

IT-MEDIATED CUSTOMER SERVICE CONTENT AND DELIVERY IN ELECTRONIC GOVERNMENTS: AN EMPIRICAL INVESTIGATION OF THE ANTECEDENTS OF SERVICE QUALITY

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Appendix A

Summary of Extant Literature on Electronic Service (e-Service) Quality

Author(s)	Domain	Dimensions + [Sub-Dimensions]	Scope of Application	Theoretical Frame of Reference	Conceptual vs. Empirical
Agarwal and Venkatesh (2002)	Website Quality	<ul style="list-style-type: none"> • Content [Relevance, Media Use, Depth/Breath and Current Information] • Ease of Use [Goals, Structure and Feedback] • Promotion • Made-for-the-Medium [Community, Personalization and Refinement] • Emotion [Challenge, Plot, Character Strength and Pace] 	Online Shopping and Content based Website	Microsoft Usability Guidelines [MUG] (Keeker 1997)	Empirical
Barnes and Vidgen (2001)	Website Quality	<ul style="list-style-type: none"> • Tangibles [Aesthetics and Navigation] • Reliability [Reliability and Competence] • Responsiveness [Responsiveness and Access] • Assurance [Credibility and Security] • Empathy [Communication and Understanding the Individual] 	Online Shopping	Parasuraman et al.'s (1988) SERVQUAL	Empirical
Cai and Jun (2003)	Service Quality	<ul style="list-style-type: none"> • Website Design/Content • Trustworthiness • Prompt/Reliable Service • Communication 	Online Shopping	SERVQUAL and eTailQ	Empirical

Author(s)	Domain	Dimensions + [Sub-Dimensions]	Scope of Application	Theoretical Frame of Reference	Conceptual vs. Empirical
Childers et al. (2001)	Website Quality	<ul style="list-style-type: none"> • Navigation [Influence Ease of Use and Enjoyment] • Convenience [Influence Usefulness, Ease of Use and Enjoyment] • Substitutability Experience [Usefulness and Enjoyment] 	Online Shopping	None	Empirical
Collier and Bienstock (2003, 2006)	Service Quality	<ul style="list-style-type: none"> • Process Quality [Privacy, Design, Information Accuracy, Ease of Use, Functionality] • Outcome Quality [Order Timeliness, Order Accuracy, Order Condition] • Recovery Quality [Interactive Fairness, Procedural Fairness, Outcome Fairness] 	Online Shopping	Model of Logistics Service Quality (Mentzer et al. 2001)	Conceptual
Devaraj et al. (2002)	Website Quality	<ul style="list-style-type: none"> • Ease of Use • Usefulness • Asset Specificity • Uncertainty • Empathy • Reliability • Responsiveness • Assurance 	Online Shopping	Technology Acceptance Model [TAM], Transaction Cost Analysis [TCA] and SERVQUAL	Empirical
Douglas et al. (2003)	Website Quality	<ul style="list-style-type: none"> • Presentation • Content • Accessibility • Reliability • Customer Support • Security 	Websites of Legal Practices	Surjadjaja et al.'s (2003) 20 Determinants of E-Service Operations	Empirical
Evanschitzky et al. (2004)	E-Satisfaction	<ul style="list-style-type: none"> • Convenience • Product Offerings • Product Information • Site Design • Financial Security 	Online Shopping	Szymanski and Hise (2000) E-Satisfaction	Empirical
Fassnacht and Koese (2006)	Quality of Electronic Service [QES] - Degree to which an electronic service is able to efficiently and effectively fulfill relevant customer needs	<ul style="list-style-type: none"> • Environment Quality [Graphic Quality, Clarity of Layout] • Delivery Quality [Attractiveness of Selection, Information Quality, Ease of Use, Technical Quality] • Outcome Quality [Reliability, Functional Benefit, Emotional Benefit] 	All forms of Electronic Services	Rust and Oliver's (1994) Service Quality Framework [i.e., Service Environment, Service Delivery, Service Product]	Empirical
Gefen (2002)	Service Quality	<ul style="list-style-type: none"> • Tangibles • Reliability, Responsiveness, Assurance • Empathy 	Online Shopping	SERVQUAL	Empirical
Gounaris and Dimitriadis (2003)	Service Quality	<ul style="list-style-type: none"> • Customer Care and Risk Reduction Benefit • Information Benefit • Interaction Facilitation Benefit 	Portal Sites	SERVQUAL	Empirical
Gummerus et al. (2004)	Service Quality – "Extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery" (Zeithaml et al. 2000, p. 11)	<ul style="list-style-type: none"> • User Interface • Responsiveness • Need Fulfillment • Security 	Content-based Websites	None	Empirical

Author(s)	Domain	Dimensions + [Sub-Dimensions]	Scope of Application	Theoretical Frame of Reference	Conceptual vs. Empirical
Janda et al. (2002)	Internet Retail Service Quality (IRSQ)	<ul style="list-style-type: none"> • Performance • Access • Security • Sensation • Information 	Online Shopping	None	Empirical
Jiang et al. (2002)	Information Systems Quality	<ul style="list-style-type: none"> • Reliability • Responsiveness • Assurance • Empathy 	Information Systems	SERVQUAL	Empirical
Kim et al. (2004)	Service and Website Quality	<ul style="list-style-type: none"> • Service Quality [Reliability, Responsiveness, Assurance and Empathy] • Website Quality [Information Quality and System Quality] 	Online Shopping	Information Quality [IQ] and System Quality [SQ] (Delone and McLean 1992; McKinney et al. 2002) and SERVQUAL	Empirical
Kim and Lim (2001)	Website Quality	<ul style="list-style-type: none"> • Entertainment • Speed • Information Quality • Reliability 	Online Shopping	Kolter et al.'s (1996) 14 Service Elements	Empirical
Kim and Stoel (2004)	Website Quality	<ul style="list-style-type: none"> • Web Appearance • Entertainment • Information Fit-to-Task • Transaction Capability • Response Time • Trust 	Online Shopping for Apparel	Loiacono's (2000) Original 12 Dimensions of WebQual	Empirical
Kim et al. (2006)	Service Quality - "Extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery" (Zeithaml et al. 2000, p. 11)	<ul style="list-style-type: none"> • Efficiency • Fulfillment • System Availability • Privacy • Responsiveness • Contact • Personalization • Information • Graphic Styles 	Online Shopping for Apparel	Parasuraman et al.'s (2005) E-S-QUAL	Conceptual
Loiacono et al. (2002)	Website Quality [WebQual]	<ul style="list-style-type: none"> • Usefulness [Informational fit-to-task, Interactivity, Trust, Response Time] • Ease of Use [Ease of Understanding, Intuitive Operations] • Entertainment [Visual Appeal, Innovativeness, Flow] • Complementary Relationship [Consistent Image, Online Completeness, Better than Alternative Channels] 	All manners of Websites but with no explicit reference to service delivery	Technology Acceptance Model [TAM]	Empirical
McKinney et al. (2002)	Website Quality	<ul style="list-style-type: none"> • IQ Expectations [Relevance, Understandability, Reliability, Adequacy, Scope, Usefulness] • SQ Expectations [Access, Usability, Entertainment, Hyperlinks, Navigation, Interactivity] 	Online Shopping	Information Quality [IQ] and System Quality [SQ] (Delone and McLean 1992)	Empirical
Meliàn-Alzola and Padron-Robaina (2006)	Website Quality	<ul style="list-style-type: none"> • Tangibility [Navigation, Signposting, Tools and Explanation] 	Online Shopping	Eiglier and Langedard's (1989) Two Components of a Service	Empirical

Author(s)	Domain	Dimensions + [Sub-Dimensions]	Scope of Application	Theoretical Frame of Reference	Conceptual vs. Empirical
O'Neill et al. (2001)	Service Quality	<ul style="list-style-type: none"> • Contact [Assurance, Empathy + (Reliability)] • Responsiveness • Reliability • Tangibles 	Online Service Websites	SERVQUAL	Empirical
Palmer (2002)	Website Quality	<ul style="list-style-type: none"> • Download Delay [Initial Access Speed, Speed of Display Between Pages] • Navigation/Organization [Arrangement, Sequence, Links, Layout] • Interactivity [Customization, Interactivity] • Responsiveness [Feedback, FAQ] • Information/Content [Amount of Information, Variety of Information, Word Count, Content Quality] 	Online Shopping	None	Empirical
Parasuraman et al. (2005)	Service Quality [E-S-QUAL] – Extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery	<ul style="list-style-type: none"> • Efficiency • System Availability • Fulfillment • Privacy 	Online Shopping	Means-End Framework	Empirical
Ribbink et al. (2004)	Service Quality	<ul style="list-style-type: none"> • Ease of Use • Website Design • Customization • Responsiveness • Assurance 	Online Shopping	SERVQUAL and eTailQ	Empirical
Rosen and Purinton (2004)	Website Quality - [Website Preference Scale (WSPS)]	<ul style="list-style-type: none"> • Coherence • Complexity • Legibility • Mystery 	Online Shopping	Kaplan et al.'s (1998) Environment Preference Framework	Empirical
Santos (2003)	Service Quality – Consumer's overall evaluation and judgment of the excellence and quality of e-services offerings in a virtual marketplace	<ul style="list-style-type: none"> • Incubative Dimension [Likely to increase website's daily hit rates] – Ease of Use, Appearance, Linkage, Structure and Layout, and Content • Active Dimension [Likely to increase customer retention and positive word of mouth referral] – Reliability, Efficiency, Support, Communications, Security, and Incentives 	Online Shopping	None	Empirical
Schubert (2002)	Website Quality [Extended Web Assessment Method (EWAN)]	<ul style="list-style-type: none"> • Ease of Use Criteria • Usefulness Criteria • Trust Criteria 	Online Shopping	Technology Acceptance Model [TAM]	Empirical
Semeijn et al. (2005)	Service Quality	<ul style="list-style-type: none"> • Assurance • Navigation • E-Scape • Accuracy • Responsiveness • Customization 	Online Shopping	SERVQUAL and eTailQ	Empirical
Shchiglik and Barnes (2004)	Website Quality [Perceived Airline Website Quality Instrument (PAWQI)]	<ul style="list-style-type: none"> • Domain Specific Dimension • Web Information Quality • Web Interaction Quality • Web Design Quality 	Online Shopping	Barnes and Vidgen's (2001) WebQual	Empirical

Author(s)	Domain	Dimensions + [Sub-Dimensions]	Scope of Application	Theoretical Frame of Reference	Conceptual vs. Empirical
Shim et al. (2002)	Website Quality	<ul style="list-style-type: none"> • Ease of Contact • Customer Service Information • Ease of Access of Product Information 	Online Shopping	None	Empirical
Singh (2002)	E-Services	<ul style="list-style-type: none"> • E-Search • E-Response-Transaction and E-Payment • E-Assurance and Trust • E-Help and E-Technologies 	Online Service Websites	None	Empirical
Srinivasan et al. (2002)	E-Service Loyalty	<ul style="list-style-type: none"> • Customization • Contact Interactivity • Care • Community • Convenience • Cultivation • Choice • Character of E-Retailer 	Online Shopping	None	Empirical
Surjadjaja et al. (2003)	Service Quality	<ul style="list-style-type: none"> • Service Marketing [Trusted Services, Internal Communication, External Communication, Price and Return Process] • Service Delivery [Real time Assistance by CSR, Fulfillment and Availability] • Service Design [Responsiveness, Site Effectiveness & Functionality, Up to Date Information, Supply Chain Information, System Integration, Personalization, Customization, Navigability, Security, Interactivity, Service Recovery] 	Online Service Websites	None	Conceptual
Wolfenbarger and Gilly (2003)	Service Quality [eTailQ]	<ul style="list-style-type: none"> • Website Design • Fulfillment/Reliability • Security/Privacy • Customer Service 	Online Shopping	None	Empirical
Zeithaml (2002), Zeithaml et al. (2002)	Service Quality [e-SQ] - Extent to which a Website facilitates efficient and effective shopping, purchasing, and delivery of products and services	<ul style="list-style-type: none"> • Information Availability and Content • Ease of Use or Usability • Privacy/Security • Graphic Style • Fulfillment 	Online Shopping	Zeithaml et al.'s (2000) e-Service Quality	Conceptual
Zhang and von Dran (2001)	Website Quality	<ul style="list-style-type: none"> • Basic [Features the support expected needs of users] • Performance [Features that enable the website to stay current to users' expectations] • Exciting [Features that are not expected but have the ability to excite and delight users] 	News Content-based Website	Kano et al.'s (1984) Model of Quality	Empirical

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Appendix B

A Comparison of E-Government Best Practices across Canada, Singapore, and the United States

Service Content Function	Canada	Singapore	United States
Requirements			
Needing	The net-filing website of the Canada Revenue Agency [www.netfile.gc.ca] of the Canadian government provides taxpayers with a detailed checklist to ensure the fulfillment of prerequisites before they can file their taxes online	The website of the Housing Development Board [www.hdb.gov.sg] of the Singapore government details step-by-step instructions on how to proceed with complicated procedures such as the buying of properties	The website of the Social Security Administration [www.ssa.gov] of the American government provides users with step-by-step information on how to replace a lost social security card
Customizing	The website of the Government of Canada [www.canada.gc.ca] allows users to open a "My Government Account" from which users can choose to load different administrative links and tools to manage their e-service within a single domain	The website of Singapore Army's National Service [www.ns.sg] allows users to choose the different types of services to be loaded on the their own login page	The website of government benefits [www.govbenefits.gov] of the American government allows users to choose different page presentation according to how the information is categorized

Service Content Function	Canada	Singapore	United States
Acquisition			
Sourcing	The website of Contracts Canada [contractsCanada.gc.ca] of the Canadian government provides services such as the Government Electronic Tendering Service to match federal government purchasing orders with commercial suppliers	The website of the Government e-Business [www.gebiz.gov.sg] of the Singapore government provides online tracing functions to match government purchasing orders with commercial suppliers	The website of the Federal Business Opportunities [fedbizopps.gov] of the American government provides matching functionalities to match federal government purchasing orders with commercial suppliers
Trying	The website of the Canada Revenue Agency [www.netfile.gc.ca] of the Canadian government has certified several commercial software applications that will assist taxpayers in tax returns preparation before the actual net-filing process	The website of the Inland Revenue Authority [mytax.iras.gov.sg] of the Singapore government allows demo slides that take users through a simulated tax filing process before the actual transaction	The website of the Internal Revenue Services [www.irs.gov] of the American government provides a service know as Free File: An online tax preparation and electronic filing service through a partnership agreement between the IRS and the Free File Alliance for American Taxpayers
Ordering	The website of the Human Resources and Skills Development Canada [www100.hrdc-drhc.gc.ca] of the Canadian government allows users to apply for Employment Insurance (EI) benefits online	The website of the Inland Revenue Authority [mytax.iras.gov.sg] of the Singapore government allows users to file their taxes online	The website of the Social Security Administration [www.ssa.gov] of the American government allows users to apply for social security benefits online
Paying	The website of the Canada Savings Bonds [www.csb.gc.ca] of the Canadian government provides users with a variety of online options to pay for the purchase of saving bonds	The website of One Motoring [www.onemotoring.com.sg] that is affiliated to the Land Transport Authority of the Singapore government provides users with the ability to pay for the renewal of road tax online	The website of the Department of Motor Vehicles [www.dmv.ca.gov] of the Californian state government provides users with the ability to pay for the renewal of driver license online
Tracking	The website of Citizenship and Immigration Canada [www.cic.gc.ca] of the Canadian government allows users to view securely, the status of his/her immigration application(s) online, 24 hours a day, 7 days a week; anytime, anywhere	The website of the Central Provident Fund (CPF) Board [www.cpf.gov.sg] of the Singapore government provides real-time status of all online transactions with the government agency and informs users whether transactional applications are received, rejected, being processed or approved	The website of the Social Security Administration [www.ssa.gov] of the American government allows American Citizens to: (1) check on the status of their online application for Social Security Retirement, Spouse's, or Disability benefits; (2) continue an unfinished Online Appeal Disability Report, and; (3) review benefits and personal information that have been supplied
Accepting	The website of the Canada Revenue Agency [www.netfile.gc.ca] of the Canadian government allows automatic computation of tax returns and users to estimate online the expected amount of refunds	The website of the Inland Revenue Authority [mytax.iras.gov.sg] of the Singapore government allows users to re-file their taxes within the same tax portal if amendments are required before the filing is finalized	The website of the Social Security Administration [www.ssa.gov] of the American government allows users to request confirmation of their Social Security benefit information
Authorizing	The website of the Canada Revenue Agency [www.netfile.gc.ca] of the Canadian government provides clear statements about how the tax information received will be used and about the security features used to protect the taxpayers' privacy	The website of the Inland Revenue Authority [mytax.iras.gov.sg] of the Singapore government allows users to authorize third parties and to verify their identity in order to carry out the tax filing process on the users' behalf	The website of the Social Security Administration [www.ssa.gov] of the American government offers clear privacy statement about the usage of the residential information provided by users

Service Content Function	Canada	Singapore	United States
Ownership			
Training	The website of the Government of Canada [www.canada.gc.ca] allows users to open a “My Government Account” that allows users to make use of existing personal information and transaction records to facilitate future administrations in a more simplified manner	The website of Singapore Army’s National Service [www.ns.sg] has integrated the servicemen’s reservist records with other related services such as reimbursement claims from the government and annual fitness test requirements under a single database to allow a serviceman to initiate multiple-service applications whenever he receives a military call-back	The website of the State Government of California [www.ca.gov] allows users to open a “My California” account that allows users to make use of existing personal information and transaction records to facilitate future administrations in a more simplified manner
Monitoring	The website of the Government of Canada [www.canada.gc.ca] allows users to choose among the different news feeds from which they can stay updated on news from different levels of government	The website of One Motoring [www.onemotoring.com.sg] that is affiliated to the Land Transport Authority of the Singapore government offers news flash to inform users of new administrative procedures and new transport regulations	The website of the U.S. Government [www.firstgov.gov] offers well-categorized summaries of news and features that are related to the government
Upgrading	The website of the Canada Revenue Agency [www.netfile.gc.ca] of the Canadian government allows taxpayers the option to log into their account should they wish make changes to their tax returns after net-filing	The website of the Inland Revenue Authority [mytax.iras.gov.sg] automatically recalculates tax returns of employees in respond to changes in tax regulations without requiring taxpayers to go through the entire e-filing process again	The website of Employee Express [www.employeeexpress.gov] of the American government allows federal employees the ability to update and make changes to specific payroll information without having to submit a new application to create an entirely new personal profile
Scheduling	The website of the Canada Revenue Agency [www.cra-arc.gc.ca] of the Canadian government provides clear information to remind taxpayers of important dates of recurring administrative events such that the annual tax filing process can be completed with complications	The website of eCitizen [www.eCitizen.gov.sg] of the Singapore government provides automatic Short Message Services and email alerts for recurring administrative steps such as road tax renewal and passport renewal notifications, library book reminders, season parking reminders	The website of the Internal Revenue Services [www.irs.gov] of the American government provides clear information to remind taxpayers of important dates of recurring administrative events such that the annual tax filing process can be completed with complications
Delegating	The website of Jobs Etc. [www.jobsetc.ca] of the Canadian government allows users to create and store their resumes online so that potential employers may contact and notify these users should an appropriate position becomes available	The website of the Housing Development Board [www.hdb.gov.sg] of the Singapore government allows automatic deduction of seasonal parking ticket payments through General Interbank Recurring Order (GIRO)	The website of the Electronic Federal Tax Payment System [www.eftps.gov] of the American government allows taxpayers to schedule dates of installment payments of their tax returns up to one year in advance
Negotiating	The website of the Canada Revenue Agency [www.cra-arc.gc.ca] of the Canadian government allows users to log into their personal account to dispute their assessments and determinations in tax matters	The website of the Inland Revenue Authority [mytax.iras.gov.sg] of the Singapore government automatically logs all taxpayers’ complaints and concerns in the e-filing system for easy retrieval and re-evaluation of processed tax transactions	The website of the Internal Revenue Services [www.irs.gov] of the American government provides comprehensive information about the different ways by which taxpayers can go about solving tax controversies through appealing
Evaluating	The website of the Government of Canada [www.canada.gc.ca] offers a comprehensive list of governmental websites addresses for easy access, by users with feedback, to the relevant authorities	The website of the Feedback Unit [app.feedback.gov.sg] of the Singapore government allows layers of bureaucracy to be flattened by providing a one-stop portal for channeling any feedback on e-service offerings	The website of the U.S. Government [www.firstgov.gov] offers a one-stop email address for enquiries about the FirstGov.gov website or about anything in government, if the users are not sure who to ask

Appendix C

Sorting Procedure and Outcomes for Measurement Items

The sorting exercise for measurement items began with the recruitment of five judges for the first round of sorting. Consisting of postgraduate students and faculty members, the judges either were familiar with the topic of e-government or had conducted research in the area of virtual transactions. To reduce fatigue among judges, measurement items for service content functions were separated from those for service delivery dimensions during sorting. Each judge was initially presented with definitions for each of the 16 service content functions and a randomly sorted list of 49 reflective items. The judges were then told to assign each item to one of the functions or to an “ambiguous” category if they were unsure of its placement. Upon completion, an identical procedure was followed to sort another 18 reflective items corresponding to the 6 service delivery dimensions. Average “hit ratios” of 85 percent and 83 percent were attained for the service content functions and delivery dimensions, respectively. Computed Kappas also averaged above 0.80 for both service content functions and delivery dimensions (Cohen 1988).

Following this initial round of sorting, the judges were interviewed and minor amendments were made to the phrasing of the measurement items. The second round of sorting was conducted with the sole purpose of discerning the performance of the measurement items in a general population. For this reason, six judges were selected from a convenient pool of postgraduate students with e-government transactional experience but not affiliated with the information systems discipline. Again, the judges sorted the items for service content functions separately from those for service delivery. Hit ratios of 80 percent and 83 percent were registered for the service content functions and delivery dimensions, respectively, whereas calculated Kappas yielded values of above 0.78 for both.

A third and final round of sorting was conducted with three other judges (who, again, were unfamiliar with the research topic) whereby measurement items from both service content functions and delivery dimensions were sorted simultaneously. An average hit ratio of 82 percent and a Kappa value of 0.79 were observed, thereby eliminating the probability of cross-loadings among measurement items between service content functions and delivery dimensions.

Reference

Cohen, J. 1988. *Statistical Power Analysis for the Behavioral Sciences*, Hillsdale, NJ: Erlbaum.

Appendix D

List of Measurement Items

Construct	Reflective Measures [All items were measured using a 7-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree”]	Mean (S.D.)	Standardized Factor Loading
Constructs of IT-Mediated Customer Service Functions			
Requirements			
Needing	Using the website lets me identify the e-government transactions I need to perform.	2.48 (1.23)	0.87
	Using the website lets me better understand the e-government transactions I have to perform.	2.94 (1.32)	0.82
	Using the website lets me determine the e-government transactions I have to perform.	2.55 (1.18)	0.87
Customizing	Using the website lets me configure the steps for completing e-government transactions according to my specific needs.	2.82 (1.38)	0.87
	Using the website lets me customize e-government transactions according to my requirements.	3.15 (1.43)	0.90
	Using the website lets me customize its content to serve my needs better.	3.61 (1.53)	0.83

Construct	Reflective Measures [All items were measured using a 7-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree"]	Mean (S.D.)	Standardized Factor Loading
Acquisition			
Sourcing	Using the website lets me communicate with relevant public agencies when performing my e-government transactions.	3.04 (1.36)	0.75
	Using the website helps me determine specific governmental branches that can assist me when performing e-government transactions.	3.00 (1.37)	0.88
	Using the website lets me locate the governmental branch responsible for a specific e-government transaction.	2.83 (1.30)	0.87
Trying	Using the website lets me try out the necessary steps before attempting to perform actual e-government transactions.	3.22 (1.48)	0.91
	Using the website lets me simulate the steps needed to perform actual e-government transactions.	3.28 (1.51)	0.90
	Using the website lets me perform trial-runs of e-government transactions.	3.69 (1.53)	0.87
Ordering	The website facilitates the processing of my e-government transactions.	2.36 (1.22)	0.88
	Using the website lets me effectively perform my e-government transactions online.	2.35 (1.26)	0.93
	All functions needed to perform/complete my e-government transactions are available from the website.	2.73 (1.44)	0.86
Paying	The website allows me to pay for my e-government transactions online.	2.42 (1.42)	0.92
	Using the website, I am able to pay for my e-government transactions.	2.52 (1.47)	0.95
	All functions needed to process payments for my e-government transactions are available from the website.	2.72 (1.41)	0.92
Tracking	Using the website lets me review my history of completed e-government transactions.	3.36 (1.55)	0.68
	Using the website lets me track the progress of my e-government transactions.	3.01 (1.45)	0.88
	Using the website lets me determine when my e-government transactions will be processed.	2.81 (1.38)	0.85
	Using the website informs me about the current status of my pending e-government transactions.	3.19 (1.45)	0.85
Accepting	Using the website enables me to see the potential outcomes of different e-government transactions and helps me choose the best option.	3.53 (1.49)	0.85
	Using the website gives me suggestions to improve the outcome of my e-government transactions.	3.49 (1.50)	0.85
	Using the website lets me predict the outcomes derived from performing my e-government transactions.	3.23 (1.41)	0.86
Authorizing	Using the website lets me decide on who is allowed to see my confidential personal information such as credit card numbers.	3.87 (1.61)	0.88
	Using the website lets me determine who can access my personal information disclosed while performing my e-government transactions.	3.93 (1.63)	0.89
	Using the website lets me have full authority and control over access to my personal information when performing e-government transactions.	3.65 (1.53)	0.88
Ownership			
Training	Using the website lets me be innovative in how I can go about performing an e-government transaction.	3.65 (1.48)	0.84
	Using the website empowers me to perform any e-government transaction.	3.43 (1.50)	0.81
	Using the website lets me discover other ways of performing the same e-government transaction over time.	3.50 (1.42)	0.84
Monitoring	Using the website lets me know about new service features that may aid me in performing my e-government transactions.	2.81 (1.34)	0.82
	Using the website keeps me updated on amended administrative procedures for e-government transactions.	3.38 (1.40)	0.84
	The website always advises me on newly added e-government service features.	3.34 (1.40)	0.88

Construct	Reflective Measures [All items were measured using a 7-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree"]	Mean (S.D.)	Standardized Factor Loading
Upgrading	The website informs me of any additional steps to be taken if administrative procedures change while my e-government transactions are being processed.	3.29 (1.42)	0.84
	Using the website lets me modify details of my uncompleted e-government transactions whenever administrative procedures change.	3.44 (1.41)	0.85
	Using the website lets me modify uncompleted e-government transactions without having to re-enter the exact same information.	3.46 (1.47)	0.82
Scheduling	Using the website lets me make note of the dates for recurring e-government transactions.	3.52 (1.43)	0.83
	Using the website lets me keep track of the deadlines of e-government transactions that I need to perform.	3.30 (1.47)	0.88
	Using the website lets me remember dates of e-government transactions to be completed in the future.	3.72 (1.51)	0.88
Delegating	Using the website lets me authorize future recurring administrative procedures such as payment for seasonal government services.	3.90 (1.42)	0.89
	Using the website lets me schedule execution of recurring e-government transactions automatically.	4.00 (1.42)	0.89
	Using the website frees me from performing recurring e-government transactions.	3.86 (1.54)	0.89
Negotiating	Using the website lets me dispute the outcome of an e-government transaction which I believe is unjustified.	3.93 (1.44)	0.88
	Using the website lets me query the relevant authorities if I disagree with the outcome of my e-government transactions.	3.92 (1.47)	0.91
	Using the website lets me challenge the outcomes of my e-government transactions if I perceive them to be unfair.	4.16 (1.49)	0.91
Evaluating	Using the website lets me provide feedback to the governmental branch responsible for a specific e-government service.	3.59 (1.52)	0.91
	Using the website lets me send my evaluation of the quality of an e-government service to the governmental branch responsible for it.	3.81 (1.50)	0.91
	Using the website lets me communicate my experience of a specific e-government service to its relevant governmental branch.	3.74 (1.46)	0.90
Constructs of IT-Mediated Customer Service Delivery Dimensions			
Accessibility	I do not need to perform complicated technical configurations on my computer in order to access the website to perform e-government transactions.	2.47 (1.33)	0.86
	I do not face any difficulty in accessing the website using my favorite Internet browser to perform e-government transactions.	2.43 (1.27)	0.94
	I do not encounter any problem in accessing the website using my computer to perform e-government transactions.	2.38 (1.21)	0.94
Navigability	I do not find the presentation of instructions and procedures to be ambiguous and confusing when performing e-government transactions using the website.	2.98 (1.38)	0.85
	Using the website lets me surf effortlessly through relevant webpages while performing my e-government transactions.	3.26 (1.35)	0.81
	Using the website lets me easily understand the instructions and procedures for performing e-government transactions.	2.80 (1.26)	0.90
Interactivity	I find using the website to be engaging when I am performing e-government transactions.	3.58 (1.35)	0.89
	I find using the website a stimulating experience.	3.75 (1.40)	0.83
	The website is responsive and sensitive to my online habits.	3.60 (1.30)	0.83
Interoperability	I am able to complete different e-government transactions using the same website.	3.58 (1.54)	0.83
	Using this website, I can access services provided by different governmental branches.	3.50 (1.51)	0.90
	Various e-government services under the responsibility of different governmental branches are available via the same website.	3.70 (1.48)	0.89

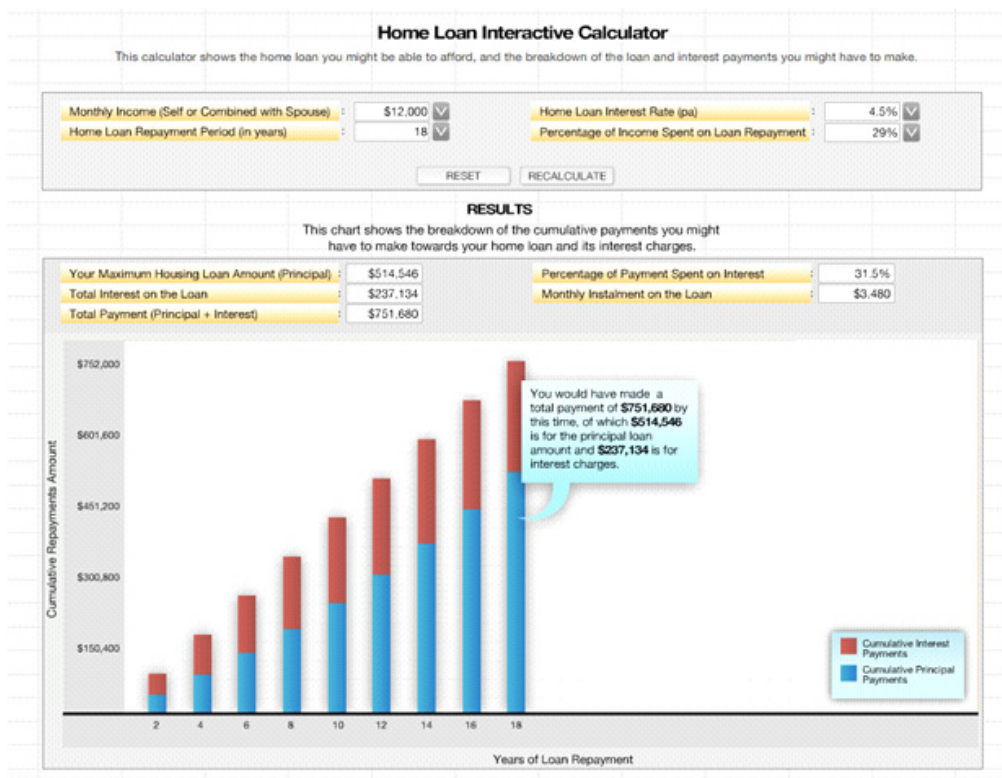
Construct	Reflective Measures [All items were measured using a 7-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree"]	Mean (S.D.)	Standardized Factor Loading
Adaptability	Using the website, I do not experience lag-time in loading of webpages when performing my e-government transactions.	3.11 (1.36)	0.88
	The website does not slow down at certain periods of time when performing my e-government transactions.	3.23 (1.42)	0.89
	The website does not become cluttered or confusing over time due to changes in service content.	3.08 (1.31)	0.88
Security	I know that my personal information disclosed during the performance of an e-government transaction is transferred in a secure manner.	3.06 (1.38)	0.90
	I trust that hackers will not be able to access the personal information I provide when performing my e-government transactions.	3.39 (1.50)	0.87
	The website provides mechanisms that protect my disclosed personal information from being stolen when I perform my e-government transactions.	3.16 (1.34)	0.92
Quality Constructs			
Perceived Service Content Quality	Generally, the service content offered on the website to support me in performing my e-government transactions is satisfactory.	2.78 (1.26)	0.94
	On the whole, the service content offered on e-government websites is highly effective in supporting me to perform my e-government transactions.	2.89 (1.29)	0.96
	Generally, I am pleased with the service content offered on e-government websites to support me in performing e-government transactions.	2.82 (1.30)	0.96
Perceived Service Delivery Quality	The general technological mechanisms underlying various service functionalities of the website are satisfactory.	2.88 (1.21)	0.93
	Generally, the e-government website service functionalities are delivered in a professional manner.	2.58 (1.16)	0.95
	Overall, the service functionalities are delivered efficiently via e-government websites.	2.67 (1.17)	0.96
Overall E-Government Service Quality	The website offers excellent overall service.	2.73 (1.20)	0.93
	The website offers service of a very high quality.	2.75 (1.21)	0.93
	The website offers a high standard of service.	2.91 (1.22)	0.95
	The website offers superior service in every way.	3.26 (1.29)	0.90

Appendix E

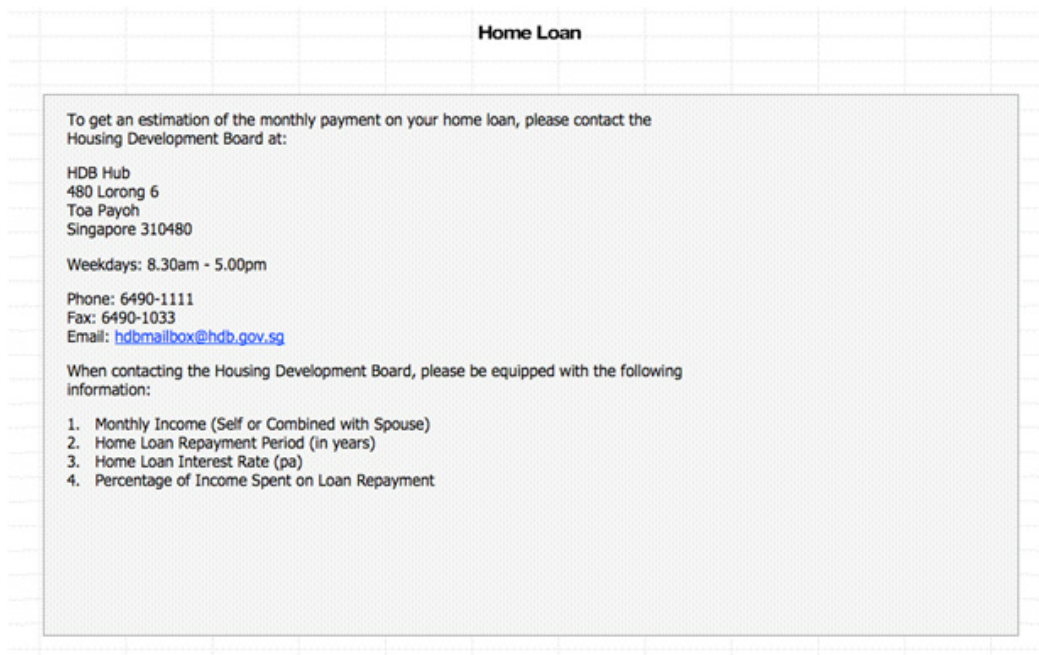
Test of Nomological Validity

Unlike the six service delivery dimensions that were derived from the systematic categorization of theoretically grounded constructs identified through an extensive literature review, the 16 service content functions were adapted from the CSLC model. Consequently, it is necessary to determine the nomological validity of the service content functions. Nomological validity, as explained by Lewis et al. (2005), is the capability of a construct to predict relationships between itself and its hypothesized antecedents and consequents (Smith et al. 1996). Adapting the methodological procedures outlined in Lin et al. (2008), an online experiment was conducted to verify whether e-government websites containing features corresponding to the 16 service content functions would translate to perceptual differences among citizens when contrasted against websites lacking such features.

To begin, we obtained screenshots from actual e-government websites that exemplify the web-enabled features corresponding to each of the 16 service content functions. We then extracted these specific content functions, while retaining the remaining design of the screenshots, to create artificial sites that reflect the absence of the service content functions. Sixteen pairs of screenshots demonstrating a dichotomy of high versus low service content were thus created. Figures E1 and E2 depict examples of screenshot pairs corresponding to the content functions of accepting and ordering respectively. By creating the comparison sites from existing e-government websites (see Figures E1 and E2), we purged potential confounds that may emanate from other aspects of web interface designs and informational content that could jeopardize the internal validity of our experiment.



Screenshot Demonstrating Presence of Accepting Service Functionality

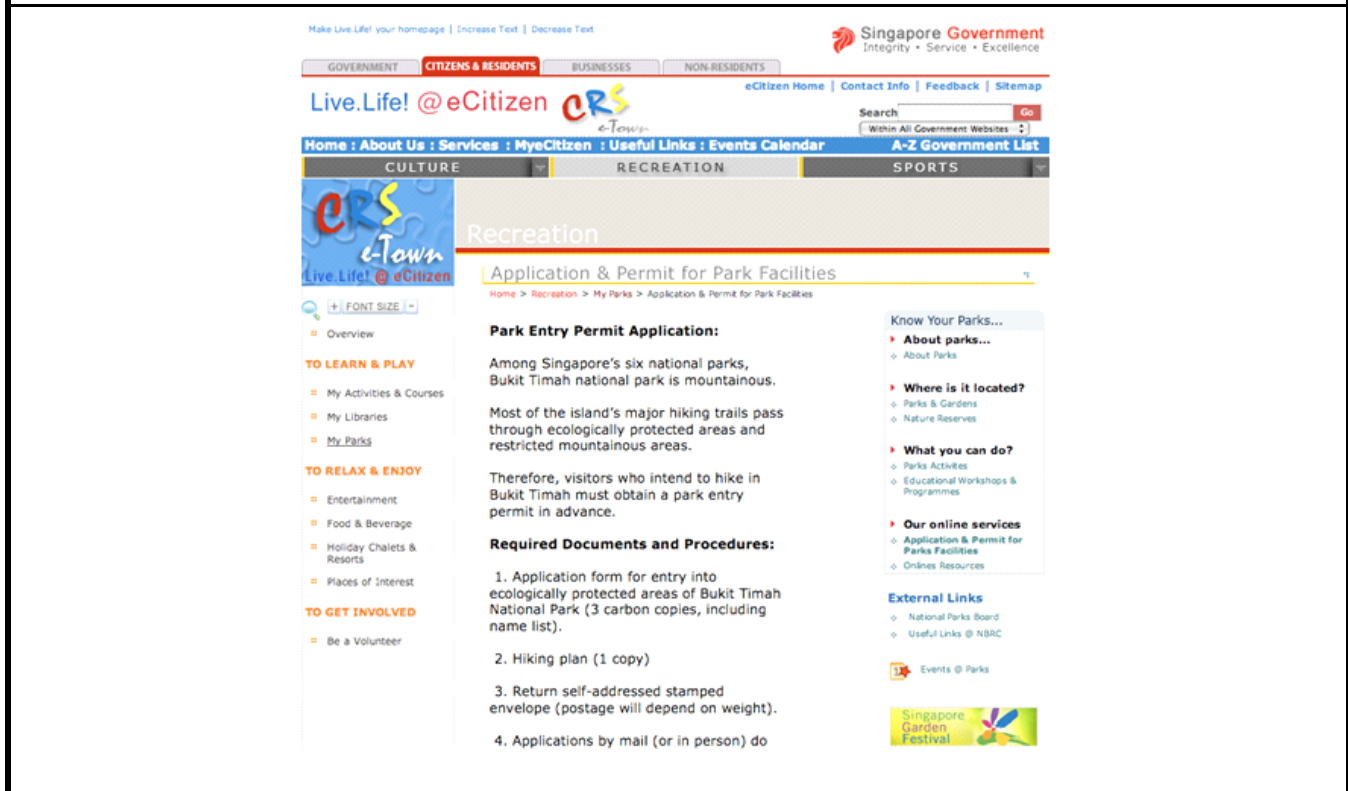


Screenshot Demonstrating Absence of Accepting Service Functionality

Figure E1. Pair of Screenshots Demonstrating Presence Versus Absence of Accepting Service Functionality



Screenshot Demonstrating Presence of Ordering Service Functionality



Screenshot Demonstrating Absence of Ordering Service Functionality

Figure E2. Pair of Screenshots Demonstrating Presence Versus Absence of Ordering Service Functionality

To reduce fatigue for experimental participants, the 16 pairs of screenshots were divided into two groups of 10 service content functions each, such that 4 of the functions (i.e., authorizing, ordering, paying, and training) overlapped. To account for sequencing effects, each pair of screenshots was randomly ordered in the experiment; that is, participants might first be presented with screenshots corresponding to the presence of a service content function before being shown screenshots representing its absence, or vice versa. Upon viewing each pair of screenshots, participants were presented with a series of statements measured using nine-point comparative scales¹ (i.e., measurement items for the service content function corresponding to the screenshots) and asked to indicate the extent to which they agree or disagree with these statements. Because these statements were devised to capture citizens' perceptions of the presence of particular service content functions for e-government websites, perceptual differences should arise from participants' evaluation of each pair of contrasting screenshots.

Separate pretests were conducted for the two experimental groups. Pretests on samples of 28 (25 percent females and, on average, each respondent having conducted e-government transactions at least once every six months) and 25 (48 percent females and, on average, each respondent having conducted e-government transactions at least once every six months) e-government service users, recruited from a commercialized marketing research panel, did not indicate problems with the treatments (i.e., screenshots) for each experimental group.

For the actual experiment, we elicited the assistance of a commercialized marketing firm to recruit 75 and 76 participants for experimental groups 1 and 2, respectively. The participants were randomly assigned to one of the two groups. Table E1 tabulates the distribution of demographic characteristics across both groups. Paired *t*-tests performed on both samples revealed no significant differences in demographic distribution (i.e., $t_{(14)} = -0.001, p = .99$).

Demographic Characteristic	Group 1 [Sample N = 75]		Group 2 [Sample N = 76]	
	No. of Respondents	%	No. of Respondents	%
Gender				
Male	39	52.00%	38	50.00%
Female	36	48.00%	38	50.00%
Unwilling to disclose	0	0.00%	0	0.00%
Age				
Age 19-29	16	21.33%	17	22.37%
Age 30-49	35	46.67%	36	47.37%
Age 50-64	16	21.33%	21	27.63%
Age 65+	8	10.67%	2	2.63%
Unwilling to disclose	0	0.00%	0	0.00%
Educational Level				
Less than college education	15	20.00%	20	26.32%
College education or higher	60	80.00%	55	72.37%
Unwilling to disclose	0	0.00%	1	1.32%
Income				
\$0-\$30,000	19	25.33%	19	25.00%
\$30,000-\$50,000	16	21.33%	22	28.95%
\$50,000-\$75,000	12	16.00%	13	17.11%
\$75,000+	22	29.33%	16	21.05%
Unwilling to disclose	6	8.00%	6	7.89%

¹We opted for a nine-point comparative scale (1 being "Website A is much better" to 9 being "Website B is much better") to ensure that the scale contains the minimum of five options for each side of the spectrum with the middle option acting as the neutral (or pivot) point.

Two-tailed t -tests² were conducted on each screenshot pair to determine whether perceptual differences arose from viewing pairs of contrasting screenshots corresponding to the 16 service content functions; results are summarized in Table E2. As can be inferred from Table E2, the first group of experimental participants was presented with screenshot pairs that correspond to 10 service content functions (i.e., accepting, authorizing, customizing, evaluating, needing, ordering, paying, scheduling, tracking, and training) and they were able to distinguish the screenshot featuring the service content function of interest from that without the corresponding service content function. The same can be said for the second group of participants who were exposed to the screenshots featuring both the presence and absence of each of the ten service content functions (i.e., authorizing, delegating, monitoring, negotiating, ordering, paying, sourcing, training, trying, and upgrading) (see Table E2). Furthermore, intergroup comparisons reveal no statistically significant differences in how participants reacted to the same pair of contrasting screenshots for the service content functions of authorizing, ordering, paying and training, regardless of whether they were in group 1 or 2 (see Table E2). This validates the nomological validity of our measurement items for the 16 service content functions.

Table E2. Summary of Empirical Results for Online Experiment Testing Nomological Validity

Content Functionality	Group 1 [Sample N = 75]		Group 2 [Sample N = 76]		Intergroup Comparison
	Mean (Std. Dev)	$t_{(74)}$	Mean (Std. Dev)	$t_{(75)}$	$t_{(149)}$
Accepting	3.11 (2.15)	-7.588***	–	–	–
Authorizing	3.52 (1.68)	-7.591***	3.65 (1.85)	-6.357***	-0.446 (n.s.)
Customizing	3.37 (1.44)	-9.786***	–	–	–
Delegating	–	–	2.81 (1.83)	-10.431***	–
Evaluating	3.87 (2.22)	-4.406***	–	–	–
Monitoring	–	–	4.08 (1.87)	-4.284***	–
Needing	4.12 (1.82)	-4.196***	–	–	–
Negotiating	–	–	3.20 (1.71)	-9.187***	–
Ordering	3.64 (1.82)	-6.505***	3.89 (2.21)	-4.357***	-0.782 (n.s.)
Paying	3.16 (1.68)	-9.508***	3.51 (1.85)	-7.043***	-1.221 (n.s.)
Scheduling	3.99 (1.91)	-4.586***	–	–	–
Sourcing	–	–	4.39 (1.73)	-3.097**	–
Tracking	3.17 (1.77)	-8.957***	–	–	–
Training	3.26 (2.15)	-7.008***	3.56 (2.27)	-5.533***	-0.838 (n.s.)
Trying	–	–	3.71 (1.98)	-5.677***	–
Upgrading	–	–	3.19 (1.77)	-8.930***	–

*** t -statistic is significant at the 0.001 level (two-tailed); ** t -statistic is significant at the 0.01 level (two-tailed); n.s. t -statistic is not significant at the 0.05 level (two-tailed).

References

- Lin, A., Gregor, S., and Ewing, M. 2008. "Developing a Scale to Measure the Enjoyment of Web Experiences," *Journal of Interactive Marketing* (22:4), pp. 41-57.
- Smith, H. J., Milberg, S. J., and Burke, S. J. 1996. "Information Privacy: Measuring Individuals' Concerns about Organizational Practices," *MIS Quarterly* (20:2), pp. 167-196.

²Because the items are measured via nine-point comparative scales, the t -tests being performed are to establish whether there is a statistically significant deviation from the midpoint value of 5; that is, to refute the null hypothesis that no perceptual differences would arise from viewing each pair of contrasting screenshots. Also, because the dataset has been coded in a manner whereby responses leaning toward zero are indicative of experimental participants reacting positively to screenshots of websites offering each of the 16 service content functions, negative t -values are desirable (as shown in Table E2).

Appendix F

Inter-Construct Correlation Matrix

	ACC	ASS	ADT	AUT	CUS	DEL	EVA	INT	IOP	MON	NAV	NED	NEG	ORD	PAY	SCH	SEC	SCQ	SDQ	ESQ	SOU	TRK	TRA	TRY	UPG	
ACC	0.86																									
ASS	0.32	0.91																								
ADT	0.45	0.59	0.88																							
AUT	0.57	0.21	0.40	0.89																						
CUS	0.63	0.31	0.37	0.44	0.87																					
DEL	0.58	0.13	0.31	0.57	0.45	0.89																				
EVA	0.60	0.23	0.42	0.55	0.44	0.65	0.91																			
INT	0.59	0.39	0.62	0.53	0.54	0.52	0.56	0.85																		
IOP	0.48	0.24	0.44	0.44	0.44	0.55	0.58	0.60	0.88																	
MON	0.69	0.39	0.48	0.56	0.64	0.61	0.61	0.55	0.52	0.85																
NAV	0.53	0.64	0.78	0.40	0.48	0.33	0.46	0.69	0.50	0.55	0.86															
NED	0.57	0.53	0.46	0.33	0.74	0.36	0.40	0.49	0.38	0.69	0.58	0.85														
NEG	0.61	0.13	0.35	0.58	0.41	0.70	0.75	0.54	0.53	0.62	0.37	0.34	0.90													
ORD	0.44	0.61	0.53	0.26	0.47	0.21	0.30	0.40	0.28	0.48	0.61	0.63	0.19	0.89												
PAY	0.35	0.51	0.40	0.21	0.31	0.20	0.23	0.32	0.23	0.39	0.48	0.49	0.18	0.82	0.93											
SCH	0.64	0.27	0.39	0.55	0.49	0.75	0.63	0.55	0.54	0.68	0.43	0.49	0.67	0.37	0.30	0.87										
SEC	0.43	0.50	0.62	0.55	0.36	0.32	0.42	0.64	0.42	0.42	0.65	0.41	0.35	0.48	0.36	0.41	0.90									
SCQ	0.51	0.59	0.63	0.40	0.52	0.36	0.48	0.61	0.41	0.55	0.74	0.62	0.37	0.71	0.58	0.49	0.58	0.95								
SDQ	0.45	0.71	0.67	0.37	0.45	0.30	0.41	0.57	0.42	0.54	0.73	0.60	0.29	0.68	0.54	0.44	0.64	0.74	0.95							
ESQ	0.52	0.61	0.68	0.44	0.52	0.37	0.45	0.70	0.45	0.55	0.76	0.58	0.36	0.63	0.53	0.47	0.63	0.77	0.77	0.93						
SOU	0.53	0.39	0.38	0.39	0.71	0.43	0.45	0.46	0.43	0.65	0.47	0.77	0.38	0.48	0.34	0.46	0.38	0.48	0.49	0.51	0.83					
TRK	0.66	0.41	0.44	0.54	0.52	0.53	0.47	0.50	0.43	0.62	0.50	0.55	0.45	0.60	0.53	0.63	0.45	0.59	0.49	0.55	0.43	0.82				
TRA	0.67	0.31	0.48	0.63	0.58	0.65	0.67	0.63	0.59	0.72	0.52	0.52	0.69	0.40	0.34	0.63	0.46	0.53	0.48	0.55	0.51	0.51	0.83			
TRY	0.64	0.26	0.29	0.44	0.67	0.48	0.39	0.43	0.33	0.60	0.34	0.59	0.43	0.28	0.16	0.50	0.29	0.34	0.31	0.37	0.58	0.49	0.51	0.90		
UPG	0.71	0.33	0.50	0.65	0.55	0.62	0.62	0.59	0.49	0.70	0.53	0.52	0.61	0.45	0.35	0.70	0.50	0.57	0.49	0.52	0.44	0.66	0.68	0.50	0.83	

*Square-root of Average Variance Extracted shown on Diagonals.