

Data Analytics Literacy Among Bangladesh's F Commerce Micro-Entrepreneurs

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Data Analytics Literacy Among Bangladesh's F-Commerce Micro-Entrepreneurs

A Study of Seller Side Data Practices and Business Outcomes

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ABSTRACT

BACKGROUND: Facebook-based commerce, F-commerce is one of Bangladesh's largest small business channels, with well over 300,000 seller pages and reported annual sales above 1,000 crore BDT. The platform supplies every seller with free analytics reach, engagement, ad performance yet the published literature on this market examines buyers almost exclusively.

THE GAP: Existing Bangladesh F-commerce research is consumer side: purchase intention, trust, adoption models. The wider analytics adoption literature covers formally registered SMEs facing an adoption decision. No published study measures whether F-commerce sellers use the analytics already in front of them, or whether doing so is associated with business outcomes.

METHOD: A mixed method, cross sectional design. A structured survey of 200–300 sellers recruited through active seller communities captures use, an objective comprehension exercise on a real insights screenshot separates literacy from self-report, and correlation and multiple regression test associations with revenue growth, repeat customer rate and advertising efficiency, controlling for page age, category, size and education. Fifteen to twenty interviews explain the quantitative patterns.

CONTRIBUTION: The first direct evidence on seller side analytics capability in a market studied almost exclusively from the demand side; a tested engagement outcome association; and a validated literacy assessment instrument reusable by digital skills programmes for baselining and re testing.

Keywords: F-commerce; data analytics literacy; micro entrepreneurs; social commerce; Bangladesh; digital skills; SME analytics adoption; mixed methods

1. Introduction

Bangladesh has roughly 46 million active Facebook users, and a striking share of the country's small businesses have built their entire storefront on the platform rather than on a dedicated e-commerce site [1]. This is F-commerce: a largely informal retail sector run through Facebook pages and buy-and-sell groups, often by a single person handling everything from product photography to delivery coordination. Official trade reporting now counts roughly 50,000 active Facebook business pages alongside 2,500+ registered e-commerce businesses [2], and independent estimates put the seller population above 300,000 entrepreneurs, a majority of

them women [8]. By any measure this is a large, working, revenue generating sector of the country's digital economy.

Most of these sellers have no accounting software, no CRM, and nobody whose job is to look at the numbers. And yet the platform they depend on already hands them a basic analytics toolkit for free page insights, audience reach, engagement, ad performance, the same kind of dashboard a much larger company would pay to have built. Whether that free toolkit gets used, whether it is understood, and whether it changes anything about how these businesses run are questions that, remarkably, nobody has asked directly. The academic literature on this market is extensive, but it clusters almost entirely around the buyer: purchase intention, trust, adoption behaviour, pandemic effects on shopping [7], [13], [15].

This matters beyond academic curiosity. If analytics literacy among F-commerce sellers turns out to be low and the scattered evidence available suggests it is, with more than 80% of female operators relying solely on manual chat records [3] and 72% managing all order metrics by hand [9] that points to a specific, fixable skills gap affecting a very large number of livelihoods. It would fit neatly into the digital skills and SME-support programs already operating in the country, and it would give those programs something they currently lack: evidence about what this population actually does with data, rather than assumptions imported from formal SME contexts.

This paper specifies the study that would produce that evidence. It is organised as follows. Section 2 reviews the literature that surround the question the Bangladesh F-commerce literature, the SME analytics-adoption literature, and the fragmentary evidence on seller-side practice and states the gap precisely. Section 3 sets out the research objectives and questions. Section 4 details the methodology: sampling, the survey instrument, the literacy assessment component, the outcome measures, the analysis plan, and the qualitative component. Sections 5 to 8 describe expected contributions, significance, limitations, and conclusion.

2. Background and Literature Review

2.1 F-commerce in Bangladesh: scale without systems

The scale of the channel is well documented, even if the numbers come from mixed sources. DataReportal counts 52.7 million active social media users in Bangladesh, with Facebook's advertising reach at 30.5% of the total population [1]. The USDA Foreign Agricultural Service's exporter guides an official US government publication, and one of the few systematically verified sources records roughly 50,000 active F-commerce pages against 2,500+ registered e-commerce businesses [2]. University-based studies put the entrepreneur population at 300,000+, some 70% female [8], and industry reporting estimates annual sales above 1,000 crore BDT [13]. Payment behaviour remains overwhelmingly cash-on-delivery, above 85% of sales, and most micro-sellers keep no recorded financial books at all [4].

The picture that emerges is a sector with genuine economic weight and essentially no measurement infrastructure. Sellers operate on personal judgement, chat logs, and memory. The platform's free analytics reach, engagement, audience demographics, ad performance represent the only structured data most of these businesses will ever see without external intervention. Whether that data is even looked at is unknown.

2.2 The buyer-side bias of existing research

The Bangladesh F-commerce literature is not thin; it is simply looking in a different direction. Its recurring strands are consumer-side. Studies built on the Information Adoption Model [21] and UTAUT [19] explain why buyers trust and purchase from Facebook-based stores; the Jahangirnagar youth study is representative, finding that page responsiveness and interaction analytics drive 38% of variance in young consumers' purchasing intention [7]. SEM-PLS analyses of COVID-era purchase intention model the buyer under disruption [13]. Descriptive accounts of entrepreneurs' prospects and problems capture the seller experience in general terms but stop short of examining what data sellers use, if any [15]. Policy analysis of the 2021 Digital Commerce Management Guide addresses governance rather than capability [14]. Across all of it, the seller's own use of analytics is absent.

2.3 Analytics adoption in developing-economy SMEs

A wider international literature on big-data-analytics adoption among SMEs should, in principle, be the place this question lives. It consistently finds that smaller firms lag larger ones in analytics uptake, with managerial capability, cost, and tool fit as the leading barriers [10]. Empirical work applying the Technology Organization Environment framework finds analytics adoption significantly associated with financial performance in developing contexts, with data literacy explaining close to half of adoption readiness [5], [16], [17], [18]. But this body of work is built around formally registered SMEs with some existing IT infrastructure. It says little about informal, social-media-native micro-sellers, and none of it is grounded in Bangladesh's F-commerce context specifically. The adoption models that dominate the field TAM and UTAUT [19], [20] were designed to explain the intention to adopt technology in organisations, not the quiet, habitual use (or non-use) of a free tool that requires no adoption decision at all.

2.4 Scattered evidence on seller-side practice

What evidence exists about seller-side data practice is fragmentary and indirect, but it points consistently in one direction. The study of women's F-commerce experiences in *Gender, Technology and Development* reports that over 80% of female operators rely solely on manual chat records and lack formal digital or analytics training [3]. Khulna University work reports 72% of female F-commerce owners managing all sales and order metrics manually, with the manual burden correlating with stress [9], and more than 65% suffering inventory losses linked to absent demand forecasting [8]. Field studies of micro-entrepreneurs find 75%+ needing simplified sales analytics tools and 68% citing lack of digital-skills training as the main bottleneck [6]. On the positive side, one capacity-building study reports a 28% customer-retention increase among female sellers trained in digital bookkeeping and analytics [12]. These are signals, not measurements: none was designed to quantify analytics engagement or link it to outcomes. Taken together they justify the study, but they do not substitute for it.

Table 1. Evidence base: sources informing the study, with verification status.

Source	Type	Key data point	Status
DataReportal, Digital 2024: Bangladesh [1]	Market statistics	52.7M social media users; Facebook ad reach 30.5% of population	Published report (dated; superseded editions exist)
USDA FAS Exporter Guide, Bangladesh [2]	Government report	~50,000 active F-commerce pages; 2,500+ registered e-commerce businesses	Verified (official publication)

Gender, Technology and Development [3]	Peer-reviewed paper	80%+ of female operators rely solely on manual chat records	Peer-reviewed; link bot-blocked at collection
Seybold Report [4]	Journal paper	85%+ of sales cash-on-delivery; unrecorded financial books	Link works; cite carefully
Creativity and Innovation Management (Wiley) [5]	Peer-reviewed paper	Analytics adoption → financial performance ($p<0.01$); data literacy explains 45%+ of readiness	Peer-reviewed (DOI 10.1111/caim.12666)
IJEAST [6]	Academic paper	75%+ need simplified analytics tools; 68% cite skills gap	Link bot-blocked at collection
Khulna University Studies [8], [9]	Academic papers	300,000 sellers (70% female); 65%+ inventory losses; 72% manual metrics	Links broken at collection — cite from indexed records
LightCastle Partners [11]	Industry report	Digital commerce + fintech >40% of early-stage investment	Verified
IJRISS [12]	Academic paper	28% retention increase after analytics training	Link works; cite carefully

2.5 The gap, stated precisely

Three bodies of work surround this question consumer-side F-commerce research, formal-SME analytics-adoption research, and fragmentary seller-side observations and none of them answers it. The consumer-side literature measures buyers. The adoption literature measures formally registered SMEs facing an adoption decision. The fragmentary observations mention data practices in passing, as side findings. No published study has directly measured the analytics literacy and practice of Bangladeshi F-commerce sellers, and no study anywhere has tested whether that engagement correlates with business outcomes in this population. That is the gap this study fills: first, direct evidence on seller-side analytics capability; second, a test of its association with survival and growth indicators; third, an account, in sellers' own words, of what stands in the way.

3. Research Objectives and Questions

The overarching objective is to measure, for the first time, the data-analytics literacy and practice of Bangladeshi F-commerce micro-entrepreneurs, and to test whether engagement with the platform's analytics is associated with measurable business outcomes. Four research questions operationalise the objective, and each maps to a specific instrument and analysis, as summarised in Table 2.

RQ1 — Use. To what extent do Bangladeshi F-commerce sellers actually use the analytics data available to them page insights, order and sales records, ad-performance metrics in running their business? This establishes the baseline and is measured by structured questions about which metrics, if any, are tracked and how.

RQ2 — Literacy. How well can these sellers interpret basic metrics reach, engagement rate, conversion, repeat-customer rate when shown them directly? This separates genuine comprehension from self-reported confidence, using a short objective exercise built on a sample insights screenshot rather than self-report alone.

RQ3 — Association with outcomes. Is analytics engagement associated with business outcomes self-reported revenue growth, repeat-customer rate, and advertising efficiency once page age, product category, and page size are controlled for? This is the study's central analytical claim and is tested by multiple regression.

RQ4 — Barriers. What do sellers themselves identify as the main barriers skills, time, awareness, or tooling to using their data more? This is addressed through both closed-form survey items and the interview component, which explains the quantitative patterns rather than merely restating them.

Barrier categories examined in RQ4

Skills	Time	Awareness	Tooling
Cannot compute a rate, compare periods, or judge whether a figure is good <i>Indicator: comprehension score at Level 0–1 despite reporting confidence</i>	Sole operator across photography, chat, packing and delivery; no review slot <i>Indicator: reported weekly hours on admin vs. on reviewing performance</i>	Does not know the insights panel exists, or assumes it is only for advertisers <i>Indicator: recall of the panel; whether it was ever opened at all</i>	Dashboard is English-only, desktop-oriented, and not built for one-person sellers <i>Indicator: device used, language preference, tool satisfaction score</i>

The four categories are not mutually exclusive, and the study does not treat them as such. The analytic purpose is to establish which barrier dominates for which segment — because a skills gap and a tooling gap call for entirely different interventions, and the policy literature often conflates them.

Figure 5. Barrier categories examined in RQ4, with the indicator used to detect each. A skills gap and a tooling gap call for entirely different interventions, and the policy literature often conflates them.

Table 2. Research questions mapped to instruments and analysis.

RQ	Question in brief	Instrument	Analysis
RQ1	How much of the available analytics do sellers actually use?	Survey Module B (data practices)	Descriptive statistics; engagement index construction
RQ2	Can sellers interpret basic metrics when shown them?	Survey Module C (comprehension exercise)	Objective scoring; literacy distribution
RQ3	Is engagement associated with business outcomes?	Survey Modules B and D, with controls from Module A	Correlation; multiple regression with page age, category, size controls
RQ4	What barriers do sellers identify?	Interviews + closed-form barrier items	Thematic analysis; frequency of barrier categories

3.1 Hypotheses

Each research question is expressed below as a directional hypothesis so that the analysis is pre-specified rather than exploratory. The hypotheses are deliberately stated before the analysis plan, and the report will indicate for each whether it was supported.

H1 (use). Analytics engagement among Bangladeshi F-commerce sellers is low in absolute terms: a majority of sellers track no platform-supplied performance metric on a recurring basis.

H2 (literacy). Objective comprehension scores fall below sellers' self-assessed data confidence, indicating systematic overestimation of one's own analytics literacy. This is the study's central measurement hypothesis, and the reason the design includes an objective exercise rather than relying on self-report.

H3 (association). Higher analytics engagement is positively associated with revenue growth, repeat-customer rate and advertising efficiency, net of page age, product category, page size and seller education. This is an association hypothesis: the cross-sectional design cannot establish that engagement causes better outcomes, and the reverse pathway better-performing businesses having more capacity to review data is acknowledged as plausible and inseparable within this design.

H4 (barriers). Reported barriers resolve into four separable categories skills, time, awareness and tooling with skills and awareness predominating among lower-literacy sellers and time predominating among higher-literacy sellers. If supported, this distinction matters directly for intervention design, since the four categories call for different remedies.

No hypothesis is offered on effect magnitude. Given that no prior study has measured this construct in this population, a directional expectation is defensible where a specific coefficient would be arbitrary; the report will present effect sizes with confidence intervals and treat magnitude as an empirical finding.

4. Proposed Methodology

4.1 Design

The study is a cross-sectional, mixed-methods design: a structured survey as the primary instrument, supported by a smaller round of semi-structured interviews to add explanatory depth. The design is deliberately simple, because the population of informal micro-sellers with limited time and no research infrastructure imposes real constraints on what can be administered reliably at scale, and because the core question is descriptive and correlational rather than causal. Figure 1 shows the overall study flow.

Study design: cross-sectional mixed-methods

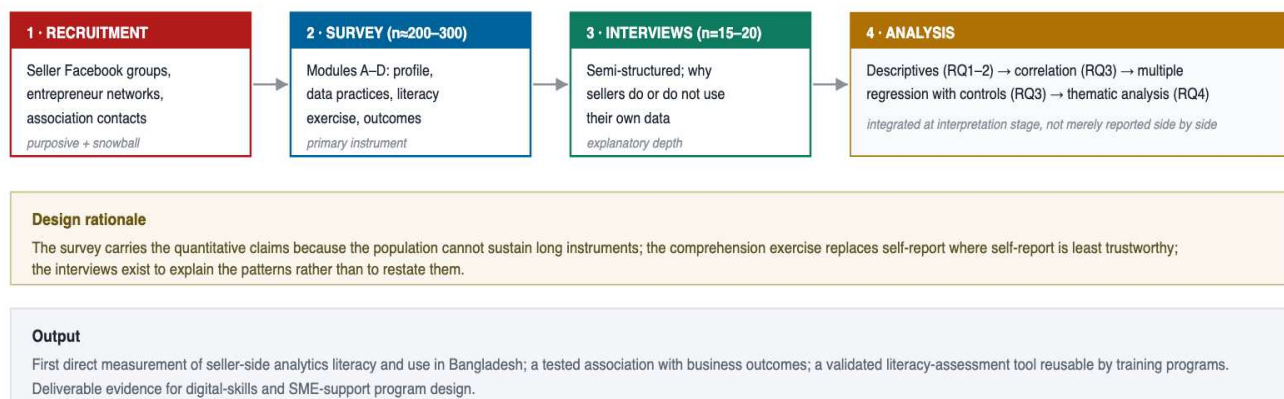


Figure 1. Study design. The survey carries the quantitative claims; the comprehension exercise replaces self-report where self-report is least trustworthy; interviews explain rather than restate the patterns.

4.2 Sampling

Sellers are recruited through the Facebook groups and networks where Bangladeshi F-commerce entrepreneurs already congregate active seller communities, F-commerce entrepreneur pages, and e-commerce association contacts using purposive sampling with snowball referral. A target of 200–300 completed survey responses provides adequate statistical power for the planned regression analyses at conventional significance levels, with 15–20 follow-up interviews for qualitative depth. The sampling frame is intentionally the active, digitally-engaged segment of the population, and this is acknowledged in Section 7 as a limitation that is likely to understate, rather than overstate, the true literacy gap.

4.3 Survey instrument

The questionnaire covers four modules, summarised in Table 3. Module A captures business and demographic profile: page age, product category, monthly order volume, and seller gender and education. Module B captures current data practices which of the platform's analytics, if any, are tracked, how often, and through what means (native dashboard, manual notebook, third-party tool). Module C is the literacy component: respondents are shown a realistic Meta Business Suite insights screenshot and asked a short set of comprehension items reading reach, computing engagement rate, interpreting a conversion figure scored objectively. Module D captures self-reported business outcomes on revenue growth, repeat-customer rate, and advertising efficiency over a fixed retrospective window.

The literacy ladder used to score the comprehension exercise

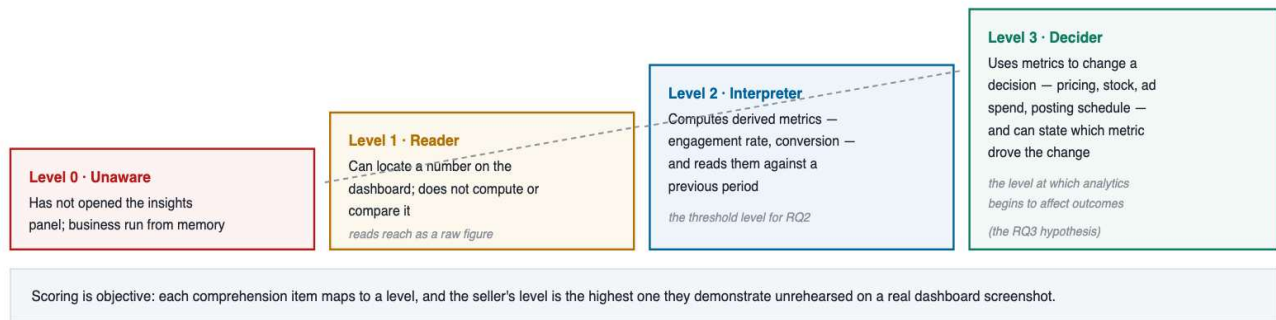


Figure 3. The literacy ladder used to score the comprehension exercise. Level 2 is the threshold for the RQ2 analysis; Level 3 is the level at which analytics begins to plausibly affect outcomes, which is the RQ3 hypothesis.

Table 3. Survey instrument modules and what each measures.

Module	Content	What it establishes
A — Profile	Page age, product category, monthly order volume, seller gender and education	Controls for regression; sample composition
B — Data practices	Which metrics are tracked, how often, through what means	Analytics-engagement index (RQ1)
C — Comprehension	Interpretation of a sample Meta Business Suite insights screenshot	Objective data-literacy score (RQ2)
D — Outcomes	Self-reported revenue growth, repeat-customer rate, ad efficiency over a fixed window	Outcome variables (RQ3)

4.4 Measures

The primary predictor is an analytics-engagement index constructed from Module B, combining the number of distinct metric types tracked and the frequency of their use into a single scale, validated for internal consistency. Data literacy is the objective score from Module C. Outcome variables are the three self-reported Module D measures. Controls include page age (months), product category (fixed effects), page size (follower count or order volume), and seller education. The framework linking engagement to outcomes, with controls, is shown in Figure 2.

Conceptual framework

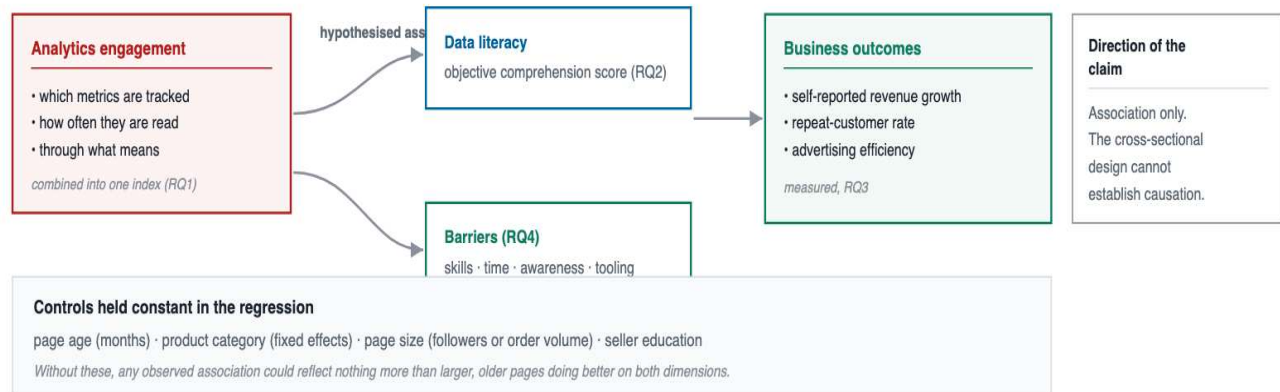


Figure 2. Conceptual framework. Analytics engagement is hypothesised to associate with three business outcomes, with page age, category, size and seller education held constant. The design supports association, not causation.

4.5 Analysis plan

Analysis proceeds in four stages, mapped to the research questions. Descriptive statistics characterise the baseline literacy picture (RQ1, RQ2). Correlation analysis establishes bivariate associations between engagement and outcomes (RQ3). Multiple regression tests whether engagement predicts each outcome net of controls (RQ3). Thematic analysis of interview transcripts identifies the barrier categories sellers report (RQ4), which are also captured quantitatively through closed-form items. The analysis plan, its inputs and its outputs are summarised in Table 4.

Analysis pipeline

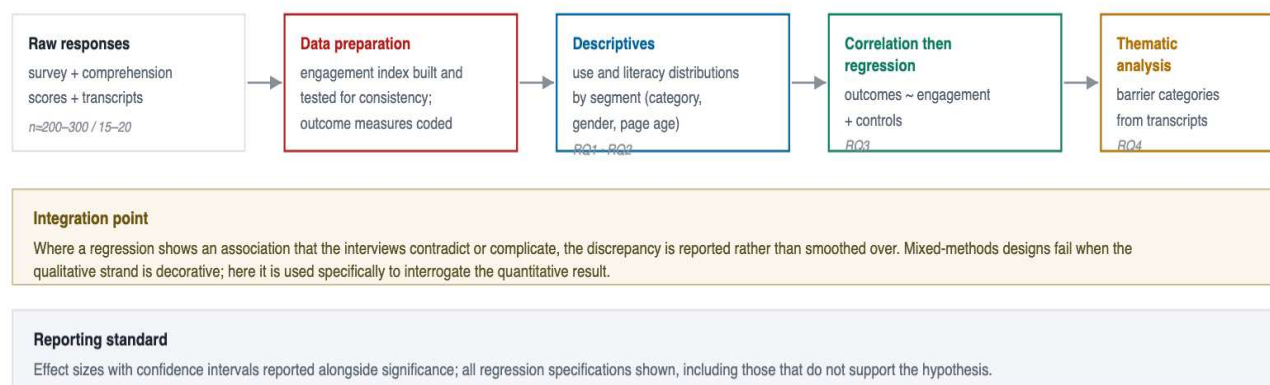


Figure 4. Analysis pipeline. The integration point matters: where the regression and the interviews disagree, the discrepancy is reported rather than smoothed over.

Table 4. Analysis plan mapped to research questions.

Stage	Inputs	Output
1. Descriptive baseline	Module B practices; Module C literacy scores	The literacy-and-use picture, RQ1–RQ2
2. Bivariate association	Engagement index × outcome measures	Correlation estimates, RQ3
3. Regression	Outcomes ~ engagement + controls (age, category, size, education)	Adjusted associations, RQ3
4. Thematic analysis	Interview transcripts; barrier items	Barrier categories in sellers' own terms, RQ4

5. Expected Contributions

The study is expected to contribute in four ways. First, it produces the first direct measurement of analytics literacy and practice among a population that has been studied almost exclusively from the demand side. Second, it provides the first test in this market of whether analytics engagement is associated with better business outcomes net of the obvious confounds. Third, it supplies a validated literacy assessment approach, based on an objective comprehension task rather than self-report, that can be reused by training programs to baseline and re-test learners. Fourth, it gives the seller-side barrier evidence, in sellers' own terms, that program designers currently lack.

6. Significance

The significance is practical before it is academic. F-commerce accounts for a large and growing share of Bangladesh's small-business digital economy, and the country already operates digital-skills and SME-support programs a2i, the SME Foundation, and platform-literacy initiatives whose training content is currently designed without evidence about this population's actual capabilities. A first, direct measurement of seller-side analytics literacy would let those programs target their content, and would let platform operators decide whether their free tooling is actually reaching its intended users. For the academic literature, the study moves a

market that has been treated almost exclusively as a consumer phenomenon into the seller-side, and it adds an informal, social media native setting to a small-business analytics-adoption literature built around formally registered firms.

7. Limitations

Four limitations should be stated plainly. Self-reported business outcomes cannot be independently verified unless sellers share platform data directly, which many will decline; the study therefore reports associations with self-reported outcomes and is explicit that these are not audited figures. Purposive and snowball sampling through active seller groups is likely to over-represent the more digitally engaged segment, biasing the literacy estimate upward and understating the true gap. The cross-sectional design supports correlation, not causal claims about analytics use driving outcomes; the framing is deliberately associational, and the study is positioned as a foundation for longitudinal work. Finally, literacy is measured through a single screenshot-based exercise, which captures comprehension of the platform's own dashboard rather than transferable statistical skill; the interpretation is scoped accordingly.

8. Conclusion

Bangladesh's F-commerce sector is large, economically real, and almost entirely unmeasured from the seller's side. The platform gives every seller a free analytics toolkit; whether it is used, whether it is understood, and whether it matters for business outcomes are open questions with direct consequences for training policy and platform design. This paper specifies the study that answers them: a mixed methods design that measures use, measures literacy objectively, tests the engagement outcome association with controls, and records the barriers in sellers' own words. It is a study almost no one else is positioned to run as well as the authors combining language, market access, and analytics domain fluency and it produces evidence the literature and the policy community do not yet have.

Author note. Correspondence concerning this manuscript should be addressed to the corresponding author. The study described is a proposed methodology; no empirical results are asserted. Bangladesh F-commerce market figures are drawn from the sources cited and carry the verification status recorded in Table 4.

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