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Service Quality as a Moderator of the Payoff from Customer Relationship Management: A Moderation Analysis in Premium Hotels in the Greater Kampala Metropolitan Area, Uganda

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Abstract

Purpose: Customer relationship management (CRM) is widely assumed to yield greater financial returns where service quality is high, yet this contingency has rarely been tested formally in African hospitality markets. This study examines whether employee-rated service quality is associated with perceived firm profitability, and whether it moderates the association between CRM and perceived firm profitability, among premium hotels in the Greater Kampala Metropolitan Area (GKMA), Uganda. **Design/Methodology/Approach:** A cross-sectional, explanatory sequential mixed-methods design was used. Survey data were obtained from 340 frontline employees in six purposively selected four- and five-star hotels (99.13% response rate), and qualitative data from 36 key-informant interviews with managers and guests. The moderation hypothesis, stated directionally from the study's conceptual framework, was tested in a model that retained CRM, service quality and their product term irrespective of sign, with customer satisfaction as a covariate. The product coefficient, its 95% confidence interval, the equivalent nested-model test, a bound on its incremental explained variance, and conditional (simple) slopes are reported. A subsequent four-step refinement sequence is reported only as an exploratory analysis, with its final model's identification status made explicit. **Findings:** Service quality was strongly correlated with perceived firm profitability ($r = 0.714$; $B = 0.816$, $SE = 0.043$, $\beta = 0.714$, $R^2 = 0.510$, $p < 0.001$) and with CRM ($r = 0.751$). In the moderation model, the CRM × service-quality product term was small and negative ($B = -0.097$, 95% CI [−0.193, −0.002], $p = 0.046$) and accounted for no more than 0.25% of the variance in perceived profitability. The conditional slope of CRM declined only slightly across the

observed range of service quality (0.85 at mean −1 SD; 0.80 at the mean; 0.75 at the scale maximum). The hypothesised positive, amplifying moderation was therefore not supported, and the small attenuating interaction is statistically fragile because nesting of employees within six hotels was not modelled. The perfect fit of the final exploratory model reflects a just-identified specification ($\chi^2(0) = 0.00$, six free parameters) rather than substantive superiority. **Originality/Value:** This is, to the authors' knowledge, the first formal test of a CRM × service-quality interaction against perceived firm profitability among premium hotels in East Africa. It also shows how post hoc trimming toward a saturated model can remove, rather than test, an interaction, and it models more transparent reporting for hospitality moderation research. **Research Limitations:** The cross-sectional, single-source and perceptual design, and the clustering of respondents within six hotels, mean that all findings are associational and bounded to the premium segment studied.

Keywords

Service Quality, SERVQUAL, Moderation, Customer Relationship Management, Perceived Firm Profitability, Premium Hotels, Simple Slopes, Uganda

1. Introduction

The hospitality industry has entered a period in which the financial return to customer relationship management (CRM) is increasingly assumed, in both academic and practitioner writing, to depend on the quality of the service actually delivered to guests (Nguyen et al., 2024). Hotels in markets at very different stages of development have adopted CRM systems in the expectation that data-driven personalisation, loyalty recognition and responsive complaint handling will be reflected in repeat business and stronger financial performance. Whether that expectation is realised only where service delivery is itself strong remains an open and consequential question, and one that has not been examined formally in an East African premium-hotel context.

The reasoning that links service quality to the financial value of CRM is intuitive. A CRM system can promise personalised attention, rapid complaint resolution and consistent recognition of returning guests, but these promises are only as credible as the frontline encounter that fulfils them (Parasuraman et al., 1988; Kumar et al., 2010). A guest whose profile correctly records a dietary preference or a past complaint has, in principle, experienced the core value proposition of CRM; if the front desk, restaurant or housekeeping team does not act on that information, the promise becomes an unmet expectation and may erode trust more than the absence of CRM would have done. Where service delivery is inconsistent, CRM-based promises may therefore be experienced as rhetoric rather than reality, weakening the association between CRM and repeat business, referral and profitability.

This reasoning is embedded in management practice, where service-quality programmes are often positioned as a precondition for, rather than a parallel track alongside, CRM investment. Hotel groups have sequenced investment accordingly, stabilising service standards first and treating CRM as a layer expected to compound an already solid service foundation. Although operationally intuitive, this sequencing assumption has rarely been subjected to a formal test of whether service quality moderates the CRM-profitability relationship.

The empirical evidence remains mixed. Al-Kharabsheh (2024) reports that CRM is associated with customer satisfaction performance in Jordanian hotels, consistent with CRM operating through customer-facing outcomes; Nguyen et al. (2024) locate the conditioning role in digital marketing capability rather than service quality in Vietnamese hospitality businesses; and Sunnassee (2020) finds that hotel star rating conditions the service-quality-satisfaction relationship. Taken together, this work suggests that the boundary conditions surrounding the financial value of CRM are neither universal nor settled. No published study known to the authors has formally tested a CRM × service-quality interaction against profitability among premium hotels in East Africa, a segment characterised by intense competition for a narrow pool of high-value corporate and leisure guests within the Greater Kampala Metropolitan Area (GKMA), Uganda's principal concentration of four- and five-star properties.

The gap matters for both theory and practice. International tourist arrivals to Uganda rose from 814,508 in 2022 to 1,274,210 in 2023, an increase of 56.4% (UTB, 2023), and national hotel occupancy rose from 46.9% to 53.9%, with Kampala reaching about 61.4% (MTWA, 2023). Yet CRM implementation in the sector remains fragmented: roughly 61% of hotels have been reported to lack the financial resources, infrastructure or expertise needed for effective CRM (UTB, 2015). In a resource-constrained sector experiencing rapid demand growth, managers allocating limited capital between service-quality programmes and CRM systems need evidence on whether the two are associated with profitability in a mutually reinforcing way, or whether each should be justified on its own merits.

Theoretically, positive moderation would support treating service quality as a complementary resource that raises the value of CRM, consistent with a contingency reading of the Resource-Based View (Barney, 1991; Sirmon et al., 2007). If, instead, the two are associated with profitability in parallel, managers would be better advised to evaluate CRM and service-quality initiatives separately rather than sequencing one as a precondition for the other.

This study addresses the gap by testing whether employee-rated service quality moderates the association between CRM and employees' perceived firm profitability in six premium hotels in the GKMA. Following established guidance on moderation analysis (Aiken & West, 1991; Dawson, 2014; Hayes, 2022), the moderation hypothesis is tested in a model that retains both main effects and the product term regardless of sign, the product term is evaluated through its confidence interval, the equivalent nested-model comparison and its incremental explained

variance, and the conditional associations are probed through simple slopes. Because respondents are nested within only six hotels, the consequences of this structure for inference are made explicit and conclusions are limited accordingly.

The study makes three contributions. First, it provides the first formal test of this interaction in an East African premium-hotel setting. Second, by separating the test of the hypothesised model from an exploratory refinement sequence, it shows how an interaction removed during post hoc trimming toward a saturated model can be misread as absent, and why perfect fit in a just-identified model cannot establish substantive superiority. Third, it situates the East African evidence within recent international literature on CRM, service quality and hospitality performance.

Section 2 reviews the literature and develops the hypotheses. Section 3 describes the design, sampling, measurement and analysis. Section 4 presents the results, Section 5 discusses them, and Section 6 concludes with limitations and directions for future research.

2. Literature Review and Hypothesis Development

2.1. CRM and Firm Profitability

CRM is conceptualised as the strategic integration of people, technology and process to acquire, retain and grow profitable customer relationships (Buttle & Maklan, 2019; Chen & Popovich, 2003). The people dimension covers staff recruitment, training, attitude and customer orientation; the technology dimension covers the systems and databases that capture and act on customer data; and the process dimension covers the routines through which customer knowledge is translated into differentiated service, recovery and retention. A hotel's CRM maturity is therefore better understood as a composite organisational capability than as a software purchase.

Within the Resource-Based View (Barney, 1991; Wernerfelt, 1984), CRM is treated as a strategic resource: integrated customer knowledge and the routines built around it are difficult for competitors to replicate quickly, even where the underlying software is commercially available. Recent scholarship increasingly frames the association between CRM and performance as conditional, operating through or depending on capabilities such as digital marketing capability (Nguyen et al., 2024) or organisational readiness for CRM (Thai et al., 2024). This shift reflects the broader argument that possessing a resource matters less than possessing it under conditions that allow its value to be captured (Sirmon et al., 2007), and it motivates the question of whether service quality is one such condition in the premium-hotel segment.

2.2. Service Quality and the SERVQUAL Tradition

Service quality is operationalised through the five SERVQUAL dimensions of reliability, responsiveness, assurance, empathy and tangibles (Parasuraman et al., 1988), which map naturally onto the stages of a hotel stay, from the first impres-

sion of the lobby (tangibles) and the promptness of check-in (responsiveness) to the dependable delivery of promised amenities (reliability). Recent applications affirm its relevance: using fuzzy-set qualitative comparative analysis, Perdomo-Verdecia et al. (2024) show that particular combinations of dimensions, often anchored by reliability and responsiveness, form sufficient pathways to guest satisfaction, while Kim and So (2023) show that service-quality perceptions are disproportionately shaped by how firms respond to service failures, giving particular weight to responsiveness and empathy.

2.3. Theoretical Basis for a Moderating Role

Three theoretical strands predict that service quality strengthens the association between CRM and profitability. First, the Service Profit Chain (Heskett et al., 1994) treats service quality as the mechanism through which internal capability, including CRM, is converted into customer satisfaction, loyalty and profit. Where service delivery is weak, the chain is broken and CRM's data-driven signal to customers is unlikely to translate into loyalty; the association between CRM and profitability should therefore be weaker at low service quality and stronger at high service quality. Second, the resource-orchestration extension of the Resource-Based View (Sirmon et al., 2007) holds that resources create value when bundled with complementary resources; a sophisticated CRM system delivers limited advantage if frontline execution is inconsistent (Zeithaml et al., 2000). Third, contingency theory predicts that the effectiveness of any practice depends on its fit with the organisational context, of which service-delivery capability is a central component (Donaldson, 2001). The study's conceptual framework accordingly specified service quality as a moderator that heightens the positive association between CRM and profitability.

2.4. The Restricted-Range Boundary Condition

A countervailing literature suggests that such moderation may be difficult to detect in premium segments. Sunnassee (2020) reports that the marginal association of service-quality improvements with satisfaction is weaker in higher-star hotels, consistent with a ceiling in which premium guests already receive uniformly high service. The methodological literature adds a general caution: the power to detect an interaction depends heavily on the variance of the moderator and the product term, and field studies with compressed moderator distributions routinely fail to detect interactions that exist in the wider population (McClelland & Judd, 1993; Dawson, 2014). Several of the sampled properties operate under international brand standards that impose minimum service benchmarks, which provides an a priori reason to expect restricted service-quality variance in this sample independently of whether moderation exists across the wider hotel population.

2.5. Hypotheses

H1: Service quality is positively associated with perceived firm profitability.

H2: Service quality positively moderates the association between CRM and perceived firm profitability, such that the association is stronger at higher levels of service quality.

H2 is stated directionally because each of the theoretical strands above, and the study's conceptual framework, predict amplification rather than attenuation. A negative product term, or one that does not differ reliably from zero, would therefore both constitute non-support for H2, although they carry different substantive interpretations that are considered in Section 5.

3. Methodology

3.1. Research Design and Philosophy

The study adopted a critical-realist philosophy and a cross-sectional, correlational design nested within an explanatory sequential mixed-methods programme, in which quantitative data were collected and analysed first and qualitative key-informant interviews were then used to explain and contextualise the statistical results (Creswell & Plano Clark, 2018). Critical realism treats statistical regularities as fallible evidence about underlying mechanisms rather than as the phenomena of interest themselves, which is appropriate for a question about whether an observed interaction reflects a genuine contingency or an artefact of specification, sampling or measurement.

Because all constructs were measured at a single point in time and reported by the same respondents, the design cannot establish temporal ordering or causal direction among CRM, service quality, customer satisfaction and profitability. All relationships are therefore interpreted as associations. Where terms such as "predictor" or "outcome" appear, they denote only the position of a variable in a statistical model (Antonakis et al., 2010).

3.2. Population, Sample and Unit of Analysis

The GKMA hosts more than ten four- and five-star hotels, but not all operate a sufficiently developed and documented CRM system for the purposes of the study. Six hotels were therefore purposively selected, using criterion sampling based on established CRM infrastructure and market prominence (Patton, 2002): four five-star properties (Serena Hotel Kampala, Sheraton Kampala Hotel, Munyonyo Commonwealth Resort, and Lake Victoria Serena Golf Resort and Spa) and two four-star properties (Lake Victoria Hotel Entebbe and Protea Hotel by Marriott Entebbe). The hotels lie along the Kampala-Entebbe corridor, the country's main business, tourism and transport axis.

The survey population comprised 2406 frontline employees in food and beverage, accommodation, front office, accounts, and marketing and sales across the six hotels. Yamane's (1967) formula, $n = N/(1 + N(e)^2)$, with $e = 0.05$, gave a required sample of 343 (2406/7.015 = 342.98). The sample was allocated to hotels in proportion to their share of the population ($n_i = N_i \times n/N$), and respondents were selected within each hotel by simple random sampling from staff rosters. Ques-

tionnaires were distributed in paper form and through a Google Forms link, and 340 usable responses were obtained, a response rate of 99.13% (Table 1).

Table 1. Sampling frame and response rate by hotel.

Hotel	Population	Sample	Responses	Response rate
Serena Hotel Kampala	523	75	74	98.67%
Sheraton Kampala Hotel	235	33	33	100.00%
Munyonyo Commonwealth Resort	581	83	82	98.80%
Lake Victoria Serena Golf Resort and Spa	581	83	82	98.80%
Lake Victoria Hotel Entebbe	246	35	35	100.00%
Protea Hotel by Marriott Entebbe	240	34	34	100.00%
Total	**2406**	**343**	**340**	**99.13%**

Note: Population figures are frontline employees by hotel (hotel records, 2022). The total is the sum of the hotel-level figures.

The unit of observation is the individual employee, who reports on his or her hotel's CRM practices, service delivery and financial standing. The constructs of interest, however, are properties of hotels, and the 340 respondents are nested within only six hotels. Employees of the same property share management, brand standards and financial circumstances, so their responses are unlikely to be independent. Yamane's formula governs precision at the employee level; it does not create additional independent hotel-level observations. The inferences the data can support are therefore associations among employee perceptions within this premium segment, not hotel-level effects that generalise to the hotel population (Section 3.4.4).

Thirty-six key informants were interviewed: six general managers, twelve marketing and sales managers or officers in charge of accounts, and six departmental managers, selected purposively, together with twelve guests (one corporate and one individual guest per hotel) selected by convenience. None of the key informants formed part of the survey sample, so the interviews provide a perspective independent of the survey respondents.

3.3. Measurement

All quantitative constructs were measured with five-point Likert items (1 = strongly disagree; 5 = strongly agree) in a self-completed questionnaire, and composites were computed as item means so that each retains the 1 - 5 metric.

Service quality was measured with 30 items, six for each SERVQUAL dimension of reliability, responsiveness, assurance, empathy and tangibles (Parasuraman et al., 1988). CRM was measured with 36 items, twelve for each of the people, technology and process dimensions (Buttle & Maklan, 2019; Chen & Popovich, 2003). Customer satisfaction, used as a covariate, was measured with 30 items

covering service over expectations, positive word-of-mouth, repurchase, perceived expectations and actual expectations, developed from the expectancy-disconfirmation (Oliver, 1980) and behavioural-intentions (Zeithaml et al., 1996) literatures.

Perceived firm profitability was measured with 12 items capturing employees' perceptions of their hotel's return on investment (ROI), return on equity (ROE) and net profit, and of changes in these indicators associated with CRM. Audited hotel-level financial statements were not available for analysis, so the outcome is defined throughout as employees' perceived firm profitability rather than recorded financial performance. Perceptual measures of this kind are common in hospitality research where firm accounts are confidential, but they represent informed judgements rather than accounting outcomes, and the conclusions are worded accordingly.

Content validity was established through expert-judge review and computed as a content validity index (CVI), and internal consistency was assessed with Cronbach's alpha (Table 2). Every CVI exceeded 0.70 and every alpha exceeded 0.90. Alpha values above 0.95 may also indicate some item redundancy, which is noted as a limitation. Exploratory factor analysis (principal components) of each scale identified a dominant first factor: service quality (eigenvalue = 17.86; 79.40% of variance), customer satisfaction (17.84; 81.38%), and CRM (18.17; 76.10%), with the people, technology and process sub-scales each unidimensional (89.74%, 95.79% and 93.92%). These results supported the use of single composite indices in the analyses.

Table 2. Instrument validity, reliability and descriptive statistics (n = 340).

Construct	Items	CVI	Cronbach's α	Mean	*SD*
CRM-People	12	0.708	0.921	4.499	0.506
CRM-Technology	12	0.778	0.948	4.446	0.587
CRM-Process	12	0.744	0.936	4.456	0.522
Service quality	30	0.771	0.977	4.542	0.506
Customer satisfaction	30	0.768	0.976	4.501	0.527
Perceived firm profitability	12	0.815	0.959	4.465	0.578

Note: CVI = content validity index. The CRM composite (36 items) has a mean of 4.467, the average of its three equally weighted sub-scales.

3.4. Data Analysis Strategy

Quantitative data were analysed in STATA 18 and AMOS. The analysis distinguishes the test of each hypothesis from exploratory re-specifications and gives primacy to the former.

Pearson correlations and simple linear regressions described the bivariate associations among the composites. Unstandardised coefficients (B, in the 1 - 5 met-

ric) and standardised coefficients (β) are reported with standard errors, t statistics and 95% confidence intervals. In a one-predictor regression, β equals the Pearson correlation, which provides an internal check on the reported values.

H2 was tested in the model implied by the study's conceptual framework, estimated with composite indices. The perceived-profitability equation retained CRM, service quality and their product term irrespective of sign or significance, together with customer satisfaction as a covariate:

$$PP_i = \beta_0 + \beta_1 CRM_i + \beta_2 SQ_i + \beta_3 \left(CRM_i \times SQ_i\right) + \beta_4 CS_i + \varepsilon_i, \quad (1)$$

where PP is perceived firm profitability, SQ service quality and CS customer satisfaction. In the same path model, CRM was specified as associated with service quality and customer satisfaction. In a recursive path model of observed variables with uncorrelated disturbances, the maximum-likelihood estimates of each equation coincide with its ordinary least-squares estimates, so the coefficients of the profitability equation do not depend on constraints imposed elsewhere in the system (Kline, 2016). The product term was formed from the uncentred composites. Centring changes the lower-order coefficients but not β_3, its standard error or its test (Aiken & West, 1991); because the uncentred β_1 and β_2 describe each variable's slope where the other equals zero, a value outside the observed range, they are not interpreted directly.

Moderation was evaluated in four ways. First, β_3 is reported with its 95% confidence interval. Second, for a single added term, the Wald test of β_3 is equivalent to comparing the model with an otherwise identical model without the product term: the incremental F statistic equals the square of the t (or z) statistic of β_3, and the likelihood-ratio comparison is asymptotically equivalent. Third, the squared partial correlation of the product term, $t^2/(t^2 + df)$, was used to bound its incremental explained variance, since ΔR^2 = partial $r^2 \times (1 - R^2$ of the model without the product term). Fourth, the conditional (simple) slope of CRM, $\beta_1 + \beta_3 SQ$, was evaluated at one standard deviation below the mean of service quality (4.036), at the mean (4.542) and at the scale maximum (5.00), because the mean plus one standard deviation (5.048) lies beyond the scale ceiling. H2 would be supported only by a positive β_3 whose confidence interval excludes zero.

The sensitivity of this test was also considered. With n = 340 and α = 0.05, a single product term requires Cohen's f^2 of approximately 0.023 to be detected with power of 0.80; given the restricted range of service quality, interactions smaller than this cannot be reliably distinguished from zero.

3.4.1. Exploratory Refinement Sequence

The moderation model above was one step in a four-step refinement sequence. Model 1 decomposed all SERVQUAL and CRM sub-dimensions together with an interaction term; Model 2 is the moderation model described in Section 3.4.2; Model 3 dropped paths that were nonsignificant in Model 2, including the service-quality main effect; and Model 4 dropped paths that were negative or unstable,

including the product term. Because paths in Models 3 and 4 were removed on the basis of their significance and sign, the sequence is data-driven, and it is reported only as exploratory. Fit was summarised with RMSEA, CFI and SRMR against conventional thresholds (Hu & Bentler, 1999). For the final model, the chi-square statistic, degrees of freedom, number of free parameters and identification status are reported so that good fit can be distinguished from saturation (Kline, 2016).

3.4.2. Nesting of Employees within Hotels

The regression and path models treated the 340 responses as independent observations and did not model hotel membership. Where respondents share a context, this assumption tends to understate standard errors and overstate statistical significance, particularly for estimates close to conventional thresholds (Moulton, 1990). Multilevel modelling was not a viable remedy, because six level-two units are too few to estimate between-hotel variance components reliably (McNeish & Stapleton, 2016), and cluster-robust standard errors are themselves unreliable with so few clusters (Cameron et al., 2008). The study therefore addresses nesting by limiting its inferences: results are interpreted as associations among employee perceptions within the six hotels, estimates close to $p = 0.05$ are treated as statistically fragile, and no claim is made that the associations generalise to the hotel population or represent hotel-level effects.

3.4.3. Qualitative Analysis

Interview transcripts were analysed thematically following Braun and Clarke's (2006) six phases: familiarisation, initial coding, searching for themes, reviewing themes, defining and naming themes, and reporting. Codes were organised deductively around the SERVQUAL dimensions and the CRM components, and the analysis was used to establish how informants described the roles of service quality and CRM in guest satisfaction, retention and revenue.

3.5. Common Method Variance

Because CRM, service quality, customer satisfaction and perceived profitability were reported by the same employees on a single instrument, common method variance could inflate the associations among constructs (Podsakoff et al., 2003). Procedural remedies included assured anonymity, an explicit assurance that managers would not see individual responses, and separate instrument sections for each construct. Harman's single-factor test, in which all items were entered into one unrotated factor analysis, indicated that the first factor accounted for less than 50% of total variance. Harman's test is a weak diagnostic and cannot rule out common method variance (Podsakoff et al., 2003), so the bivariate associations may be inflated. Common method variance tends to deflate rather than inflate interaction terms (Siemsen et al., 2010), however, so it is an unlikely source of a spurious interaction, although it may reduce the power to detect a genuine one. The key-informant interviews, drawn from respondents outside the survey sample, provide

a further check that is not subject to the same method concern.

3.6. Ethical Considerations

The study was approved by the Clarke International University Research Ethics Committee (Protocol reference CLARKE-2024-1107) and the Uganda National Council for Science and Technology (reference SS3697ES), and administrative clearance was obtained from the Postgraduate School of Nkumba University and from the management of each hotel. Informed consent was obtained from all participants, who were told that participation was voluntary and that they could withdraw at any time without consequence. No individual identifiers were collected in the survey, interview participants are identified only by role and code, and data were stored and reported in a way that protects anonymity and confidentiality.

4. Results

4.1. Sample Characteristics

Of the 340 respondents, 61.18% were male and 38.82% female. Most worked in Food and Beverage (40.29%) and Accommodation (30.88%), followed by Front Office (16.47%), Accounts (6.76%), and Marketing and Sales (5.59%), broadly reflecting the staffing of full-service premium hotels. Nearly half (49.41%) were aged 30 - 39 years; 51.77% had 8 - 15 years of tenure at their current hotel; and 74.41% held a diploma or higher qualification. The respondents were therefore experienced and well placed to report on their hotel's CRM practice and service delivery, although their judgements of profitability remain perceptual.

4.2. Descriptive Statistics

All five SERVQUAL dimensions recorded composite means above 4.5 on the five-point scale (Table 3). Tangibility and responsiveness recorded the highest means and assurance the lowest. The composite service-quality score had a mean of 4.542 and a standard deviation of 0.506, so that the mean plus one standard deviation lies beyond the scale maximum. This high-mean, low-variance pattern is the restricted range anticipated in Section 2.4, and it constrains the power of any test in which service quality is the moderator. CRM, customer satisfaction and perceived profitability showed the same pattern (Table 2).

4.3. Bivariate Associations (H1)

Service quality was strongly and positively correlated with perceived firm profitability ($r = 0.714$, $p < 0.001$) and with CRM ($r = 0.751$, $p < 0.001$). CRM was also strongly correlated with perceived profitability ($r = 0.878$) and with customer satisfaction ($r = 0.784$), and customer satisfaction with perceived profitability ($r = 0.775$; all $p < 0.001$). Table 4 reports the corresponding simple regressions. The earlier version of this paper reported the unstandardised coefficient for service quality and perceived profitability (0.816) under the label β, which is why it differed from the correlation; as expected in one-predictor models, each standard-

ised coefficient in Table 4 equals the corresponding correlation.

Table 3. Descriptive statistics for SERVQUAL dimensions (n = 340).

Dimension	Items	Composite mean	Range of item SDs
Reliability	6	4.524	0.649 - 0.702
Responsiveness	6	4.559	0.595 - 0.643
Assurance	6	4.504	0.672 - 0.714
Empathy	6	4.553	0.610 - 0.658
Tangibility/physical evidence	6	4.572	0.575 - 0.689
Overall service quality (composite)	30	4.542	0.506 (composite SD)

Table 4. Simple regressions among the study composites (n = 340).

Predictor → outcome	r	R^2	B	SE	β	t(338)	F(1, 338)	95% CI for B
SQ → Perceived profitability	0.714	0.510	0.816	0.043	0.714	18.77	352.2	[0.731, 0.902]
SQ → CRM	0.751	0.564	0.745	0.036	0.751	20.90	436.5	[0.675, 0.815]
CRM → Perceived profitability	0.878	0.770	1.011	0.030	0.878	33.67	1133.9	[0.952, 1.070]
CRM → Customer satisfaction	0.784	0.614	0.823	0.036	0.784	23.18	537.3	[0.753, 0.893]
CS → Perceived profitability	0.775	0.600	0.850	0.038	0.775	22.53	507.5	[0.776, 0.924]

Note: SQ = service quality; CS = customer satisfaction; B = unstandardised coefficient (1 - 5 metric); SE = standard error of B; β = standardised coefficient. All $p < 0.001$. Standard errors are consistent with the reported confidence intervals, and t statistics with $t = r\sqrt{(n-2)}/\sqrt{(1-r^2)}$.

These results support H1: service quality is positively and strongly associated with perceived firm profitability, accounting for 51.0% of its variance at the bivariate level. A one-point higher service-quality score is associated with a 0.82-point higher perceived-profitability score. Because the data are cross-sectional and single-source, this is evidence of a strong association rather than of an effect of service quality on profitability. The strong correlation between service quality and CRM also indicates substantial overlap between the two constructs, which limits the precision with which their separate and joint contributions can be estimated.

4.4. Moderation Model (H2)

Table 5 reports the moderation model. In the perceived-profitability equation, the CRM × service-quality product term was negative (B = −0.097, SE = 0.049, z = −1.99, p = 0.046, 95% CI [−0.193, −0.002]). Customer satisfaction was positively associated with perceived profitability (B = 0.336, $p < 0.001$). In the same model, CRM was positively associated with service quality (B = 0.745, $p < 0.001$) and customer satisfaction (B = 0.823, $p < 0.001$).

Table 5. Moderation model: coefficients for perceived firm profitability (n = 340).

Term	*B*	*SE*	*z*	*p*	95% CI
CRM (uncentred)	1.239	—	—	<0.001	—
Service quality (uncentred)	0.309	—	—	0.161	—
CRM × service quality	−0.097	0.049	−1.99	0.046	[−0.193, −0.002]
Customer satisfaction	0.336	—	—	<0.001	—
Nested comparison (model without product term)			$\chi^2(1) \approx 3.98$	0.046	
Incremental variance of product term			$\Delta R^2 \leq 0.0025$		

Note: Estimates from the perceived-profitability equation of the hypothesised path model (maximum likelihood). The uncentred CRM and service-quality coefficients are slopes at a value of zero on the other variable, outside the observed range, and are not interpreted; conditional slopes are given in Table 6. The *SE* and CI of the product term are Wald values derived from the estimate and its *p*-value. The nested comparison follows from the equivalence of the single-term Wald and incremental tests. ΔR^2 uses partial $r^2 = z^2/(z^2 + 335) = 0.0117$ and the fact that the model without the product term explains at least 79.0% of the variance (the R^2 of CRM and customer satisfaction alone).

The product term was small. Its squared partial correlation was 0.012, and because CRM and customer satisfaction alone account for 79.0% of the variance in perceived profitability, the product term can account for no more than 0.25% of that variance ($\Delta R^2 \leq 0.0025$). Its effect size (Cohen's $f^2 = 0.012$) is about half of the value that a single product term needs to be detected with 80% power in a sample of this size (Section 3.4.2), so its nominal significance should be regarded with caution.

Table 6 reports the conditional (simple) slopes of CRM. The association between CRM and perceived profitability was 0.85 at low service quality (4.036), 0.80 at average service quality (4.542) and 0.75 at the scale maximum (5.00). Across the observed range of service quality, therefore, the CRM slope varies by only about one tenth of a scale point, and it remains large and positive throughout. The slope at average service quality (0.80) is close to the CRM coefficient in the final exploratory model (0.81; Section 4.5), which confirms that the product term adds little to the description of the data.

Table 6. Conditional (simple) slopes of CRM on perceived firm profitability.

Service-quality level	Value	Conditional slope of CRM ($\beta_1 + \beta_3 \times SQ$)
Low (mean − 1 SD)	4.036	$1.239 - 0.097 \times 4.036 = 0.85$
Average (mean)	4.542	$1.239 - 0.097 \times 4.542 = 0.80$
High (scale maximum)	5.000	$1.239 - 0.097 \times 5.000 = 0.75$

Note: Mean + 1 *SD* (5.048) exceeds the scale maximum, so the scale maximum is used as the high value. Slopes are computed from unrounded coefficients ($\beta_1 = 1.2388$; $\beta_3 = -0.0972$).

Three conclusions follow for H2. First, the product term was negative, not pos-

itive, so the prediction that higher service quality strengthens the association between CRM and perceived profitability was not supported. Second, the negative interaction was substantively negligible: it accounts for at most a quarter of one per cent of the variance and changes the CRM slope only modestly across the observed range. Third, it is statistically fragile. Its p-value lies just below 0.05, and the model did not account for the clustering of respondents within six hotels, which tends to understate standard errors (Section 3.4.4); once clustering is taken into account, the confidence interval around β_3 is likely to widen enough to include zero. The evidence is therefore best summarised as no support for positive moderation, with at most a weak attenuating tendency whose reliability cannot be established with these data.

4.5. Exploratory Refinement Sequence and Identification of the Final Model

Table 7 summarises the refinement sequence. Model 1, which retained every SERVQUAL and CRM sub-dimension with an interaction term, fitted poorly (RMSEA = 0.345, CFI = 0.319, SRMR = 0.181) and did not yield a separately estimable interaction coefficient. Model 2, the moderation model of Section 4.4, also fitted poorly as a system (RMSEA = 1.177, CFI = 0.447, SRMR = 0.210). Its misfit arises from the constraints imposed on the service-quality and customer-satisfaction equations, not from the perceived-profitability equation, whose estimates coincide with the equation-wise estimates (Section 3.4.2). RMSEA values of this size are also unreliable in models with few degrees of freedom (Kenny et al., 2015).

Table 7. Exploratory structural equation refinement sequence.

Model	Specification	CRM × SQ B	p	RMSEA	CFI	SRMR
1	Full: all CRM and SQ sub-dimensions decomposed	n.e.	—	0.345	0.319	0.181
2	Hypothesised model with composite indices	−0.097	0.046	1.177	0.447	0.210
3	Nonsignificant paths dropped (incl. SQ main effect)	−0.032	0.032	0.935	0.742	0.059
4	Negative/unstable paths dropped; CRM → CS; CRM, CS → PP	n.r.	—	0.000	1.000	0.000

Note: n.e. = not separately estimable; n.r. = not retained; SQ = service quality; CS = customer satisfaction; PP = perceived firm profitability. Model 4: $\chi^2(0) = 0.00$; six free parameters; just-identified.

Models 2 and 3 each yielded a small negative product term ($B = -0.097$, $p = 0.046$; $B = -0.032$, $p = 0.032$). The earlier version of this paper described the interaction as "sign-inconsistent", which was inaccurate: in both specifications in which it could be estimated, the product term was negative. What varied was its magnitude and whether it was retained. The Model 3 estimate should not be interpreted, because that model dropped the service-quality main effect while retaining the product term, so the product coefficient no longer represents an inter-

action conditional on its lower-order terms (Aiken & West, 1991).

Model 4 reported RMSEA = 0.000, CFI = 1.000 and SRMR = 0.000. The model contains three observed variables, with paths from CRM to customer satisfaction and from both CRM and customer satisfaction to perceived profitability. It estimates six free parameters (three path coefficients, the variance of CRM and two disturbance variances) from six sample variances and covariances, and it is therefore just-identified, with zero degrees of freedom and $\chi^2(0) = 0.00$. A just-identified model reproduces the observed covariance matrix exactly by construction, so its perfect fit indices are a mathematical property of the specification and cannot show that it is substantively superior to Models 1 - 3 (Kline, 2016). Furthermore, because the product term was removed from Model 4 partly because its sign was negative, Model 4 cannot serve as a test of H2. The conclusion regarding H2 therefore rests on the moderation model in Section 4.4, not on Model 4.

Within Model 4, CRM ($B = 0.807$, $p < 0.001$) and customer satisfaction ($B = 0.247$, $p < 0.001$) were both positively associated with perceived profitability, jointly accounting for about 79% of its variance. Given the saturated specification and the same-source data, these coefficients are best read as descriptive partial associations rather than as confirmed determinants of profitability.

4.6. Qualitative Perspectives

The interviews showed how informants understood the roles of service quality and CRM (**Table 8**). Guests and managers linked each service-quality dimension directly to trust, confidence, satisfaction and repeat patronage. One guest explained that services are usually delivered as promised and that this is why the guest trusts the hotel (Individual Customer-P01), and another stressed how quickly staff respond when a problem or complaint is raised (Individual Customer-P03). An Acting General Manager described professional service as making customers feel safe and confident (P09); a Front Office Manager located empathy in the handling of complaints and service recovery (P06); and a General Manager observed that physical facilities shape perceptions of quality and professionalism (P08). CRM, by contrast, was described in terms of recognition and personalisation: a General Manager explained that CRM systems track guests' preferences, previous visits and service history (P08), and guests valued being remembered and recognised as regular customers (P01, P02).

In these accounts, service quality and CRM appear as separately managed and separately valued inputs to guest satisfaction and repeat business. No account described service quality as changing the value that guests derived from CRM, or CRM as delivering more at higher levels of service quality. Qualitative data cannot test a statistical interaction, and informants may not articulate contingencies of this kind, but the pattern is consistent with the quantitative finding that service quality does not amplify the association between CRM and perceived profitability in this segment.

Table 8. Summary of qualitative themes.

Theme	Representative verbatim account	Informant
Reliability as a basis for trust	"Services are usually delivered as promised, which makes me trust the hotel."	Individual Customer-P01
Responsiveness in recovery	"Staff respond quickly when there is a problem or complaint raised by customers."	Individual Customer-P03
Assurance and confidence	"Professional service makes customers feel safe and confident while staying at the hotel."	Acting General Manager-P09
Empathy and service recovery	"Empathy helps in handling customer complaints and improving service recovery."	Front Office Manager-P06
Tangibles and professionalism	"Physical facilities influence customer perceptions of service quality and professionalism."	General Manager-P08
Service quality and retention	"Service quality affects customer satisfaction and influences repeat patronage."	Corporate Customer-P11
CRM as recognition and personalisation	"CRM systems help us track customer preferences, previous visits, and service history over time."	General Manager-P08

5. Discussion

Among premium hotels in the GKMA, service quality is strongly associated with employees' perceived firm profitability, but it does not strengthen the association between CRM and perceived profitability. H1 is supported and H2 is not. The product term was small, negative and statistically fragile, and the conditional association between CRM and perceived profitability remained large and positive across the observed range of service quality. This section interprets that pattern, compares it with prior evidence, and considers its theoretical, managerial and boundary-condition implications, keeping in view that all results are cross-sectional associations among employee perceptions in six hotels.

5.1. Interpreting the Interaction Pattern

Three complementary explanations may account for the absence of the positive moderation predicted by theory.

The first is restricted range. Service quality was rated uniformly highly across all five dimensions (mean = 4.542, $SD = 0.506$), and the mean plus one standard deviation lay beyond the scale ceiling. Interactions can be detected only where the moderator varies meaningfully, and field studies with compressed moderator distributions have low power to detect them (McClelland & Judd, 1993). This pattern is consistent with Sunnassee's (2020) finding that the conditioning role of service quality weakens in higher-star segments. The absence of positive moderation in this premium sample therefore does not establish its absence across the wider hotel population.

The second is diminishing returns. Where both CRM and service quality are already strong, further gains in one may add progressively less to the association

of the other with profitability, because guest expectations are already largely met on both fronts. A small negative product term is a plausible statistical signature of such substitution at the top of the distribution. It should not be read as evidence that better service quality undermines the value of CRM: the conditional slope of CRM declined only from 0.85 to 0.75 across the observed range and remained large and positive throughout.

The third concerns inference and specification. The product term was nominally significant only just below the conventional threshold, in a model that did not account for the clustering of respondents within six hotels, and it was later removed through a data-driven sequence that ended in a just-identified model whose perfect fit was guaranteed by construction. The earlier conclusion that the interaction "did not survive refinement" therefore described the refinement procedure rather than the data. Testing the hypothesis in the model that retains the product term with both main effects, and reporting its interval, incremental variance and simple slopes, addresses that weakness directly and yields a clearer conclusion: no positive moderation, and at most a negligible and unreliable attenuating tendency.

5.2. Comparison with International and Regional Evidence

The findings are compatible with Al-Kharabsheh's (2024) evidence that CRM is associated with customer satisfaction performance in Jordanian hotels, in that both studies point to CRM operating through customer-facing outcomes rather than being conditioned by them; in the present data, customer satisfaction remained positively associated with perceived profitability alongside CRM. Nguyen et al. (2024) identified digital marketing capability, rather than service quality, as the variable that conditions the association between CRM and performance in Vietnamese hospitality businesses, and Sunnassee (2020) located a conditioning role in star rating. Read together, this literature suggests that boundary conditions on the financial value of CRM are heterogeneous: no single variable appears to function as a universal moderator across hospitality contexts. The present study adds an empirically tested case—service quality in the East African premium segment—in which the predicted amplification did not appear.

The results are also consistent with the configurational view of Perdomo-Verdecia et al. (2024), who show that service quality reaches satisfaction through several sufficient combinations of dimensions. If guests can form a favourable judgement through several routes, service quality may plausibly contribute to guest outcomes through channels that run alongside, rather than through, CRM-enabled personalisation, which is how the informants in this study described it.

5.3. Theoretical Implications

Contingency extensions of the Resource-Based View predict that CRM is more valuable where complementary service-quality capability is present (Sirmon et al., 2007). The present results suggest that such complementarity needs to be specified

alongside the conditions under which it is observable. Where the complementary resource is uniformly high, as in a premium segment governed by brand standards, complementarity may be undetectable even if it operates across the wider population, because the market structure removes the variation needed to observe it. The distinction between the theoretical existence of a contingency and its empirical detectability is easily elided in applied strategy research and deserves explicit attention in studies of premium or high-performing segments.

The findings are also more consistent with a parallel than a strictly sequential reading of the Service Profit Chain (Heskett et al., 1994) in high-service-quality environments. Rather than service quality acting as a gate through which the value of CRM must pass, service quality and CRM appear as separate, converging correlates of perceived profitability, with customer satisfaction associated with both. Because the design is cross-sectional, these pathways remain propositions for longitudinal testing rather than established causal sequences.

5.4. Managerial Implications

For managers of premium hotels in the GKMA and comparable markets, the findings caution against deferring CRM investment until service quality has reached some prior threshold, and against justifying service-quality investment mainly as a way of unlocking returns from CRM. Both were strongly and separately associated with perceived profitability, and there was no evidence that one enhances the other in this segment. Each is therefore better evaluated, funded and monitored on its own merits, with separate indicators and business cases. These recommendations rest on observed associations, and hotels are encouraged to test them against their own financial records.

Within service quality, responsiveness and tangibles recorded the highest ratings, and informants linked responsiveness and empathy to complaint handling and service recovery. Hotels seeking to strengthen service quality may therefore prioritise frontline responsiveness and empathetic recovery protocols, consistent with Kim and So's (2023) evidence on the importance of service recovery. For CRM, the strong association with perceived profitability across every specification suggests that CRM maturity remains a strong candidate for continued investment, which is relevant given reported resource and skills constraints in the Ugandan hotel sector (UTB, 2015).

5.5. Boundary Conditions: When Might Moderation Emerge?

The absence of positive moderation is bounded by the characteristics of the sampled strategic group. Three conditions under which moderation might emerge are proposed for future testing. The first is sample composition: samples spanning mid-range and budget properties would show wider service-quality variance and provide a more powerful test. The second is volatility: hotels recovering from staffing disruption, or newly opened properties still stabilising standards, would show the service-quality variation that the present sample lacked. The third is outcome

disaggregation: perceived profitability was modelled as a single composite of ROI, ROE and net-profit indicators, yet service quality might condition one financial pathway, such as ancillary spending prompted by high-empathy encounters, without conditioning another, such as marketing cost savings from CRM-supported retention. Disaggregating the outcome, ideally with recorded financial data, is a concrete extension.

6. Conclusion, Limitations and Future Research

Service quality is strongly and positively associated with perceived firm profitability among premium hotels in the GKMA (H1 supported). In a model that retained CRM, service quality and their product term, there was no evidence that service quality strengthens the association between CRM and perceived profitability (H2 not supported). The product term was negative, accounted for no more than 0.25% of the variance in perceived profitability, changed the CRM slope only from 0.85 to 0.75 across the observed range, and was statistically fragile. Substantively, service quality and CRM are best treated as parallel, separately justified correlates of perceived profitability in this segment rather than as a conditioning pair. Methodologically, the study cautions that an interaction should be tested in a model that retains it with its lower-order terms, and that the perfect fit of a just-identified model says nothing about substantive superiority.

Several limitations qualify these conclusions. First, the cross-sectional design cannot establish temporal ordering or causal effects; reverse relationships are plausible, for example if more profitable hotels are better able to invest in CRM and service quality. Second, all quantitative constructs, including the outcome, were reported by the same employees, so common method variance may have inflated the bivariate associations, and the outcome reflects perceptions rather than recorded financial performance. Third, respondents were nested within six hotels and this structure was not modelled, so standard errors may be understated, estimates near conventional thresholds are fragile, and the findings cannot be generalised to the hotel population. Fourth, the restriction to four- and five-star hotels limits the variance of service quality and hence the power to detect moderation. Fifth, very high alpha coefficients suggest some item redundancy, and treating SERVQUAL as a single composite precludes dimension-specific moderation tests.

Future research could address these limitations through longitudinal or panel designs; multi-source designs combining employee reports with guest-rated service quality and audited financial data; samples of many more hotels, spanning star categories, that permit multilevel analysis with adequate numbers of hotels; tests of alternative moderators such as digital marketing capability, guest segment and star rating; and replication in other Ugandan tourism regions and in premium markets in Kenya, Tanzania and Rwanda.

In sum, the study offers a substantive finding—that service quality and CRM are parallel, separately justified correlates of perceived profitability among premium East African hotels—and a methodological caution: interaction effects

should be tested in models that retain the product term with its lower-order terms, and should be neither reported nor dismissed on the basis of post hoc specifications or saturated models.

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Author Contributions

Conceptualization, S.C.; methodology, S.C., F.P.K. and F.L.; investigation and data collection, S.C.; data curation, S.C.; formal analysis, S.C.; validation, F.P.K. and F.L.; visualization, S.C.; project administration, S.C.; writing—original draft preparation, S.C.; writing—review and editing, S.C., F.P.K. and F.L.; supervision, F.P.K. and F.L. This article is based on the doctoral research of S.C. at Nkumba University, for which F.P.K. and F.L. served as doctoral supervisors. All authors have read and agreed to the published version of the manuscript.

Data Availability

The anonymised survey data are available from the corresponding author on reasonable request, subject to the confidentiality conditions of the ethical approvals.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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