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Delivering Quality in Last Mile Delivery for Social Commerce: Implications for Retaining Customers and Spreading Word of Mouth of Facebook Entrepreneurial Brands by Women Entrepreneurs

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ABSTRACT

Women entrepreneurs are increasingly participating in informal digital marketplaces, the role of logistics performance, and more specifically the quality of last mile delivery in customer loyalty is largely under explored in emerging markets. This paper aims to explore how last mile delivery quality influences on customer retention and positive word-of-mouth through customer satisfaction as a mediator for female entrepreneurs' Facebook brand in Bangladesh. This study has used quantitative approach with cross sectional survey design and the respondents were 384 female customers who visited the women managed Facebook businesses within 3 months. Using covariance-based structural equation modeling with bootstrapping, adapted multi-items scales were used to measure the constructs and the proposed research model that involves direct and mediated pathways were tested. With regard to the latter, the results also show that the quality of the last-mile delivery has a strong positive impact on customer satisfaction ($\beta = 0.61$, $p < 0.001$). Customer satisfaction, in turn, has a strong impact on customer retention ($\beta = 0.47$) and word of mouth ($\beta = 0.53$). The direct effects of delivery quality on retention and WOM are still very strong, thus supporting the partial mediation. The model accounts for 37%, 51%, and 46% of the variance in satisfaction, retention, and word of mouth, respectively. This research is the first in this area to give evidence of the effect of the quality of last mile logistics services on customer loyalty outcomes in a women dominated social commerce environment in a developing economy. The results have shown that service-dominant capabilities of logistics, even for an informal brand on Facebook, are a valuable relational asset, and provide useful lessons for micro-entrepreneurs, platform designers, and last mile delivery partners.

1. Introduction

Confluence of social media and entrepreneurship, many women in emerging economies are able to start and run businesses from the comforts of their own homes [7,14]. Such activities are known as F-commerce or Facebook Boutique in Bangladesh and Facebook has become the most important

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of these activities. Most of these unorganized businesses are women-owned and sell articles of clothing, handicrafts, cosmetics and homemade food products [1,13]. A strong relationship, trust and third party logistics providers are key in these businesses when it comes to the final delivery of products to customers.

Although there is a lot of research that has been conducted around customer loyalty in formal eCommerce environment [10, 11] there is less research that has been done around logistics dimension of social commerce, especially last mile delivery process. Last-mile delivery quality (LMDQ) includes timeliness, order accuracy, product condition, professionalism of delivery persons and reliability of communications [5]. Within the context of the Facebook-based businesses, where one's institutional trust can be low, and the brand reputation is highly dependent on the personal approach, LMDQ is one of the most concrete and risky experiences of encountering service. However, with its practical significance, quantitative studies about LMDQ as an influence on customer retention and word-of-mouth (WOM) by female-led Facebook brands have been limited.

The literature shows that the last mile delivery is the most expensive and failure prone stage of the supply chain and has the greatest impact on customers' perception of service quality overall [4]. Many of the interactions in social commerce do not have formal shopping carts or logistics tracking systems, and delivery is often handled by local riders without regulation or by small courier companies [11]. When female entrepreneurs are delivering on Facebook, it's almost like it's the brand delivering. Interactive content, relational trust, and WOM are well acknowledged as important factors in customer acquisition in these businesses [1,13] but, post-purchase delivery issues, including delivery delays, damage and poor communication are often pointed out by customers. However, there is no previous empirical study that directly systematically related LMDQ with loyalty outcome in this specific context.

Customer retention is just one of the basic measures of relationship strength – the intention to repurchase from the same seller. In the traditional retail context, previous studies have demonstrated that stable service quality improves customer loyalty through satisfaction [15]. Likewise, positive WOM is a significant way of spreading Facebook brands, which are frequently entrepreneurs' brands with reduced algorithmic reach [4]. Customer satisfaction is a post-consumption appraisal [13] and is expected to mediate the operational excellence in delivery to loyalty behavioral outcomes.

In this context, the present study attempts to fill in an important gap in theorems and practice. It theoretically brings the conceptualization of logistics service quality models to the informal social commerce arena and investigates the mediator effect of customer satisfaction in an environment where the brand building is almost solely dependent on WOM. In practical terms, the results can help female micro-entrepreneurs, who are not always particularly expert in logistics, to make decisions on delivery partners, packaging, and customer communication.

Based on this, this study attempts to address the following research questions:

RQ1. How is the quality of the last mile service influencing customer retention and word of mouth of the Facebook entrepreneurial brands involving women?

RQ2. How does customer satisfaction mediate the last-mile delivery quality to these loyalty outcomes?

Based on service-profit chain and relationship marketing concepts, the study suggests that the quality of last-mile delivery positively impacts customer satisfaction and, consequently, customer

retention and customer word-of-mouth. There are also direct effects of LMDQ on retention and WOM, causing partially mediation. The following hypotheses are suggested:

- H1. The quality of last mile delivery has a positive impact on retaining customers.
- H2. Customer satisfaction has a positive effect on customer retention.
- H3. Positive last-mile delivery quality is an enabler of positive word-of-mouth.
- H4. Positive word of mouth is positively influenced by customer satisfaction.
- H5. The last-mile delivery is related to customer satisfaction which then affects customer retention.
- H6. The meditational effect of customer satisfaction was found between last mile delivery quality and positive WOM.

The proposed model is empirically tested with a survey data gathered from 384 female customers of women led businesses from Facebook in Bangladesh and analyzed by Covariance based Structural Equation Modeling (CB-SEM).

The remainder of this paper is organized as follows. The methodology of research is shown in section 2. Results of the measurement and model assessment of the structure are reported in Section 3. The findings, theoretical contributions and practical implications are discussed in Section 4. The study ends in section 5 with a summary of key insights, limitations and future research directions.

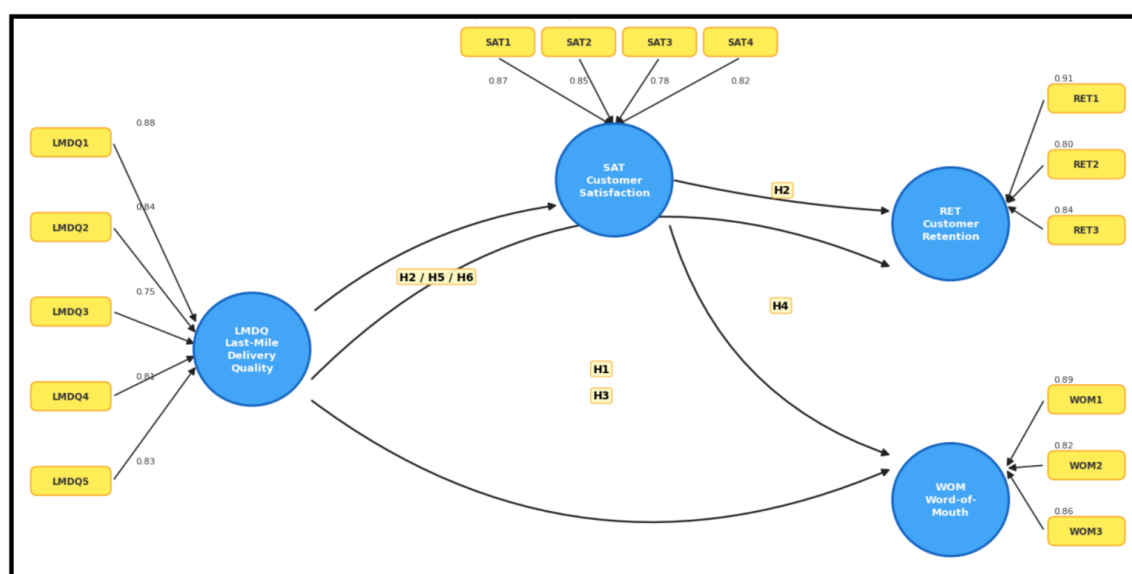


Fig. 1. Conceptual model

2. Methodology

2.1 Design of the Study

The survey design was adopted in this study to be of cross section and quantitative in nature. The target population was women who have been buyers from at least one Bangladeshi women-led business in the last 3 months via Facebook. To correspond to the typical gendered marketplace and to control for gender response variance, we examined female buyers.

2.2 The Sampling Method

A structured questionnaire was prepared in English and translated into Bangla by back-translation method. A pilot test of the survey was conducted with 35 respondents with some minor wording changes crafted from their feedback. The main data was collected on-line using google forms, which was spread via women shopping groups and women entrepreneurship groups (for example: Women Entrepreneurs of Bangladesh, F-commerce Bazar Bangladesh etc.) in Facebook. Only recent female customers were allowed to proceed through a screening question. The snowball sampling technique was also promoted. The data collection period was from March to May 2026. A total of 384 individuals of the 517 initial responses were retained because they met criteria, did not have a lot of missing values in the questionnaire, and did not straight-line the responses. Sample size was above the threshold of minimum number of observations suggested by CB-SEM (200 observations for 20 observed indicators and 4 latent variables) [8].

Respondent demographics: 67.2% aged 18–25, 24.7% 26–35; 61.5% students, 22.1% employed; 42.4% made 2–3 purchases from female-led Facebook brands in the last three months, 28.6% four or more. Apparel (52.1%), cosmetics (19.5%) and homemade food (13.8%) were the top three categories purchased.

2.3 Measurement Instruments

All constructs were measured by using scales based on earlier research that was adapted to the F-commerce context; items were rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) for each item.

Table 1

Constructs, measurement items, and factor loadings

Construct	Item Code	Item Wording	Standardized Loading	Source(s)
Last-mile delivery quality (LMDQ)	LMDQ1	The courier was able to deliver my order at the designated time.	0.88	[9, 10, 11]
	LMDQ2	The items were all undamaged with no problems.	0.84	
	LMDQ2	The items were all undamaged with no problems.	0.84	
	LMDQ3	The courier was very clear on the delivery status (calls or messages prior to arrival).	0.75	
	LMDQ4	The delivery personnel were courteous and respectful during the handover.	0.81	

Table 1 (Continued)

Construct	Item Code	Item Wording	Standardized Loading	Source(s)
Customer satisfaction (SAT)	LMDQ5	Seller promptly and satisfactorily addressed any issues related to delivery.	0.83	[12]
	SAT1	So, I am satisfied with my purchase experience with this Facebook seller.	0.87	
	SAT2	I was happy with this buying experience.	0.85	
	SAT3	I was a smart man who chose to purchase by this merchant.	0.78	
	SAT4	I'm happy about the shopping experience in general.	0.82	
Customer retention (RET)	RET1	I plan to purchase from this Facebook vendor in the future.	0.91	[15]
	RET2	Overall, this seller will be my first choice in the future for similar products.	0.80	
	RET3	I think I will continue to purchase products from this seller in the future.	0.84	
Word-of-mouth (WOM)	WOM1	I would say this Facebook brand to my friends and my family.	0.89	[3]
	WOM2	I say positive things about this seller to other people.	0.82	
	WOM3	I wish everyone would shop this brand on Facebook.	0.86	

Note: p values for all factor loadings < 0.001. The composite reliability (CR) and average variance extracted (AVE) for each construct are presented in Table 2.

2.4 Common Method Bias and Ethics

The first factor accounted for 31.8% of the total variance which is less than 50%, meaning that common method bias is not a significant problem in this study according to Harman's single factor test. Also a marker variable (general attitude towards online shopping) was added, the correlation with which was less than 0.1 and was not correlated with main constructs.

3. Results

CB-SEM for AMOS 28 was performed two step procedure. Mediations were tested using bootstrapping with 5,000 resamples [2].

3.1 Measurement Model Assessment

Confirmatory factor analysis demonstrated excellent model fit: $\chi^2/df = 1.94$, GFI = 0.94, CFI = 0.97, TLI = 0.96, RMSEA = 0.048 (90% CI: 0.039–0.056), SRMR = 0.041. The factor loadings ranged from 0.72 to 0.91 and were greater than 0.70 and statistically significant at $p < 0.001$. Reliability (composite, AVEs, and Cronbach's alpha) values are reported in Table 2. The convergent validity was obtained by CR ranging 0.87-0.93 and AVE ranging 0.63-0.74 and Cronbach's alpha ranging 0.85-0.92.

Table 2

Descriptive statistics for the data

Construct	Items	Loadings Range	CR	AVE	α
LMDQ	5	0.75–0.88	0.91	0.68	0.90
SAT	4	0.78–0.87	0.89	0.67	0.88
RET	3	0.80–0.91	0.87	0.70	0.85
WOM	3	0.82–0.89	0.88	0.72	0.86

The Fornell-Larcker criterion (square root of AVE > inter-construct correlations) was used to calculate discriminant validity, along with HTMT ratios [6]. Table 3 indicates that the square root of AVE for each construct (diagonal) is larger than all the off-diagonal correlations. All the HTMT values (Table 4) were below 0.85, with the lowest value being 0.72 (between IP and SAT) and the highest being 0.78 (between SAT and RET), which does not indicate that the variables were not discriminant.

Table 3

Fornell-Larcker criterion

	LMDQ	SAT	RET	WOM
LMDQ	0.82			
SAT	0.61	0.82		
RET	0.53	0.62	0.84	
WOM	0.48	0.59	0.55	0.85

Note: Diagonal (bold) = VAVE.

Table 4

HTMT ratios

The table is neatly organized as follows:

	LMDQ	SAT	RET	WOM
LMDQ				
SAT	0.69			

Table 4 (Continued)

	LMDQ	SAT	RET	WOM
RET	0.60	0.78		
WOM	0.55	0.72	0.67	

The Collinearity diagnostics showed that all variance inflation factors (VIF) are below the common threshold of 5 which shows there was no multicollinearity problem.

3.2 Structural Model and Testing of Hypotheses

The structural model also exhibited good fit: $\chi^2/df = 2.11$, CFI = 0.96, RMSEA = 0.052. Standardized path coefficients with levels of significance are given in Figure 2.

Direct effects: LMDQ has strong positive effect on SAT ($\beta = 0.61$, $p < 0.001$), thus the expected antecedent role it has. SAT significantly influences RET ($\beta = 0.47$, $p < 0.001$) and WOM ($\beta = 0.53$, $p < 0.001$), confirming H2 and H4. The direct paths from LMDQ to RET ($\beta = 0.22$, $p = 0.003$) and LMDQ to WOM ($\beta = 0.19$, $p = 0.014$) are both significant, lending support to H1 and H3. Effect sizes (f^2): LMDQ $\rightarrow$ SAT = 0.59 (large), SAT $\rightarrow$ RET = 0.24 (medium), SAT $\rightarrow$ WOM = 0.31 (medium), LMDQ $\rightarrow$ RET = 0.05 (small), LMDQ $\rightarrow$ WOM = 0.04 (small). Table 5 presents results on hypothesis testing.

Table 5

Results of the hypothesis and path coefficients

Hypothesis	Path	β	t-value	p	Result
H1	LMDQ $\rightarrow$ RET	0.22	2.98	0.003	Supported
H2	SAT $\rightarrow$ RET	0.47	6.52	<0.001	Supported
H3	LMDQ $\rightarrow$ WOM	0.19	2.46	0.014	Supported
H4	SAT $\rightarrow$ WOM	0.53	7.34	<0.001	Supported

Note: $R^2_{SAT} = 0.37$, $R^2_{RET} = 0.51$, $R^2_{WOM} = 0.46$. Q^2 all > 0.25

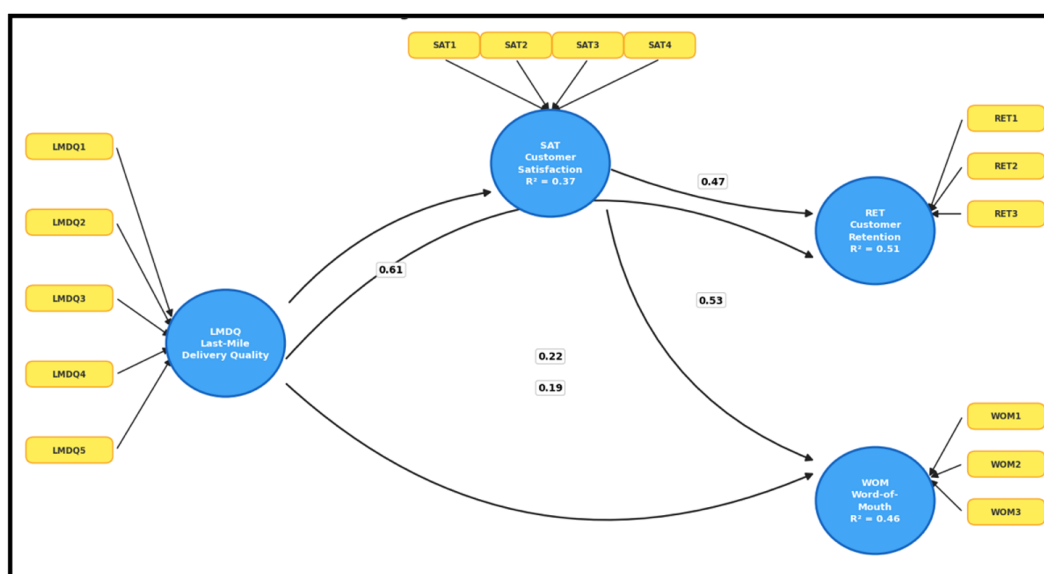


Fig. 2. Structural model with path coefficient

Mediation Analysis: Table 6 displays BC bootstrap 95% confidence intervals of the indirect effect. The indirect effect of LMDQ on RET via SAT is $\beta = 0.29$ (CI: 0.20–0.38, $p < 0.001$), and on WOM is $\beta = 0.32$ (CI: 0.23–0.42, $p < 0.001$). Because both of the indirect effects are significant and the magnitude of both direct effects are significant, partial mediation is considered present, thus supporting H5 and H6.

Table 6
Indirect effects (mediation)

Mediation path	β	95% CI	p	Result
LMDQ $\rightarrow$ SAT $\rightarrow$ RET	0.29	[0.20, 0.38]	<0.001	Partial med.
LMDQ $\rightarrow$ SAT $\rightarrow$ WOM	0.32	[0.23, 0.42]	<0.001	Partial med.

All Stone-Geisser Q^2 values were greater than zero, and showed good predictive relevance at 0.28 (SAT), 0.34 (RET) and 0.30 (WOM).

4. Discussion

The findings strongly substantiate the hypothesis that, for female-led Facebook entrepreneurial brands, last-mile delivery quality directly and indirectly, via increased customer satisfaction, is a strong determinant of customer retention and word-of-mouth. LMDQ has a total effect on retention of 0.51 (direct effect of 0.22 + indirect effect of 0.29) and on WOM of 0.51 (0.19 + 0.32), making LMDQ a key element of relational marketing in this informal sector.

A strong path ($\beta = 0.61$) leading from LMDQ to satisfaction is consistent with the theory of service quality, which posits that when the e-commerce interface is not sophisticated, the physical delivery touchpoint becomes disproportionately salient and evaluative. The relatively strong satisfaction - WOM effect ($\beta = 0.53$) supports ethnographic evidence of these communities' customers actively recruiting new members through social media platforms and effectively becoming unpaid brand salespeople. The direct LMDQ $\rightarrow$ retention/WOM connections, while small, indicate a residual effect beyond what is conveyed by cognitive satisfaction; it may be based on emotional gratitude for remarkable delivery heroics (e.g., same day delivery in emergencies) that could lead directly to reciprocity-based loyalty.

The results contribute to the logistics service quality and social commerce literature by showing that the last-mile performance is not an edge phenomenon, but is the core of female micro entrepreneurship viability. They also question the idea that there is only competition on price or social connections: logistics skills can also be a competitive advantage and even for a small "Facebook" seller!

4.1 Theoretical Implications

First, this study confirms and connects the chain of logistics service quality–satisfaction–loyalty in the special context of female Facebook entrepreneurship, which is characterized by trust. Secondly, it quantifies WOM as a logistics-influenced-result, which adds to the discussion on the issue of operation-driven advocacy. Thirdly, it highlights that partial mediation opens the possibility of examining other loyalty determinants (apart from cognitive) in the last-mile field.

4.2 Practical Implications

Investing in reliable partners is a little more expensive, but is a good, long-term investment for the women micro-entrepreneurs in terms of repeat sales and referrals. Just some quick tricks such as giving customers real-time tracking or investing in better branded packaging and teaching the couriers to be friendly can make a world of a difference and make the experience of doing business with them more pleasant. For platforms such as Facebook, embedding simple logistics rating systems (such as delivery satisfaction badges) may be able to create a differentiation between the sellers. Policymakers who want to encourage women to become digital entrepreneurs could consider setting up subsidy packages for – quality-controlled – pooled delivery.

5. Conclusion

This is the first to present an empirical study, which shows a correlation between last-mile delivery quality and customer retention and WOM for the case of brands using Facebook, which are entrepreneurship-oriented and led by women entrepreneurs. The results clearly show that quality last-mile delivery not only helps to achieve customer satisfaction but also keeps customers and creates them as valuable “salesmen.” The “last-mile” is not a matter of logistics for the millions of women who are trying to find a way to make their business model work on the tricky ground of social commerce in emerging markets, but a potential lifeline to their entrepreneurial future.

Future studies are needed with longitudinal or experimental designs because of the cross sectional design which leads to limited causal claims. While the sample is sufficient, it only involved female buyers and female entrepreneurs in Bangladesh, limiting its generalizability and replication in other cultural and gender contexts is required. Self-report means there is likely to be social desirability bias, although marker variable and Harman's test reduce this concern. In the study, LMDQ was modeled as one dimensional, reflective construct; future studies could work to model LMDQ as a multidimensional construct (timeliness, communication, empathy), so as to identify these sub dimensions which have the greatest impact. An analysis of modifying factors such as the type of product, distance of delivery or the “digital literacy” of customers could be used to further improve the model.

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