehousing success. *MIS Quarterly*, 25(1), 17-41.
- [59] Woodcock, N., Stone, M, & Ekinci, Y. (2008). Customer management in public sector organisations. *Journal of Direct, Data and Digital Marketing Practice*, 10(1), 16-28.

Copyrights



Copyright for this article is retained by the author(s), with first publication rights granted to the journal. This is an open-access article distributed under the terms and conditions of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

