

Research Article

E-Service Value Assessment of Trade and Industry Portal

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Abstract

Delivering high-quality services to citizens represents a fundamental commitment for government organizations globally. This research assesses user satisfaction levels with e-services provided by the Ministry of Trade and Industry (MOTI), focusing specifically on its Online Trade Registration and Licensing System (OTRLS). Given that e-service value assessment remains an understudied domain, this study directly addresses a significant research gap. Employing a deductive research approach, hypotheses were derived from an extensive review of extant literature. A structured survey instrument was subsequently developed, and quantitative data were systematically collected from 327 active users of the OTRLS platform. Structural equation modeling (SEM) served as the primary statistical technique for model construction and comprehensive data analysis. The findings reveal statistically strong positive relationships among the four core constructs of the COBRA framework Cost, Opportunity, Benefit, and Risk Analysis validating its application in this context. This research confirms that the COBRA framework constitutes a robust and important approach for evaluating e-service success from the citizen's perspective. Furthermore, the study critically evaluates the practical applicability and relevance of this model for assessing e-service value among users within developing countries, where unique challenges related to digital infrastructure and user behavior patterns exist. Ultimately, the outcomes provide empirically grounded insights with significant practical implications. These insights are crucial for informing Ethiopian government specifically MOTI policymakers seeking to strategically enhance the usability, accessibility, and overall effectiveness of the ministry's e-services portal, thereby fostering greater citizen adoption and satisfaction.

Keywords

Citizen Adoption, COBRA Framework, Digital Government, E-Service Value, E-Trade, MOTI Ethiopia, User Satisfaction

1. Introduction

Information and communication technology (ICT) use in government activities has become a rapidly growing phenomenon in recent years. Emerging technologies, the demand for business intelligence to aid decision-making, and national competitiveness for economic development further propel this shift. Public organizations adopt e-government to modernize service quality, boost public management efficiency, and

enhance user satisfaction. Key drivers for e-government reforms include low levels of citizen and business satisfaction with public services, poor service quality, limited trust and confidence in government, fragmentation and duplication of services and information sources, and the demands of the knowledge economy [1].

The Government of Ethiopia, through its Ministry of In-

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novation and Technology (MIT), allocates significant budgets to develop numerous e-government services. These include the Ethiopian government portal, the Ethiopian e-Service portal, the open data portal, and many organizational websites and electronic services [2]. However, these initiatives still fall short of public expectations. The core problem is that services continue to be modeled and provided based on government requirements and processes rather than citizen needs [3]. Reflecting this, the United Nations (UN) E-Government Development Index (EGDI) shows Ethiopia scoring low from 2003 to 2012, with notable progress elevating it to a middle-level EGDI country from 2014 to 2018 [3, 4].

Government organizations increasingly conduct operations through Information Systems (IS), driving e-service demand at individual, organizational, and national levels. Organizations show high concern for adopting and utilizing e-service features, either fully or alongside traditional paper-based work. E-service platforms have become key resources for improving organizational performance, competitive advantage, and creating business value from IT-enabled government operations for citizens [5].

Reforms by the Ministry of Trade and Industry (MOTI), particularly within its Licensing and Registration Directorate (LRD), have been highly successful in rectifying long-standing systemic problems [5]. These achievements serve as exemplary lessons for other public sectors in Ethiopia. As noted previously, “MOTI needs to maintain the reform momentum and cascade business process reengineering (BPR) and other reform elements throughout remaining divisions, departments, and work units” [6]. Consequently, MOTI strives to sustain progress by introducing fundamental changes to improve trade registration and licensing services [7]. A uniform and harmonized trade registration and licensing system has been established across all administrative levels. This system ensures fair, transparent, and accessible services while focusing on professional efficiency and competency for the business community [7]. However, verifying its success necessitates investigating its perceived value from the users’ perspective.

Given the exponential development of e-service initiatives, assessing e-service value to evaluate performance from the citizen’s perspective is not only appropriate but essential [8]. Employing the e-service value concept is thus suitable for evaluating initiative performance based on the value delivered for citizen satisfaction [9]. Despite this, limited effort exists to provide holistic assessment models from specific perspectives [9].

This study addresses e-service value assessment by measuring public e-service performance from the user’s standpoint. The ultimate goal of e-government initiatives is citizen value creation, which drives high levels of customer satisfaction [5]. ICT now offers significant potential for business through e-government services [10], making the examination of e-government public value highly relevant. While Ethiopian e-government services have been studied concerning devel-

opment, initiatives [5], sustainability [11], acceptance [12], success [13], and challenges [14], a critical gap exists: research on stakeholder satisfaction, particularly from the user’s perspective regarding delivered e-government service value, remains lacking [14].

The study aims to investigate the value of e-services provided by MOTI from the citizen’s perspective and its impact on user satisfaction. It addresses three research questions to open new directions for e-service value evaluation:

RQ₁: How do e-services create value for users?

RQ₂: What Key Performance Indicators (KPIs) influence e-service satisfaction?

RQ₃: How can the value of e-services be assessed?

2. Theoretical Framework

E-government is comprehensive ICT solution constituting different modalities accordingly. According to [7] the national ICT policy and strategy of Ethiopia 2009, the e-government strategy of the country expected to target Government-to-Government (G2G), Government-to-Business (G2B), Government-to-Citizen (G2C) and Government-to-Employee (G2E) programs. The scope of the study focuses on the modality of G2B where e-interaction between government and business that offered by MOTI. The strategic problem is to deliver services to members of public along with dimensions such as quality, convenience, minimum risk and cost.

E-Trade portal (OTRSL) that have introduced by MOTI allows the user to obtain miscellaneous services regarding commercial registration, trade licence and trade name amendment etc. This platform initiated by [15] aiming to make government services more accessible online, reduce cost of transactions and improve turnaround time to citizens, employees, businesses, governmental, & nongovernmental organizations. According to [15] the portal is a one-stop portal for e-government services that improves ease of doing business in Ethiopia through the automation of essential government services leveraging ICT.

According to [16] there have been many attempts by e-government study scholars and practitioners alike to present comprehensive framework to evaluate the success of e-government services from a citizen’s perspective. An intensive investigation of works on conceptual frameworks to assess stockholders satisfaction with e-government services reveals a number of studies [17] and [18]. In particular, SERVQUAL [19], the national customer satisfaction indices (CSI) [20], the IS success model [21] and the value measurement model (VMM) [22] mentioned. In addition [23] e-GovQual, a multiple item scale for evaluating e-service quality, [24] E-SQUAL as a new model to evaluate of e-service website quality, [25] e-ServEval also another well known model.

The D&M model then updated by [21] to measure success of any e-commerce IS. CSI designed to evaluate customer satisfaction. The VMM framework is a cost-benefit and risk analy-

sis model designed to assess the dimensions that are hard to quantify in a traditional financial return on investment study [22]. In general, these frameworks are the new adapted versions of IS or e-commerce adoption models [16]. In addition, serve as an outline for the COBRA model [16, 17], and [26]. Nonetheless, the e-services value assessment process differs highly from the traditional IS or ecommerce process [16]. An intensive review of the literature on conceptual frameworks to assess user satisfaction with e-government services include the various publications by [9, 27-29], and [30].

The existing frameworks are not satisfactory for comprehensively evaluate the multidimensional and multi participant influences that e-services encapsulate [17, 18], and [16].

According to [26] the limited scope of analysis in IS success constructs and the resulting context specificity significantly reduces the possibility of generalizability of these models in an e-government services context. Hence including both D&M and VMM measurement factors would provide an inaccurate understanding of overall e-government success to verified as intended in the work of [16]. According to [26] COBRA framework that psychometrically and systematically assesses e-government service success from a user perspective, as the SERVQUAL, NCSI, and IS success models do for e-commerce. This study choose the model that recently gains acceptance from e-government researchers to evaluate e-service value from the perspective of users.

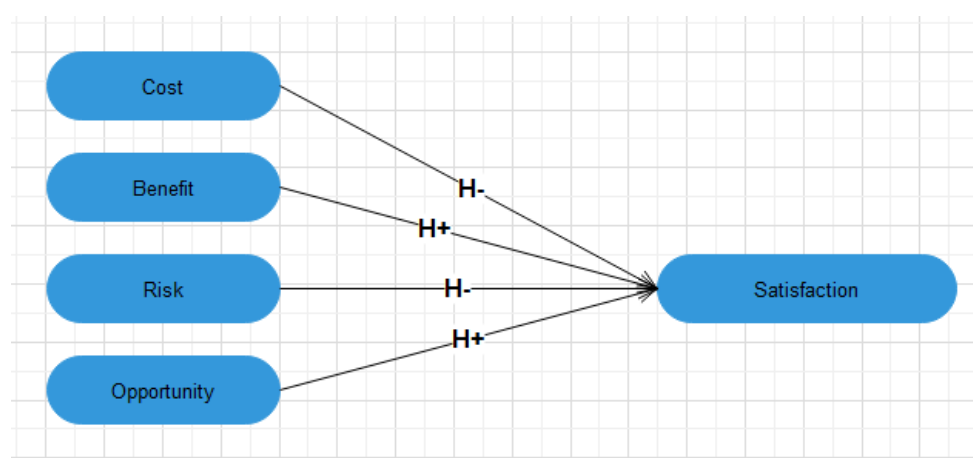


Figure 1. Hypothesized relationship between the COBRAs construct [14].

The assessment of e-service success approached from different directions with a recent interest in user centered satisfaction. However, satisfaction evaluation depends exclusively on the user's expectation, experience and interaction with an e-service and the generated values. The COBRA framework based on theoretical causal effect relationships between the cost benefit analysis and the risk opportunity analysis on the one hand and users' satisfaction on the other hand [17]. The observed casual relationships among constructs and various performance indicators in the literature grouped into four sets of elements cost, opportunity, benefit, and risk. Contrary to traditional models and frameworks that evaluate public e-services from a general point of view [9], the COBRA framework has the ability to guarantee fine grained assessment of e-services from all stockholders perspectives considering "the most successful factors that impact the satisfaction of users within an e-government service is COBRA" [16]. The cost and benefit dimensions are mostly tangible and are often easy to evaluate, whereas the risk and opportunity are mostly intangible. This study used COBRA as a framework and structural equation modeling partial least square (SEM-PLS) analyzation technique. Based on the adopted model [16] the expected constructs of the hypothesized causal effect relationships between the five elements of the

so-called COBRAs model costs, opportunities, benefits, risks analysis for user satisfaction presented in the above Figure 1. The contextualized and hypothesized relationship among each constructs described below.

2.1. Cost

Cost, measured in terms of money and time, reported as one of the most important issue in the use of e-services [22]. Logically users compare the e-service costs with the associated benefits to decide on use or reuse of the e-service [9]. The cost benefit analysis is a well-known concept in management and economic where managerial decisions to select a project based on the highest ratio of benefits to costs among competing alternatives [22]. The cost variables are often tangible and measured, like the actual spending of money and time to complete a requested e-service [22]. This suggests that delivering e-service at high quality and low cost. From the above explanation incurring high cost of using e-services might lead to lower satisfaction levels of citizens, which leads to derive the following hypothesis:

H1: E-service cost has a negative relationship with user satisfaction on e-services platform [16].

2.2. Opportunity

The decision to use and intention to reuse e-government services influenced by opportunity. It presented by the environment or country within which the e-government service operates [16]. Also provided by the environment/ country within which e-service operates with special affairs. These arise when a user can take benefit of conditions to use e-services that enable him/her to become more beneficial due to his/her use of provided service. Users can gain personal advantage and additional flavors by making use of opportunities [17] on e-service. From this, researchers formulate the following hypothesis:

H2: The opportunities created by using e-service is positive hypothesized relationship with user satisfaction on e-service platform [16].

2.3. Benefit

Represents the value of using an e-service. It measures the total values of information availability, services quality, system quality, easy of use, and understanding [21]. There is a growing agreement of the need to address the notion of “benefit to the user” in any e-government service assessment [17]. Therefore, there is a need to develop success assessments that accurately measure user benefits [31]. Benefit variable include tangible and intangible values.

H3: There is positive relationship between e-service benefits and the higher user satisfaction on e-service platform [16].

2.4. Risk

Risks arise when conditions in external environment jeopardize the reliability, availability and secured use of e-services. They compound the vulnerability when they relate to low cost risks are often uncontrollable [32]. Users have concern about their personal and credit card information when they perform online transaction. According to [33] trust in technology infrastructure and those managing the infrastructure would reduce risk leading to a strong impact on the adoption of a technology. Researchers, including [32, 34] and [35] have addressed this risk dimension. According to the related studies, researchers drive hypothesis four.

H4: the risk related with using e-service platform is negative hypothesized relationship with user satisfaction on e-service platform [16].

2.5. Satisfaction

Defined as a person’s feelings of pleasure or disappointment that results from comparing products perceived performance or outputs with their expectations [33]. Customer satisfaction is a collective outcome of perception evaluation and psychological reactions to the consumption experience with a product/service [33]. Customers’ positive attitude towards e-service creates the need to reuse and negative atti-

tudes are creating the opposite and increasing the risk for dissatisfaction [8]. According to the COBRA model, factors affecting satisfaction levels towards an e-service are based around four major constructs; those are cost, opportunity, benefit, and risk [17, 16, 9, 36, 26].

The cost variable includes all tangible and intangible costs, such as the cost of using the internet and the time needed to lookup information, respectively. Opportunity considers the advantages a user can obtain by using the service to complete a transaction, such as flexibility in accessing the service or the ability to consult service support and incentives. The benefit variable stands for the extra value generated to the user by using the e-service [27]. These can be described by the money and time saved compared to perform the same service offline. Finally, risk includes factors that may make the system, or make it appear, vulnerable to threats [33]. Risks can be tangible, such as financial frauds and payment mistakes, or intangible and more social, such as data privacy, fear of interaction among peoples and protection or social isolation [34]. Therefore, the output that the e-government delivered, the satisfaction of served people about services, the expectation of served people assessed [37].

3. Methodology

This study adopts the positivist paradigm as its philosophical foundation. Employing a deductive research approach, hypotheses were formulated and tested through a quantitative survey strategy with cross-sectional data collection. The research empirically examines the theoretical framework concerning the relationship between e-service value and citizen satisfaction.

A cross-sectional design was implemented to assess the value of MOTI’s e-services in relation to user satisfaction within a specific timeframe. Participants were selected using systematic sampling techniques from active users of the e-Trade portal (OTRSL), launched by MOTI in January 2021 [15]. This platform provides business services including trade name registration, license acquisition/renewal, and trade name cancellation.

Using the finite population formula

$$n = \frac{N}{1} + Ne^2 \quad (1)$$

The target population comprised active OTRSL users during its inaugural month (January 21 - February 21, 2021). According to MOTI’s ICT Directorate, there were 9,658 registered ‘Group A’ taxpayers (potential users), with 1,906 active portal users during this period forming the sampling frame. With a 5% margin of error ($e=0.05$), a representative sample of 327 respondents was determined. Systematic sampling was executed as follows: The original user list was reshuffled to eliminate potential patterns. A sampling interval of $k = N/n = 1906/327 \approx 6$ was established. Selection initiated from three random starting points using

first-come-first-served sequencing to minimize bias.

The structured questionnaire was adapted from validated instruments [16, 17], and [26] with permission from original authors. To address literacy considerations in the Ethiopian context the English instrument was translated to Amharic by researchers. Translation was verified by linguistics experts at Addis Ababa University's College of Humanities. Bilingual versions were made available to participants.

The final instrument contained 39 items across two sections. Section one demographic characteristics (7 items), Section two Latent variable indicators (31 items) measured on a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree), comprising: 26 independent variable items (COBRA constructs) and 5 dependent variable items (User Satisfaction). A pilot test with 22 active users (88% response rate) yielded a Cronbach's alpha of 0.73. Minor revisions were implemented based on feedback to enhance clarity and remove jargon. Primary data collection occurred from May 07-20, 2021. Surveys were administered to the 327 systematically selected participants, with bilingual support available for literacy accommodation.

4. Model Validation

Table 1. Study constructs with their manifest variables code.

Constructs	# Manifest Variables	Representation
Cost	8	(C1-C8)
Opportunity	6	(O1-O6)
Benefit	7	(B1-B7)
Risk	5	(R1-R5)
Satisfaction	5	(S1-S5)
Total	31	

The primary objective of this study is to assess e-service satisfaction factors that create value for users through the COBRA framework, adapted from established literature. Validation employed SEM with dual assessment measurement model confirmatory factor analysis and structural path analysis. The theoretical framework comprises five constructs independent variables cost, opportunity, benefit, and risk where as dependent variable user satisfaction. All latent variables (LVs) and their indicator items were adapted from [16] with contextual modifications to fit the Ethiopian e-government context.

4.1. Measurement Model Assessment

The measurement model was evaluated following estab-

lished guidelines [38] and [39] for reflective indicators, focusing on indicator reliability (IR), internal consistency reliability (ICR), Convergent Validity, and Discriminant Validity.

As confirmed by [40], all constructs in this study employ reflective measurement. Consequently, assessment of outer weights significance, construct validity, and multi-collinearity was unnecessary. All reported metrics were generated through SmartPLS 3.0 using these algorithm settings: Path weighting scheme, Data standardization (Mean = 0, Variance = 1), Maximum iterations: 5,000, Stop criterion: 1.0E-5, and Initial weight: 1.0.

As all constructs were reflective, the evaluation of outer weights' significance. All constructs demonstrated adequate ICR, exceeding the threshold of $\alpha > 0.70$ (Table 2), which confirms strong item interrelatedness.

Table 2. Internal consistency reliability result.

Constructs	Internal Consistence Reliability (ICR)
Cost	0.93
Opportunity	0.86
Benefit	0.85
Risk	0.89
Satisfaction	0.88

Indicator reliability (IR) was assessed by examining the standardized outer loadings, which measure the proportion of variance in each observed variable explained by its latent construct. As illustrated in Figure 2, all measurement items demonstrated loadings exceeding the critical threshold of 0.70. This establishes that individual items sufficiently capture their underlying constructs, the measurement error is acceptably low, and the measurement model exhibits strong psychometric robustness.

Fundamentally, indicator reliability measures the degree to which an indicator variable is consistent with the latent construct (LV) it is intended to measure. In other words, it assesses how much of an indicator's variance is explained by its corresponding LV [40]. The reliability of each construct is calculated independently of the others.

The internal consistency of the latent variables (LVs) was evaluated using the Average Variance Extracted (AVE). The AVE measures the amount of variance a latent construct captures from its indicators relative to the amount due to measurement error. As per established guidelines [40], an AVE value of at least 0.50 is required, indicating that the latent construct explains no less than 50% of the variance in its observed variables. The results confirm that the measurement model demonstrated strong convergent validity, as all AVE values surpassed this critical threshold.

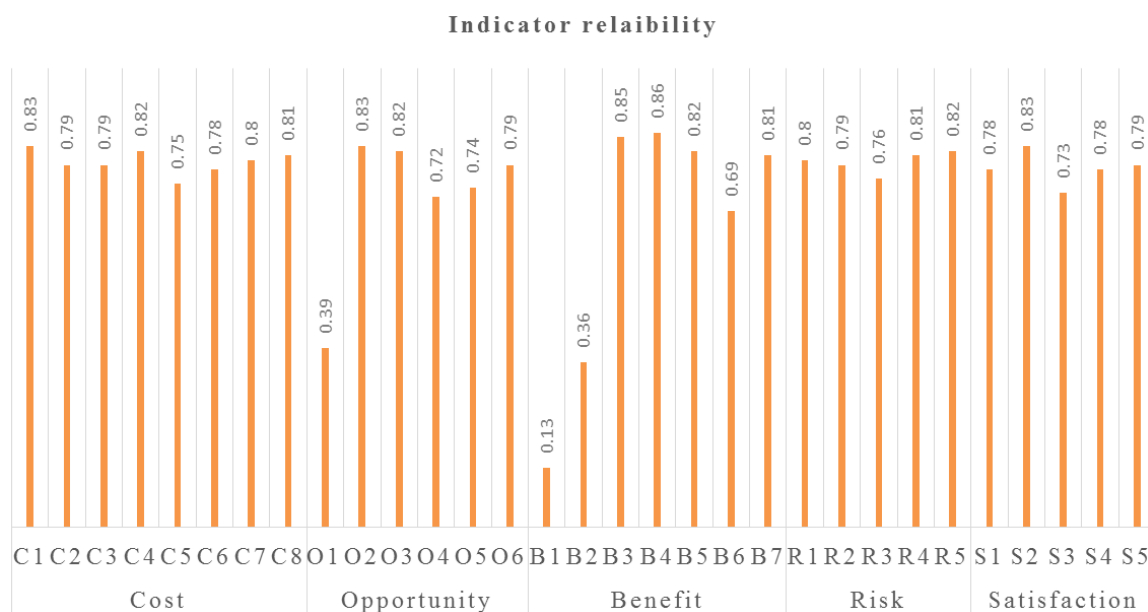


Figure 2. IR (outer loading) result.

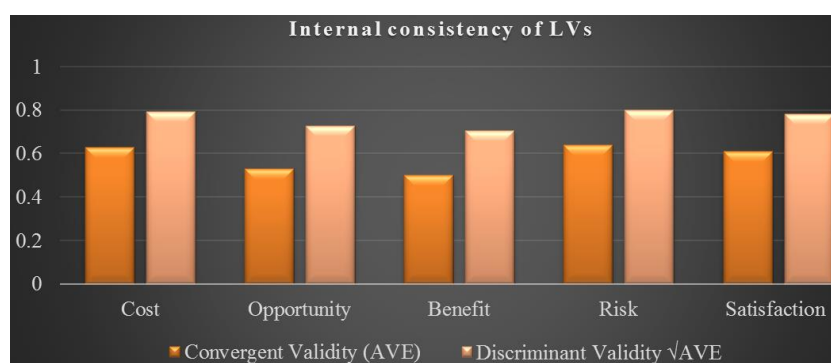


Figure 3. Convergent and discriminant validity result.

Discriminant validity is established when the indicators of a given construct are distinct from those of any other construct in the path model [41]. To assess discriminant validity, researchers employed the Fornell-Larcker criterion. This was accomplished by calculating the square root of the Average Variance Extracted (AVE) for each construct and verifying that this value was greater than the construct's highest correlation with any other latent variable in the model.

4.2. Structural Model Assessment

After confirming that the measurement model was both valid and reliable, the next step was to evaluate the inner structural (path) model. The evaluation was based on several key criteria: The coefficient of determination (R^2), the path coefficients (β values) and their significance via t-statistics, the effect size (f^2), the predictive relevance (Q^2), the goodness-of-fit (GoF) index.

These standards are established benchmarks for assessing a structural model's explanatory and predictive power [38]. As

presented in Figure 4, the results for all these metrics exceeded their respective minimum thresholds, confirming the robustness of the proposed structural model.

The study's model demonstrated strong explanatory power, achieving a coefficient of determination (R^2) of 0.79 for the construct of satisfaction. This indicates that the four exogenous latent variables in the model collectively explain 79% of the variance in satisfaction. This high value confirms that these four independent constructs are substantial drivers, accounting for the majority of changes observed in the endogenous variable.

The structural model was further assessed by evaluating the effect size (f^2). This test measures the impact of including or excluding a specific latent variable (LV) by observing the resultant change in the R^2 value of the endogenous construct (satisfaction). The analysis revealed that the LVs had small to moderate effects on satisfaction.

The Goodness of Fit (GoF) index was used to assess how well the overall model explains the empirical data. The model achieved a GoF value of 0.73, which indicates a satisfactory

fit to the data and substantiates the model's substantial predictive power when compared to baseline values.

The model's predictive relevance was evaluated using the Q^2 statistic, calculated via the blindfolding procedure (with an omission distance set to 7). A Q^2 value of 0.48 was obtained

for the satisfaction construct, which signifies a high degree of predictive relevance. This result confirms that the proposed model's constructs possess strong predictive power for explaining citizen satisfaction with e-services, based on the e-Trade user dataset.

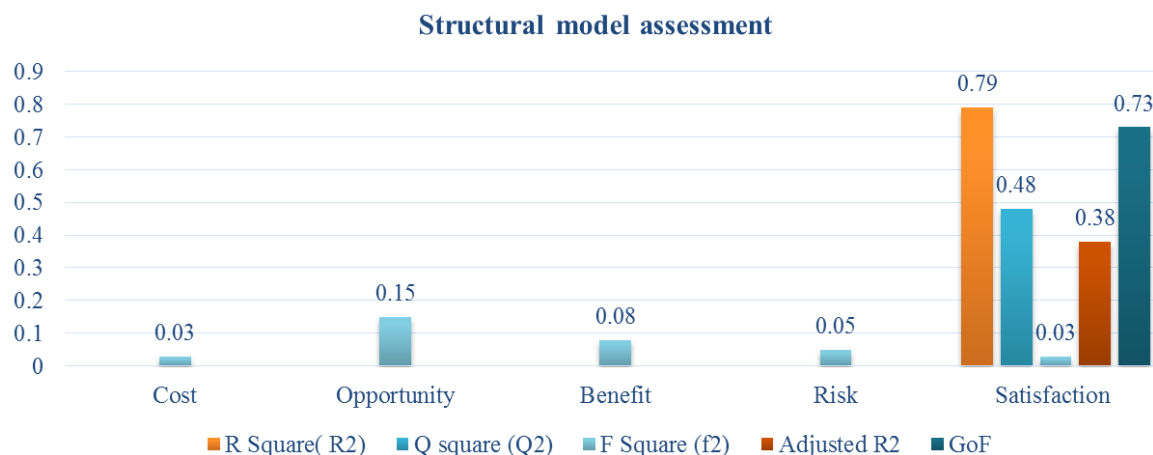


Figure 4. The structural model assessment compiled result.

5. Results and Discussion

5.1. Result

As presented in Figure 5, the study captured essential demographic characteristics of e-Trade portal users (N=327). Participants were predominantly male (82.8%), with 20-40 years representing the largest age cohort (57.7%). Educational

attainment was relatively high, with 40.4% holding BA/BSc degrees or higher. Professionally, 41.4% worked in trade-related companies. Regarding technical proficiency, most respondents reported good-to-excellent computer skills (79.3%) and internet competency (63.5%). Portal engagement patterns showed 66.2% accessed the system "sometimes" while 32.4% were frequent users.

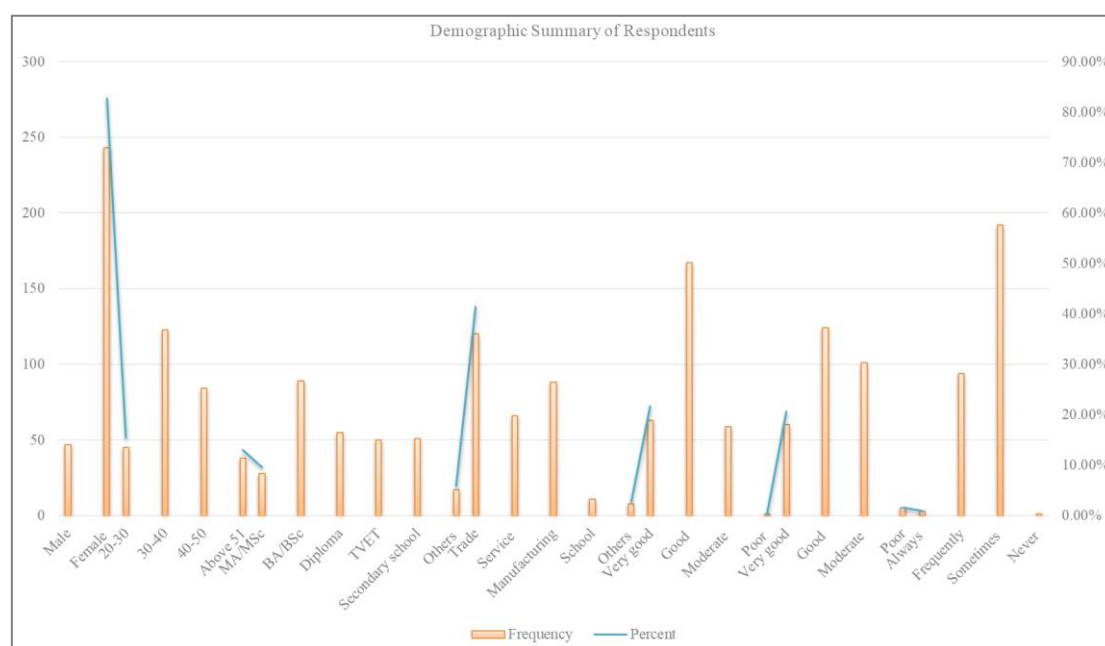


Figure 5. Demographic summary of study participants.

The structural model evaluation yielded a coefficient of determination (R^2) of 0.79, indicating that the LVs collectively explain 79% of the variance in user satisfaction demonstrating substantial explanatory power. The model exhibited strong predictive relevance ($Q^2 = 0.48$), confirming its robustness for forecasting user satisfaction outcomes. Following established methodological guidelines [40], researchers further evaluated path coefficients through their

algebraic signs, magnitudes, and statistical significance.

As shown from Table 3, study findings confirm that three e-service dimensions cost, opportunity, and benefit serve as significant determinants of user satisfaction among e-Trade portal users. The path coefficients quantify the strength of relationships between LVs, with opportunity emerging as the strongest predictor ($\beta = 0.35$), followed by benefit ($\beta = 0.33$) and cost ($\beta = 0.25$).

Table 3. Path coefficient, t-statistics and hypothesis status.

Hypothesis	Path Coefficients	T-Statistics	Hypothesis Status
H1: Cost -> Satisfaction	0.25*	3.59	Supported
H2: Opportunity-> Satisfaction	0.35*	4.33	Supported
H3: Benefit -> Satisfaction	0.33*	3.83	Supported
H4: Risk -> Satisfaction	0.10	0.32	Rejected

5.2. Discussion

The significance of path coefficients was tested using bootstrapping with the same sample size. Analysis revealed that the risk construct's relationship with user satisfaction was non-significant ($p > 0.05$), necessitating its removal from the theoretical model. The final validated model confirmed three of the four original hypotheses:

H1: Cost $\rightarrow$ Satisfaction, Significant positive effect ($\beta = 0.25$, $p < 0.05$), confirming cost as a key predictor of satisfaction. The alternative hypothesis was accepted. H2: Opportunity $\rightarrow$ Satisfaction, Significant positive effect ($\beta = 0.35$, $p < 0.05$), representing the strongest influence on satisfaction. H4: Benefit $\rightarrow$ Satisfaction, Significant positive effect ($\beta = 0.33$, $p < 0.05$), confirming benefit as a major predictor. H3: Risk $\rightarrow$ Satisfaction, Non-significant relationship ($p > 0.05$) - hypothesis rejected. The relative influence of constructs on e-Trade portal satisfaction follows this order: Opportunity ($\beta=0.35$) > Benefit ($\beta=0.33$) > Cost ($\beta=0.25$).

The non-significance of risk may stem from users prioritizing tangible benefits over security concerns. Limited exposure to online transactions in Ethiopia's nascent e-service ecosystem. Mandatory nature of services reducing risk sensitivity. Despite this finding, Researchers recommend retaining risk assessment for future studies given its established importance in mature digital environments [42].

RQ1: How do e-services create value? Through three validated mechanisms, boosting opportunities (35% impact), delivering tangible benefits (33% impact), and minimizing user costs (25% impact). This aligns with cost-benefit economic theory while introducing opportunity maximization as a critical value driver.

Regarding RQ2: What KPIs influence satisfaction? The COBRA constructs (opportunity, benefit, cost) serve as key performance indicators, collectively explaining 79.3% ($R^2=0.79$) of satisfaction variance. This substantially exceeds the 76% benchmark observed in comparable contexts [16].

In other hand RQ3: How to assess e-service value? Requires citizen-centric evaluation through measuring satisfaction via validated frameworks (COBRA), Prioritizing citizen needs over governmental processes [9], and designing portals from user perspective rather than operational convenience.

The findings demonstrate that Ethiopia's e-service value assessment must center on opportunity Enhancement expanding service accessibility and functionality, Benefit Optimization ensuring clear user advantages in efficiency and quality, cost Reduction minimizing financial, time, and effort burdens. This trifecta represents the critical pathway to maximizing citizen satisfaction in developing e-government ecosystems.

6. Conclusions

This study complements ongoing government e-service initiatives by adopting a citizen-centric perspective, thereby promoting closer alignment with public needs while developing assessment tools. Our validated model identifies key factors affecting user satisfaction through specific constructs essential for enhancing e-service value and outcomes. Among these, e-service initiatives and user satisfaction-related factors emerged as the most dominant and significant constructs. Consequently, government organizations particularly the case ministry (MOTI) should prioritize the three constructs exhibiting the highest beta coefficients, as these are imperative

drivers of e-service satisfaction. Furthermore, opportunity, benefit, and cost-related factors demonstrated strong positive effects on user satisfaction. Overall, satisfaction with MOTI's e-service is primarily influenced by three core constructs, collectively explaining 79.3% of the variance in satisfaction, with significant relationships confirmed by beta values. The model demonstrated good fit (GoF = 0.73). This research advances e-service assessment literature and deepens understanding of e-service user satisfaction.

The study have contribution for theory and practice. Validates the COBRA model within a developing country context and corroborates findings through extant literature. Equips ICT directors and organizational managers with insights to utilize the COBRA model strategically for superior e-service assessment and competitive advantage. It also informs decision-making for future e-service deployments and value evaluations. Crucially, it provides practitioners with evidence-based relationships between LVs for policy and strategy formulation.

This study focused exclusively on MOTI's e-Trade portal, sampling users from Addis Ababa and surrounding areas, specifically Type "A" taxpayers, despite the portal's national availability. Future studies should encompass all regional users and diverse company representatives. To address this, longitudinal research is recommended. An additional limitation concerns language accessibility; participants with limited Amharic or English literacy were excluded as the survey instrument required these languages.

The COBRA framework is confirmed as a vital model for evaluating e-service value/success from the user perspective in Ethiopia. Results identify e-service opportunity, benefit, and cost as key antecedents to satisfaction, while perceived risk was non-significant. Organizations should enhance e-service opportunities and benefits while reducing costs to maximize satisfaction. Make strategic trade-offs among opportunity, benefit, and cost to elevate e-service maturity and value perception. Consider incorporating the risk construct for assessing mature e-service platforms, where its impact may be significant. Conduct longitudinal research on e-service value assessment. Cross-sectional findings (like this study) are inherently limited, as citizen perspectives and satisfaction fluctuate based on temporal, regional, and organizational maturity factors. Replication across different timeframes and regions is essential.

Abbreviations

AVE	Average Variance Extracted
BPR	Business Process Reengineering
COBRA	Cost Opportunity Benefit Risk Analysis
CSI	Customer Satisfaction Indices
EGDI	Electronic Government Development Index
GOF	Goodness of Fit
ICR	Internal Consistency Reliability
ICT	Information Communication Technology

IR	Indicator Reliability
LVs	Latent Variables
MIT	Ministry of Innovation and Technology
MOTI	Ministry of Trade and Industry
OTRLS	Online Trade Registration and Licensing System
PLS	Partial Least Square
SEM	Sequential Equation Modeling

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Author Contributions

Jelalu Nesre Aerato: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Visualization, Writing – original draft, Writing – review & editing

Getachew Hailemariam Mengesha: Project administration, Resources, Supervision, Validation

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Data Availability Statement

The data is available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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Research Field

Getachew Hailemariam Mengesha: Data Science, Artificial Intelligence, Health Informatics, Frugal Innovations, Information Systems Security.

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