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Boosting app-based mobile financial services engagement in B2B subsistence marketplaces: The roles of marketing strategy and app design

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ABSTRACT

Subsistence marketplaces generate over US$4 trillion annual spend and host fifty million B2B subsistence micro-enterprises, globally. These enterprises are increasingly adopting technology-driven service innovations, including app-based mobile financial services, to boost retail supply value chain efficiency. However, fostering users' continued engagement *post*-adoption in these markets remains challenging. Addressing this issue, in Study 1, we gather insights into theories-in-use held by app-based service providers, subsistence micro-suppliers, and -retailers. This led to a conceptual model grounded on the stimuli-organism-response (S-O-R) framework and SD logic. In Study 2 we empirically test this model through a field study with a dyadic sample of 253 micro-suppliers and micro-retailers. The findings reveal that relationship-building marketing strategies increase engagement, while transaction-focused strategies hinder it. App functionality (vs. aesthetics), likewise, represents a key customer engagement driver. Increased app-based services engagement positively impacts on non-coercive power and relationship satisfaction. These findings offer actionable implications for policymakers and marketers, emphasizing technology's role in fostering financial and digital inclusivity and efficiency in traditionally underserved B2B subsistence marketplaces.

1. Introduction

Subsistence marketplaces comprise of individuals and small-scale businesses meeting consumers' needs, in resource-constrained contexts (Viswanathan, Rosa, & Ruth, 2010). In these marketplaces, close personal interactions and 1–1 interactions are key to trading goods and services, despite their inherent problems like limited education and poor infrastructure (Mukherjee, Jebarajakirthy, & Datta, 2020; Viswanathan, Sridharan, Ritchie, Venugopal, & Jung, 2012). In this context, business-to-business (B2B) value chains in subsistence marketplaces comprise over 50 million small or micro-enterprises globally (OECD/ILO, 2019). These enterprises are predominantly family-owned or sole traders, where the owner (i.e., subsistence entrepreneur) makes strategic decisions (Azmat, Samaratunge, & Ferdous, 2021; Mukherjee et al., 2020; Viswanathan, Rosa, & Ruth, 2010). They operate predominantly as micro-suppliers or -retailers (see Web Appendix A for images of micro-enterprises), employing fewer than 10 individuals, while contributing significantly to the US$4 trillion annual spend in rapidly growing subsistence marketplaces (Azmat et al., 2021; Sridharan, Maltz, Viswanathan, & Gupta, 2014; Viswanathan, Sridharan, & Ritchie, 2010).

With the rising availability of the internet and smartphones in subsistence markets over the last decade, formal institutions are increasingly delivering technology-enabled service innovations to improve subsistence B2B value chain efficiency (Chaudhuri, Gathinji, Tayar, &

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Williams, 2022; Prasad, Jaffe, Bhattacharyya, Tata, & Marshall, 2017). For example, app-based mobile financial services like M-Pesa in Africa and Bikash in Bangladesh, alongside Unilever's mobile app in India, are transforming subsistence markets. They do so by fostering financial inclusion, enhancing value chain efficiencies, empowering retailers to improve purchasing decisions, streamlining operations, and boosting profitability (Prasad et al., 2017). Relatedly, a report by the International Labor Organization (ILO) (2021) calls for subsistence micro-entrepreneurs to regularly engage with technology-based services (e.g., app-based mobile financial services), beyond mere adoption. The report suggests that sustained engagement with such services should optimize long-term performance and efficiencies in retail supply value chains. Similarly, scholarly research also highlights the potential of regular (continued) engagement with technology-based services in subsistence markets. Such engagement can enable bottom-up market learning through enhanced cognitive, emotional, and behavioral interactions (engagement), in turn, boosting subsistence retail supply value chain performance (e.g., Akareem, Ferdous, & Todd, 2021; Gupta & Ramachandran, 2021; Mason & Chakrabarti, 2017).

Notwithstanding, these scholarly advances have only focused on resource-rich companies and national/global economies from business-to-consumer (B2C) contexts and primarily examine the key drivers of customers' internal motivational states (vs. firm-initiated stimuli) (Hollebeek, 2019; Roy, Singh, Sadeque, Harrigan, & Coussement, 2023). This pertinent literature-based gap thereby limits both theoretical and managerial insight into subsistence business-to-business (B2B) customers' engagement, whether from the supplier's or retailer's perspective in the context of low-income (e.g., micro) businesses (Adhikary, Diatha, Borah, & Sharma, 2021; Berger & Nakata, 2013). Importantly, the findings attained in resource rich B2C environments are expected to differ in B2B subsistence marketplaces, given their unique characterizations such as socially-rich relationships between micro-suppliers and -retailers, which these micro-enterprises draw upon to address financial or skill-based constraints (Mason & Chakrabarti, 2017; Viswanathan et al., 2012; Viswanathan, Rosa, & Ruth, 2010).

Furthermore, power asymmetries and resource scarcity further distinguish subsistence marketplaces (Raghubanshi, Venugopal, & Saini, 2021). For example, a single player might wield considerable social influence within subsistence-based retail supply value chains (Prasad et al., 2017). Despite acknowledging the importance of these factors, the nature and dynamics characterizing B2B customer engagement with technologically driven service in subsistence retail supply value chains remain tenuous, thus exposing an important knowledge gap. To further highlight the motivation and significance of our study, we present Table 1, which succinctly outlines the research gaps pertaining to the key variables (constructs) of our study, thereby emphasizing areas where understanding is currently limited. Indeed, these complex supply chains that provide last-mile delivery in the most challenging of circumstances can lead to unique insights for research and practice. Therefore, addressing these gaps, we explore the following two research questions: a) *what factors drives micro-enterprises sustained engagement with technology-based services in B2B subsistence marketplaces, and b) how does this engagement impact the power and relationship dynamics in subsistence retail supply value chains?*

To explore the aforestated research questions, we conduct two studies and focus on app-based mobile financial services as a primary manifestation of technology-based services among subsistence micro-suppliers and -retailers including those with no formal bank accounts, (Adhikary et al., 2021; Chaudhuri et al., 2022; see Web Appendix A). These services enable money transfers, purchases, withdrawals, deposits, and the opening of new accounts (Klapper, Margaret, & Jake, 2019). In Study 1, we adopt a theories-in-use approach to show that both transactional and relational strategies by app-based mobile financial service providers influence B2B customer engagement. Informed by these insights and drawing on Stimulus-Organism-Response (S-O-R) theory and Service-Dominant (S-D) logic, we develop a conceptual model that posits that marketing strategies directly impact micro-suppliers' app engagement, while also indirectly affecting micro-retailers' perceived power dynamics and satisfaction with micro-suppliers. In Study 2, we empirically tested our model with 253 micro-supplier and retailer pairs, demonstrating that B2B relationship marketing (i.e., customer support) boosts micro-suppliers' engagement. App functionality (vs. aesthetics) was also identified as a key engagement determinant. Conversely, transactional promotion practices, while widely used to boost engagement, were found to impede engagement.

By integrating S-D logic with the S-O-R framework in the B2B subsistence marketplace context our study underlines the collaborative, interactive dynamics among technology providers, micro-suppliers, and -retailers Thus, we provide theoretical understanding of B2B focused technology-based service interventions in subsistence retail supply value chains. Doing so provides insights into the mechanisms through which relationship marketing approach and app design (functionality) serve as stimuli impacting on the organism's (supplier's) internal state. Furthermore, insights are gained regarding the other entity's (retailer's)

Table 1
Study Variables and Gaps.

Study	Context	Stimuli				Organism	Outcomes	
		Customer Development Support	Sales Promotion Offers	App Aesthetics	App Functionality	Customer Engagement	Non-Coercive Power	Relationship Satisfaction
Viswanathan, Rosa, and Ruth (2010)	Subsistence	Highlighted	Not considered	Not considered	Not considered	Not considered	Highlighted	Highlighted
Cowan et al. (2015)	Non-Subsistence	Not considered	Not considered	Not considered	Not considered	Not considered	Highlighted	Highlighted
BFP-B (2018)	Subsistence	Highlighted	Not considered	Not considered	Highlighted	Highlighted	Highlighted	Highlighted
Mukherjee et al. (2020)	Subsistence	Highlighted	Not considered	Not considered	Not considered	Highlighted	Highlighted	Highlighted
Akareem et al. (2021)	Subsistence	Positive effect as a moderator	Not considered	Not considered	Not considered	Considered	Not considered	Not considered
Azmat et al., 2021	Subsistence	Highlighted	Not considered	Not considered	Not considered	Not considered	Highlighted	Highlighted
International Labor Organization (ILO) (2021)	Subsistence	Highlighted	Highlighted	Not considered	Not considered	Highlighted	Highlighted	Highlighted
Gupta and Ramachandran (2021)	Both	Highlighted	Not considered	Not considered	Not considered	Highlighted	Highlighted	Highlighted
Current Study	**Subsistence**	**Examines**	**Examines**	**Examines**	**Examines**	**Examines**	**Examines**	**Examines**

Note - Highlighted text refers to anecdotal emphasis provided in the study but not empirically examined.

response and how such interventions can transform power structures and bolster relational dynamics in subsistence B2B settings. These insights provide specific impetus for practitioners on how to better formulate their marketing strategies and design-specific app features that boost B2B engagement with technology-driven services among subsistence micro-entrepreneurs. Our study also has implications for policy makers in promoting market harmonization, and inclusion and contributing to the overall resilience and sustainability of subsistence retail supply value chains through engagement-enabled technology-driven services. We next discuss key streams of literature that form the theoretical foundation of this study, followed by a discussion of the research method and findings, and their implications.

2. Theoretical background

2.1. Subsistence vs. mainstream market ecosystems

Market ecosystems consist of intricate networks where stakeholders like buyers, sellers, agents, and government bodies interact and co-create value, forming value chains for distributing offerings (Hollebeek, Kumar, & Srivastava, 2022; Vargo & Lusch, 2011). These chains are prevalent in both mainstream and subsistence markets, often operating independently yet interconnected, as depicted in Fig. 1 (Granados, Rosli, & Gotsi, 2022; Trienekens & Van Dijk, 2012). Mainstream markets typically involve large and small-to-medium enterprises serving a diverse range of customers, while subsistence markets are characterized by subsistence micro-suppliers and micro-retailers catering primarily to low-income customers, including those in isolated or rural areas (e.g., International Labor Organization (ILO), 2021; Maksimov, Wang, & Luo, 2017; Sridharan et al., 2014).

These subsistence micro-suppliers and -retailers operated by resource-limited entrepreneurs, often fill roles including producers, distributors, or traders (Azmat et al., 2021; Sridharan et al., 2014). They not only serve low-income but on occasions middle-income customers too (Sodhi & Tang, 2014; Tasneem & Biswas, 2014), thereby highlighting their pertinence in the B2B retail supply value chains. These micro-enterprises are marked by challenges including low literacy, poor infrastructure, and marginalization, leading to issues of information asymmetry and vulnerability to exploitation (Adhikary et al., 2021; Viswanathan, Umashankar, Sreekumar, & Goreczny, 2021). Power dynamics, both coercive and non-coercive, therefore play a crucial role in these marketplaces, significantly influencing relationships within the retail supply value chains (Granados et al., 2022; Hani, Akter, Wickramasinghe, Kattiyapornpong, & Mariani, 2022; Prasad et al., 2017).

Regarding power dynamics in subsistence marketplaces, micro-suppliers are able to exercise coercive power by controlling essential resources, influencing micro-retailers' decisions and actions, significantly affecting the value chain (Boyle, Cornes, & Gilbert, 2016; Prasad et al., 2017). By contrast, non-coercive power stems from intrinsic qualities and relationships, fostering mutually beneficial partnerships (Prasad et al., 2017). Interestingly, studies highlight third-party entities, including governments, multinational, and service providers, can significantly influence power dynamics in subsistence marketplaces (Ireland & Webb, 2007). These entities may centralize control, thus impacting power imbalances, or positively contribute by empowering micro-retailers, thus enhancing non-coercive power and leading to a more equitable supply chain (Prasad et al., 2017). Our study aims to unpack these complex interactions and the role of third parties, which in our case are app-based mobile financial service providers, in modifying power balances, influencing subsistence value chains and its performance (Ireland & Webb, 2007). Furthermore, despite resource limitations, subsistence micro-enterprises often have relationally rich networks, characterized by empathy, loyalty, and enduring interdependencies, crucial for their performance within the retail supply value chains (Hani et al., 2022; Mukherjee et al., 2020; Viswanathan, Rosa, & Ruth, 2010). Understanding the dynamics of power and relationship quality is crucial for improving B2B relationship satisfaction and overall efficiency in subsistence market supply chains, highlighting a significant research gap in the literature on B2B subsistence marketplaces.

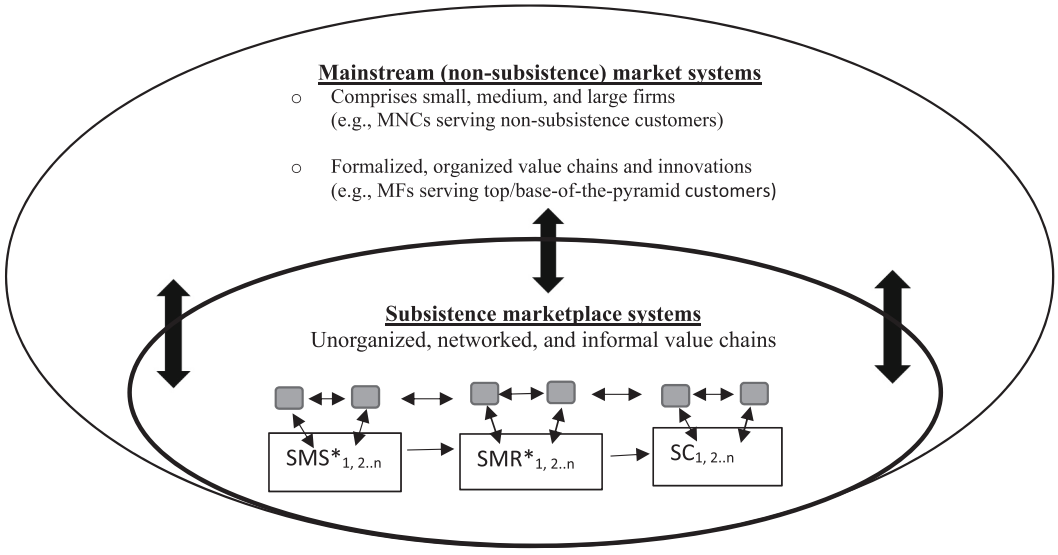

Fig. 1. Mainstream and subsistence market ecosystems.
*This study's focus is on subsistence micro-suppliers' (SMS) and subsistence micro-retailers' (SMR) engagement with app-based mobile financial services.

2.2. Customer engagement and technology-enabled service innovation in subsistence marketplaces

Customer engagement, which has been widely studied in marketing, involves interactions with brands, products, online content, and other customers/stakeholders (Akareem et al., 2021; Hollebeek & Belk, 2021). Defined as a customer's volitional investment in brand interactions, it encompasses cognitive, emotional, and behavioral dimensions (Hollebeek, Srivastava, & Chen, 2019). While extensively explored in the B2C context, its application to B2B settings, especially in subsistence retail supply value chains is lacking (Gupta & Ramachandran, 2021; Hollebeek et al., 2019; Lilien, 2016). Customer engagement dynamics vary by context (Brodie, Hollebeek, Ilic, & Juric, 2011; Hollebeek, Muniz-Martinez, Clark, Simanaviciute, & Letukyte, 2022), highlighting the need for analysis across B2B stakeholders, including industrial employees, suppliers, retailers, and buyers (Hollebeek, Kumar, & Srivastava, 2022; Wilson, 2019). Our study focuses on micro-suppliers and micro-retailers, key stakeholders in subsistence retail supply value chains (International Labor Organization (ILO), 2021).

App-based mobile financial services offer a useful innovation for subsistence markets. However, approximately 1.7 billion individuals globally do not use them and are unbanked (i.e., do not have a formal back account; Pelletier, Khavul, & Estrin, 2020). This includes many subsistence micro-enterprises that rely on unrecorded cash transactions outside the formal banking system (BFP-B, 2018). The adoption of app-based mobile financial services is thus predicted to improve digital inclusion and business efficiency (Adhikary et al., 2021; BFP-B, 2018). However, challenges in ensuring regular technological *post*-adoption interactions persist, emphasizing the need to customize engagement drivers, or stimuli, in subsistence B2B retail supply value chains (Adhikary et al., 2021; Gupta & Ramachandran, 2021). We therefore delve into formal service providers particularly those offering subsistence-based technology-enabled services designed to advance micro-suppliers and -retailers' engagement with app-based mobile financial services. Our goal is to clarify the firm-based benefits of such engagement by conducting two studies. In Study 1, we apply a theories-in-use approach to gather initial insight. Then, using these findings along with the existing literature, we develop and test a model grounded in the stimulus-organism-response (S-O-R) framework (Jacoby, 2002) in Study 2, which offers novel insight to B2B marketing practitioners regarding the implementation of customized marketing strategies to boost subsistence-based B2B customers' engagement with app-based mobile financial services and to understand its outcomes.

3. Study 1: theories-in-use approach

In subsistence markets, adopting an inside-out micro-foundational lens is crucial to examine key dynamics at a more granular level, extending beyond the limitations of broader *meso*−/macro-level vantage-points (Viswanathan, 2017). As theories and practices based on developed markets may lack applicability in the subsistence context, reassessment of their applicability is essential (Venugopal & Viswanathan, 2017). For example, while some knowledge exists about stimuli that may foster engagement with technology-driven services (e.g., Eisingerich et al. ., 2019; Roy et al., 2023), limited insight exists of the practices and strategies used by app-based mobile financial service providers to stimulate their customers' engagement with subsistence-based micro-enterprises. While prior research has explored outcomes of technology-driven service adoption (e.g., revenue/efficiency growth; Adhikary et al., 2021), its influence on stakeholder engagement in subsistence retail supply value chains remains under-explored. Addressing this issue, the proposed theories-in-use approach has elevated relevance (Zeithaml et al., 2020). By delving into the bottom-up insights of concerned stakeholders, we contribute to the subsistence marketplaces-based B2B theorization.

We adopt the theories-in-use approach to garner insight from app-based mobile financial service providers (also known as MFSs) using a convenience sample of subsistence entrepreneurs (micro-retailers and -suppliers). With the assistance of a leading Bangladeshi university's outreach office, at which one of the researchers is employed, we obtained permission to interview key informants from different financial service providers in an emerging country, Bangladesh. To be eligible to participate, informants were required to have extensive experience (10+ years) in the marketing/customer service department of their organization and be members of the senior management team. At the time of the study, 11 MFS providers operated in Bangladesh. After receiving approval to undertake the study, we approached all of these providers, ensuring participant confidentiality. Six of the MFS providers agreed, and subsequently we conducted six exploratory interviews with senior practitioners employed at app-based mobile financial service providers (see Web Appendix B for detailed participant demographics). The participants included two vice-presidents of operations, two customer experience directors, and two expert marketing managers. We first asked the informants to provide their insights on the commonly adopted initiatives (stimuli) deployed by technology-driven service providers when delivering their offerings to B2B subsistence entrepreneurs. Next, we asked them about initiatives that are taken specifically by mobile financial service providers to foster B2B customers' engagement in subsistence markets. Furthermore, with the assistance of a local non-profit organization, we were able to contact and conduct eight exploratory interviews using a convenience sample of subsistence entrepreneurs, which included five micro-retailers and three micro-suppliers (see Web Appendix B). We asked the participants about their experiences with app-based mobile financial services and its impact on their business. All interviews, inclusive of service providers and subsistence entrepreneurs, were carried out in the local Bengali language and translated into English by two members of our research team, who possess bilingual proficiency.

The exploratory interviews revealed that app-based mobile financial service providers commonly utilize four stimuli to attract, and engage, B2B subsistence customers (see Table 2), including customer development support, sales promotion offers, and app design (i.e., aesthetics/functionality). The interviews also uncovered insight into the participants' regular engagement with app-based mobile financial services and their positive impact on subsistence businesses. They reported experiencing benefits, including reduced information asymmetry, less reliance on external enforcements, increased rewards, and stronger supplier/retailer relationships. As outlined in Table 2, these responses unpacked the importance of non-coercive power, and B2B relationship satisfaction, in subsistence retail supply value chains. Moreover, customers of app-based mobile financial services were required to use the same provider/brand for transactions and business activities, representing a general industry norm in most subsistence markets. Next, we draw on the interview findings, and prior literature, to develop the proposed conceptual model.

3.1. Conceptual model and hypotheses development

The Stimulus-Organism-Response (S-O-R) framework, originally formulated in the advertising persuasion context, has proven effective in explaining or predicting stakeholders' responses in a range of (e.g., B2B and B2C marketing) contexts (Ferdous, Polonsky, & Bednall, 2021; Sombultawee & Wattanatorn, 2022). The framework posits those specific environmental attributes (i.e., stimuli/S) influence individuals' internal psychological (e.g., cognitive, emotional, and behavioral) states and processes (i.e., organism/O), in turn influencing their response (R) to these stimuli. For example, a consumer's investment in their thought, affect, time, energy, and effort spent in their interactions with brand-related stimuli (S) (e.g., a financial service app), which are key constituents of the individual's brand engagement (O) (e.g., Sombultawee & Wattanatorn, 2022) are expected to foster (e.g., brand loyalty-based) responses (R) (Jacoby, 2002).

Table 2
Summary of findings using the theories-in-use approach.

Sample Direct Quotes from Participants	Emerging Themes	Field-based theories-in-use
Mobile financial service providers		
Our company (X) takes pride in serving and contributing to SMEs and micro-entrepreneurs. Not only do we do this as part of our meeting of societal objectives, but this segment has strategic importance as it is large and generates revenue. To ensure these customers are regularly using our services, we largely offer incentives such as a range of promotions including cash back on usage, discounts on transactions. Yes of course, we ensure the spending is within our budget availability. I think this [strategy] applies to the entire MFS [mobile financial services] industry ecosystem **(VP Operations).** *Offering incentives on transactions is a common practice by digital mobile financial service providers to quickly attract low-income clients. I think this practice is widely used by most Asian and African providers* **(Marketing Manager)**	***Sales Promotion Offers***	Mobile financial service providers simultaneously embrace two streams of marketing-focused strategies to engage B2B subsistence customers: (i) ***sales promotion offers*** as a short term/transactional strategy; and (ii) providing ***customer development support*** as a relationship building strategy.
In developing strategies to attract and retain new informal customers, two key aspects stand out, running effective activation programs and providing constant customer support **(Customer Experience Director).** *…industry wide practices, such as promotions, focusing on brand building, social media, strong field agents work. But there is always the risk that these practices only generate you [the business] a small volume of registered users but they tend to be inactive or occasional users. What to me really works and what we invest for micro-businesses is to provide customer education and support"* **(Marketing Manager)**	***Customer Development Support***	
It may be a situation where our B2B micro-entrepreneurs for the first time have come into contact with app-based mobile financial services. We make sure that the main front-facing touch point of our app is appealing to them but importantly does its job! We often hear from our B2B customers that providers' branded app can take time to open, app freezes, issues with logging in etc. *I think most MF [mobile financial services] providers are serious about investing in a functional app to ensure all walks of customers are engaged* (Senior Marketing Manager). *Our top executives focus on the 'growth' segment, which includes customers like small-scale fruit growers and street vendors. For them, app functionality is paramount, as issues can lead to frustration and even loss of customers for us. Investment in delivering a seamless app experience to prevent reverting to cash payments, benefit the MFS industry* **(VP operations)**	***App Functionality***	In addition to transactional and relationship building strategies, mobile financial service providers prioritize investing in their app design to stimulate customer engagement. They focus on enhancing **app functionality** and **aesthetics** to actively engage customers with their offerings.
Many of our B2B micro business customers who have adopted our services were in the past unbanked and may not be technologically savvy. Yes, I agree that app appearance is standardized for variety of reasons, such as building a consistent brand image, but most of the MFS providers still invest in upgrading and improving the app appearance, which can be important to drive engagement **(Customer Experience Directors)** *Communicating our value propositions is the key for us as marketers. Yes, the industry can adopt marketing strategies like offering short-term incentives, providing sponsorships, but at the end of the day our apps are the face and voice of our company to our customer. Leading with only marketing will not do, you need to lead by having the right design like its appearance and consistent image that appeals to customers and provides them the confidence to engage with our services* **(Marketing manager)**.	***App Aesthetics***	
Subsistence Entrepreneurs (micro-suppliers and micro-retailers)		
Using X app for doing transactions has been a big deal for me. I am a struggling entrepreneur serving other poor businesses (micro-retailers). I voluntarily help my retailers to use these services (apps) for some reason. I feel I can make my clients (retailers) happier and help me to earn their trust. They feel that I am credible to them as the payment system makes them think I am not imposing anything on them, or I don't have a bad intent sitting inside me. Brother, I think using these services makes my retailers think I can be held accountable in case something goes wrong as they have some form of record or evidence **(micro-supplier: small scale vegetable supplier).** *My father and grandfather have been in this business for*	***Power/Influence***	**Power** and **B2B relationships** play a crucial role in subsistence retail supply value chains. Technology-driven services, including app-based mobile financial services, can **boost** subsistence micro-retailers' **perceptions** of their suppliers' **non-coercive power** and improve their overall **relationship satisfaction** with them.

(*continued on next page*)

Table 2 (*continued*)

Sample Direct Quotes from Participants	Emerging Themes	Field-based theories-in-use
generations, and I remember how they used to talk about the struggles with our suppliers, which I also saw when I took over. They would offer us too much credit, and then suddenly demand payments on specific dates, forcing them to travel long distances and sometimes miss the deadline, leading to extra costs. But ever since mobile payments arrived, things have changed for the better. Our payment options have become hassle-free and instant, and it feels like our supplier really cares about our convenience. We can now keep track of our payments, withdraw cash easily, and they even help us with any app payment issues. These changes make us feel empowered" **(Micro-retailer: tin shed garment vendor).**		
I think frequently using X service has made our job as a poor businessman easier. Even my relationship with the suppliers is much better. It's like he genuinely cares about my success and prosperity, and I don't feel he has more authority on me, as I am the small retailer and is dependent on his supplies **(micro-retailer: hawker)**		
I can't express how happy I am with my suppliers since we started using MFS apps. The ease of doing business and the timeliness of transactions have brought us closer. It's like we're a team, working together to achieve our goals. Ask other businesses like me around you, they will say that these services has improved our satisfaction with our suppliers and customers **(micro-retailer: mobile shoe cobbler)**	***B2B relationships***	
My supplier first started using the payment app. It made a huge difference in our business relationship with them. They've gone the extra mile to support me in adopting this technology, and it shows they genuinely care about my success. Our mutual respect to each other improved, making our business partnership more rewarding as we are now able to record our payments. I am really happy with my relationship with my suppliers, which priorly was based on doubts and mistrust **(micro-retailer: tin-shed hot tea shop owner)**		

While traditionally rooted in consumer psychology, the multifaceted and dynamic nature of B2B-based inter-organizational relationships has been emphasized (Möller, 2013), suggesting the relevance of frameworks like S-O-R to analyze complex B2B interactions and behaviors (Yoo & Kim, 2019). Cowan, Paswan, and Van Steenburg (2015) re-reiterate this notion by highlighting the interconnected nature of B2B engagement, suggesting that a firm's interactions within one organization can elicit responses from its partner organization. Relatedly, S-D Logic suggests that in the B2B context, value can be co-created through actors' interactions, emphasizing the organism's role in shaping its responses in collaboration with the stimulus provider (Hollebeek, 2019; Vargo et al., 2023; Vargo & Lusch, 2011). In the B2B subsistence marketplace context, this perspective shifts the focus towards understanding how micro-suppliers engage with technology (i.e., the stimulus) not just as users but also as value co-creators, influencing both their own operational efficiencies and micro-retailers' satisfaction (i.e., response).

Building on B2B-based SD-logic and drawing on our Study 1 findings, we adapt the S-O-R framework to the B2B subsistence marketplace context (see Fig. 1). We argue for the framework's relevance in exploring subsistence micro-supplier and -retailer dynamics, where the micro-supplier's technological engagement serves as a stimulus that influences operational efficiencies and, consequently, retailer satisfaction. This cross-entity dynamic, reflecting the micro-supplier's actions and in turn influencing the micro-retailer's outcomes, aligns with Cowan et al. (2015) observed interconnected nature of B2B engagement and the potential of organizational actions to impact partner outcomes through power-benefit dynamics.

The conceptual model (Fig. 2) depicts the impact of specific stimuli (S) delivered by mobile financial service providers (e.g., customer development support, sales promotion offers, or app design aspects). This includes influence on the engagement of subsistence micro-suppliers with app-based mobile financial services, while also engaging them in value co-creation processes. This engagement and subsequent value co-creation, in turn, affects subsistence micro-retailers' behavioral responses (R), notably their perception of the supplier's non-coercive power dynamics and their relationship satisfaction with the micro-supplier. Integrating a S-D Logic informed S-O-R framework in the B2B subsistence marketplaces context enhances our theoretical and managerial understanding of technology's role in transforming power structures and improving relational dynamics (Gupta & Ramachandran, 2021). We next outline the hypotheses, as depicted in the proposed conceptual model (Fig. 2).

4. The stimulus-organism interface

4.1. Relational customer development support

Customer development support has been defined as the degree to which a B2B customer perceives a provider to assist him/her in the development of brand-related knowledge and/or competence (e.g., customer support, training, or education; Akareem et al., 2021; Karpen, Bove, Lukas, & Zyphur, 2015). Our exploratory practitioner interviews (see Table 2) emphasized the importance of customer development support as an industry-wide practice to stimulate B2B subsistence customers' engagement with technology-driven services. This practitioner-based theories-in-use is congruent with prior research that indicates the importance of relational customer development support strategies to foster customer adoption, and engagement, in the context of new technology-enabled service innovation performance (Kim, Younghoon, Myeong-Cheol, & Jongtae, 2015). Relatedly, Akareem et al. (2021) uncover that subsistence consumers' behavioral engagement with a technology-enabled service innovation was higher when customer development support was provided (vs. not provided).

We argue that a service provider's investment in customer development support initiatives will act as a key resource for subsistence

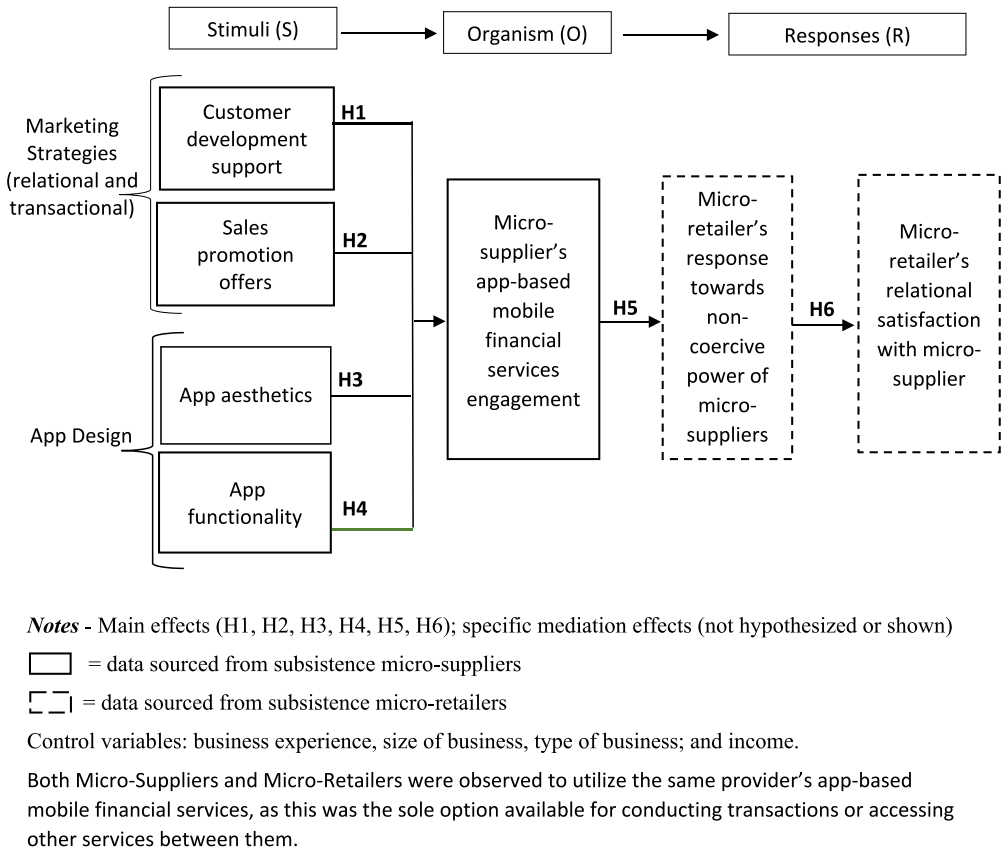

Fig. 2. Conceptual model.
Control variables: business experience, size of business, type of business; and income.
Both Micro-Suppliers and Micro-Retailers were observed to utilize the same provider's app-based mobile financial services, as this was the sole option available for conducting transactions or accessing other services between them.

entrepreneurs to better understand the app-based service in turn raising their engagement with the app (e.g., usage; Hollebeek et al. 2014). For example, as highlighted in Fig. 2, customer development support should endow subsistence micro-suppliers with the necessary skills, and knowledge, to regularly engage with the app, reducing perceived usage barriers (e.g., lacking app-related trust, education, or technical skills). We hypothesize:

H1. Perceived customer development boosts micro-suppliers' app-based mobile financial services engagement.

4.2. Transactional-based sales promotion offers

Sales promotion offers are monetary (e.g., cash discounts), or non-monetary (e.g., gifts), short-term (transactional) incentives offered to stimulate sales (Chandon, Wansink, & Laurent, 2000). One of our informants summarized the importance of using transactional practices to stimulate mobile financial service adoption and engagement: "*Our MFS systems and apps play a crucial role in supporting our small-sized B2B clients with their daily business operations. We understand that for this segment, transaction costs can sometimes be a concern. To address this, we have a short-term marketing strategy that focuses on offering cash discounts, bonuses, rebates, and prizes. It's a win-win situation as it not only helps our clients but also acts as an incentive to keep them engaged and actively using our services.*" (Customer Experience Director).

Though sales promotion offers can lower brand equity (e.g., by stimulating switching behavior; Valette-Florence, Guizani, & Merunka, 2011), industry reports suggest that they, nevertheless, represent a significant portion of many firms' marketing budget targeting low- and middle-income customers (Mukherjee, Malviya, & Thakkar, 2022). For example, sales promotion offers expenditure secures a large portion of such budgets to induce resellers, salespersons, and customers amid increased competition in emerging markets (Mukherjee et al., 2022). In, 2019, app-based mobile financial services providers in India spent almost US$1 billion on sales promotion offers (e.g., discounts, cash-backs) to retain their customers and/or attract new ones (Palepu & Sharma, 2019). In Bangladesh, mobile financial services providers sales promotion offers tend to primarily attract unbanked customers and/or boost market share in highly competitive markets (Ehsan, Musleh, Gomes, Ahmed, & Ferdous, 2019; Yan, Siddik, Akter, & Dong, 2021). As most subsistence micro-entrepreneurs are resource constrained, we posit that sales promotion offers should generate additional resources for the entrepreneurs and act as key customer engagement stimuli, in turn inducing subsistence micro-entrepreneurs to regularly interact with app-based mobile financial services. We propose:

H2. Sales promotion offers boost micro-suppliers' app-based mobile financial services engagement.

4.3. App aesthetics

Drawing on Homburg, Schwemmle, and Kuehnl (2015), we define *app aesthetics* as a micro-supplier's perception of a mobile financial service app's appearance and attractiveness. Our exploratory practitioner interviews highlighted that app aesthetics are primarily designed to stimulate customer engagement, while remaining consistent with the service provider's brand image. For example, as noted in Table 2, one of the interviewees emphasized: "*I agree that app appearance is standardized for variety of reasons, such as building a consistent brand image, but most of the MFS providers still invest in upgrading and improving the app appearance,*

which can be important to drive engagement" (Customer Experience Director). Industry-based reports, likewise, suggest that practitioners invest in app aesthetics to increase B2B subsistence customers' engagement (Fang, Zhao, Wen, & Wang, 2017), consistent with prior research showing that well-designed apps tend to create a good first impression, positively affecting users' (e.g., ease-of-use) perceptions and boosting their usage frequency (Tarute, Nikou, & Gatautis, 2017).

Leveraging on the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), app aesthetics align closely with Perceived Ease of Use (PEOU) (Davis, 1989) and Effort Expectancy (Venkatesh et al., 2012). This alignment suggests that an app's aesthetic design contributes to its perceived ease of use, which is instrumental in fostering continued engagement with the technology. Furthermore, the functional aspects of app design can be linked to TAM's Perceived Usefulness (PU) and UTAUT's Performance Expectancy, highlighting the role of app functionality in enhancing user-perceived app utility, supporting its continued engagement and use (Venkatesh et al., 2012). Therefore, while we focus on app aesthetics, the foundational notion of ease of use and perceived usefulness—central to both the TAM and UTAUT perspectives—are echoed in our exploration of users' technology adoption and continued engagement. These considerations underscore the relevance of integrating traditional technology acceptance models with specific features like app aesthetics and functionality to comprehensively understand user engagement in the B2B subsistence marketplace context. We, thus, posit that app aesthetics will stimulate B2B subsistence entrepreneurs' engagement with app-based mobile financial services, as follows:

H3. App aesthetics boost micro-suppliers' app-based mobile financial services engagement.

4.4. App functionality

The functionality aspect of a product's design is viewed as utilitarian benefits that the customers receive (Homburg et al., 2015). In our context, *app functionality* reflects the degree to which subsistence micro-entrepreneurs perceive an app-based mobile financial service to fulfil its purpose. The app-based mobile financial services utilitarian performance attributes include its ability to send, or receive, money, recharge, take cash out, make payments, pay bills, self-register, scan QR codes, and provide security updates (Adhikary et al., 2021), as one of our interviewees re-iterates: "*For this segment, app functionality is absolutely crucial! It's what shapes how these micro-businesses interact with our mobile financial services. A top-notch, user-friendly functional app can really grab their attention and keep them coming back for more, ensuring their financial transactions are smooth and hassle-free and this is what this segment requires*" (Marketing Manager). Prior research suggests that an app's functionality conveys not only its quality and reliability, but also how it meets, or exceeds, users' utilitarian expectations (Lee, 2018). Due to resource constraints faced by subsistence micro-entrepreneurs, enhanced app functionality can improve their understanding of the app's various services, leading to increased engagement. We propose:

H4. App functionality positively stimulates micro-suppliers' app-based mobile financial services engagement.

5. The organism-response interface

5.1. Micro-supplier's engagement and micro-retailer's responses

Power, a stakeholder's ability to influence another's behavior, can take the form of coercive or non-coercive power (Geyskens & Steenkamp, 2000). *Coercive power* relies on force, or threats, to ensure compliance or to discourage non-compliance by posing negative consequences (Han et al., 2022). *Non-coercive power*, on the other hand, involves implicit influence through suggestions, assistance, or adherence to norms (Ramaseshan, Yip, & Pae, 2006). Our interviews (see Table 2) reveal that subsistence micro-suppliers exert significant influence (power) over micro-retailers in subsistence value chains, congruent with the subsistence retail supply value chain literature (Granados et al., 2022; Prasad et al., 2017). For instance, one of our micro-retailer stated how their response towards micro-suppliers' non-coercive power is shaped by micro-suppliers' engagement with app-based mobile financial services: "*As a poor shopkeeper, I face numerous hurdles. We were always worried that suddenly our supplier who often holds the 'khomota' (power), would suddenly ask us for immediate repayments for goods. It required us to travel distances, which made me keep my business closed, and my poor education made me less confident to keep a record of my transactions with my suppliers. After I saw my suppliers started using mobile money apps to do business, I think my relationship with them has deepened. I think I am not in a position where they (supplier) will impose anything on me, and I am also able to track my transactions or at least ask my son, who studies in class 8, to read the records payment records for me"* (Micro-retailer: tin-shed garments shop owner).

Drawing on the S-O-R framework, we posit that the micro-supplier's engagement with their app-based mobile financial services (O) acts as a transformative force in the subsistence value chain by influencing the retailer's response (R) to supplier's power and relational dynamics. According to industry reports, when a focal subsistence B2B actor engages with technology, their operational efficiency, and their commitment to invest in resources that enhance the ease, reliability, and effectiveness of their interactions with their B2B partners tend to improve (BFP-B, 2018). These operational enhancements are critical in shifting micro-retailers' perception to recognize micro-suppliers' non-coercive power—a power that is predicated on mutual respect, reliability, and a willingness to support without imposing undue pressure (Cowan et al., 2015). For example, in our research context, micro-suppliers' engagement should not only facilitate more streamlined operations but should also yield micro-retailers' enhanced perceptions of suppliers' reliability and responsiveness. We contend that this perceptual shift directly boosts micro-retailers' positive responses to micro-suppliers' non-coercive power—marked by an ability to influence without coercion (Cowan et al., 2015; Ramaseshan et al., 2006). Furthermore, integrating this insight with of S-D logic (Hollebeek, 2019; Vargo et al., 2023; Vargo & Lusch, 2011), we acknowledge the co-creative process of value between micro-suppliers and micro-retailers, is facilitated by technological engagement. This process underlines the organism's (micro-supplier's) active role in shaping the (micro-retailer's) response through reciprocal, value-creating interactions, highlighting the importance of non-coercive power as a collaborative, value-driven construct in B2B subsistence markets. We propose:

H5. Micro-suppliers' engagement with app-based mobile financial services boosts micro-retailers' response to suppliers' non-coercive power.

We build on the theoretical foundation laid out in H5, which we next focuses into the consequences of micro-retailers' positive perceptions of micro-suppliers' non-coercive power on their overall satisfaction with the supplier-retailer relationship. The positive relational dynamic enabled by micro-suppliers' engagement not only uplifts micro-retailers' perception of power dynamics but also cements the foundation for a satisfying, mutually beneficial relationship between micro-suppliers and -retailers.

Prior research suggests that non-coercive power is characterized by accommodative and responsive behavior, in turn promoting trust, cooperation, and the willingness to work towards solutions (Ramaseshan et al., 2006; Prasad et al., 2017). In our study context, micro-retailers' positive response, influenced by micro-suppliers' engagement with mobile financial services (O), represents a critical element of the response (R) in our model. This response is not merely about operational transactions but encompasses a broader spectrum of relational satisfaction derived from a sense of mutual respect, empathy, and collaborative problem-solving. Evidence from our interviews, such as the micro-

retailer, who felt empowered and valued by using the supplier's mobile payment app, vividly illustrates this relational satisfaction dynamic: "*You know, ever since our suppliers started using those fancy mobile payment apps, things have gotten so much better for us (micro-retailer). We were confused when we heard about it, but after using it, I see they can handle transactions faster and smoother, which makes our business exchanges with our suppliers way more satisfying. I feel I have the same status as my supplier. Actually, it now feels that they really care about us, and it feels great! I think this has given me the confidence to better serve my customers*" (Micro-retailer: mobile shoe cobbler). Such narratives thus echo the broader implications of non-coercive power in enhancing B2B relationship satisfaction, particularly in subsistence contexts characterized by regular, one-on-one interactions (Mukherjee et al., 2020; Viswanathan, Sridharan, & Ritchie, 2010).

Past studies highlight rising levels of perceived non-coercive power between channel partners can boost B2B relationship satisfaction by creating a positive social atmosphere characterized by respect, empathy, and the exchange of ideas (Cowan et al., 2015; Geyskens, Steenkamp, & Kumar, 1999). This positive social environment can, in turn, influence stakeholders' perception of their relationship with their other partners (Cowan et al., 2015). Reflecting on S-D logic's emphasis on interactive value co-creation, this would suggest that the positive response to non-coercive power is a manifestation of co-created value. This reinforces the notion that satisfaction in B2B relationships, especially in subsistence markets, is intricately linked to the collaborative efforts and shared success between micro-suppliers and -retailers (Vargo et al., 2023; Viswanathan, Sridharan, & Ritchie, 2010). We propose:

H6. Micro-retailers' response to suppliers' non-coercive power boosts supplier-retailer relationship satisfaction.

6. Study 2: Field study

To test the model, a dyadic sample comprising subsistence micro-suppliers and their primary B2B customers (i.e., micro-retailers) in Bangladesh was deployed in a field study context. This context was chosen for the following reasons. First, the informal (subsistence) sector accounts for over 40% of GDP in Bangladesh, and almost 50% of total employment (Mukherjee et al., 2020). Second, the majority of the approximately 7 million subsistence (informal sector) enterprises in Bangladesh are small micro-enterprises operating under resource constraints (Mukherjee et al., 2020). Yet, these enterprises show relatively high technology adoption rates for mobile financial services (BFP-B, 2018; The World Bank Group, 2019). Third, a Bangladeshi Government initiative – Digital Bangladesh – was launched to encourage technology adoption, including mobile financial services (Zaman, 2019), thus fitting with our selected app-based context. Finally, Bangladesh is recognized as one of the largest mobile money markets globally, with over 110 million users making transactions worth US$100 billion in 2022 (Liaquat, 2022).

6.1. Sample and data collection

Collecting data in subsistence marketplaces can be challenging, primarily due to potential biases (e.g., common method bias), false responses, or the non-equivalence of target constructs (Ingenbleek, Tessema, & Van Trijp, 2013). To overcome these issues, we, therefore, adhered to Christensen, Siemsen, Branzei, and Viswanathan (2017), and Ingenbleek et al. (2013) guidelines. For example, the questionnaire was written in English, and then translated into Bengali to ensure high interpretability of the survey items, before being back-translated into English by a team of business academics fluent in English and Bengali. The Bengali version was piloted among 8 subsistence micro-suppliers and 10 subsistence micro-retailers, resulting in revisions to some of the wording to improve comprehensibility, prior to it being back-translated again.

No official registry of informal/subsistence micro-enterprises was available. Thus, to gain access to participants, a local NGO specializing in subsistence micro-enterprises was consulted to help source potential subsistence micro-suppliers. The research team, assisted by trained research assistants, screened, selected, and administered the participant surveys (Web Appendix A provides visual images of the data collection process undertaken by our research team in the field). Eligible subsistence micro-suppliers were screened to select only those who, in the past six months, had conducted transactions with micro-retailers using the same provider's app-based mobile financial services (i.e., both micro-suppliers and -retailer using the same company's app). Micro-suppliers, typically located in specific suburbs in major Bangladeshi cities were identified with the NGO's assistance. To mitigate potential self-selection bias, we recruited the respondents as randomly as possible, within the constraints of the subsistence context (Christensen et al., 2017; Ingenbleek et al., 2013). Specifically, we randomly approached micro-suppliers and -retailers in different locations in the major cities of Dhaka and Chittagong, aiming for a diverse cross-section of participants. This strategy was intended to reduce the likelihood of sampling bias by not limiting our respondent pool to those who might be more readily accessible or more visibly interested in app-based mobile financial services (Christensen et al., 2017). Overall, 591 subsistence micro-suppliers were approached to participate in the study, with 253 agreeing. In addition, as most subsistence B2B value chains function on a relational basis (Borchardt, Ndubisi, Jabbour, Grebinevych, & Pereira, 2020), both micro-supplier, and micro-retailer perspectives were considered. Participating subsistence micro-suppliers were requested to recommend two customers to the research team (i.e., subsistence micro-retailers) they had transacted with via the same mobile financial services app (provider) in the last six months. If the first micro-retailer did not agree to participate, the second was contacted.

The final sample was a *paired dyadic* sample of subsistence micro-suppliers (n = 253) and micro-retailers (n = 253). Subsistence micro-suppliers included fruit growers (18.6%), vegetable growers (20.6%), livestock suppliers (19.0%), small-scale bakers (19.4%), and small scale subcontracted ready-made garment manufacturers (22.5%) with a similar percentage distribution to ensure comparability of the categories. Subsistence micro-retailers mainly comprised street side shops (62.8%), including tea/snacks, fish/meat, flowers, and tin-shed garment sellers, with the remaining operating as small mobile vendors/hawkers (37.2%).

Several questionnaire items were included to characterize the participants: (1) average monthly income; (2) length of business tenure; (3) number of employees (<10); and (4) micro-supplier offerings targeting micro-retailers (serving subsistence consumers). The majority of the micro-suppliers' (47.83%) average monthly income was BDT 20001–30,000 (approximately USD 185–277), while most of the micro-retailers' (43.08%) reported revenue was BDT 10000 (approximately USD 92) or below. On average, eligible respondents employed approximately six individuals (including the owner) (SD = 2.85) for micro-suppliers, and approximately two employees (SD = 0.76) for micro-retailers. In terms of business tenure, the enterprises had been operating their business for around ten years (SD = 8.08) for micro-suppliers and around five years (SD = 2.02) for micro-retailers. Monthly income, business tenure (experience), number of employees, and type of businesses for micro-suppliers, and micro-retailers, were included in the model as control variables.

6.2. Measurement

The measurement scales were adapted from prior literature (see Table 3). As noted in Study One, we propose two sets of drivers that stimulate micro-suppliers' engagement with app-based mobile financial services: app design and marketing strategies. *App design* includes app functionality and app aesthetics, and *marketing strategies* include sales promotion offers (i.e., transactional), and customer development

Table 3
Measurement items.

Constructs and items	Standardized estimate
Customer development support: The degree that B2B subsistence entrepreneurs (micro-suppliers) perceive the mobile financial service providers are assisting them to develop knowledge and competence when dealing with the provider's offerings (Akareem et al., 2021; Karpen et al., 2015) [CR = 0.96, AVE = 0.89]	
The mobile financial service provider:	
Shares useful information with me.	0.90
Helps me become more knowledgeable.	0.88
Provides me with the advice I need to use their offerings successfully.	0.86
Offers me expertise that I can learn from.	0.78
Sales promotion offers: The intensity/frequency that the sales promotion offers are provided by the service provider (Yoo et al., 2000) [CR = 0.84, AVE = 0.66]	
The mobile financial service provider:	
Frequently offers sales promotion offers.	0.91
Often presents sales promotional offers to me.	0.77
Emphasizes sales promotion offers.	0.76
App aesthetics: The degree that a B2B actor perceives the appearance of a product (app-based mobile financial services) (Homburg et al., 2015) [CR = 0.92, AVE = 0.74]	
App-based mobile financial services:	
Is visually striking.	0.96
Is good looking.	0.91
Is appealing.	0.86
App functionality: The degree that the app-based mobile financial services effectively fulfils its purpose (Homburg et al., 2015) [CR = 0.90, AVE = 0.77]	
App-based mobile financial services:	
Is likely to perform well.	0.93
Is capable of doing its job.	0.83
Seems to be functional.	0.80
App-based mobile financial services engagement: Subsistence B2B actor's motivationally driven, volitional investment of focal operant resources (including cognitive, emotional, behavioral) into app-based mobile financial services (operand resources) (Hollebeek, 2019; Hollebeek et al. 2014; Hollebeek et al., 2019)	
Cognitive engagement – 1st-order engagement dimension [CR = 0.94, AVE = 0.85]	
Using my app-based mobile financial service gets me to think about the ease of doing business with my retailers.	0.92
I think about my app-based mobile financial services a lot when I'm using it to do business with my retailers.	0.90
Using my app-based mobile financial service stimulates my interest to learn more about this service.	0.88
Affective engagement (AE) – 1st-order engagement dimension [CR = 0.90, AVE = 0.69]	
I feel very positive when I use my app-based mobile financial services.	0.90
Using my app-based mobile financial services makes me happy to do business with my retailers.	0.81
I feel good when I use my app-based mobile financial services to do business with my retailers.	0.79
I'm proud to use my app-based mobile financial services to do business with my clients*	–
Behavioral engagement (BE) – 1st-order engagement dimension [CR = 0.91, AVE = 0.79]	
I spend a lot of time using my app-based mobile financial services to do business with my retailers.	0.91
Whenever I need to do business with my retailers, I often use my app-based mobile financial services.	0.89
My mobile app-based mobile financial services is one of the financial tools I usually use when I do business with my retailers.	0.83
Micro-supplier's non-contingent use of non-coercive power: The use of a noncoercive power involves rewards and assistances, the bestowal of consequences that are evaluated as desirable without any punishment involved from a micro-supplier (Geyskens & Steenkamp, 2000) [CR = 0.96, AVE = 0.88]	
This supplier freely offers its expertise to make our firm stronger and a better partner.	0.96
This supplier provides information and/or assistances without requiring specific behavior in return from our firm.	0.92
This supplier unconditionally shares important information with our firm	0.91
From our association with this supplier, we receive various rewards and benefits with no strings attached.	0.87
Relationship satisfaction: The degree that the B2B subsistence entrepreneur (micro-retailer) perceive the relationship with its subsistence micro-suppliers to be satisfying, productive, and worthwhile (Grace & Weaven, 2011) [CR = 0.92, AVE = 0.81]	
Over the past six months, when doing business with my supplier using the mobile financial service app:	
Our relationship has been productive.	0.94
Our relationship has been satisfactory.	0.91
The time and effort we spent in our relationship have been worthwhile.	0.86

Note - *: Item dropped due to low factor loading.

support (i.e., relational) practices. *App functionality* refers to the degree to which B2B actors (here, subsistence micro-suppliers) perceive a product's (i.e., app-based mobile financial service) ability to effectively fulfil its purpose, as measured by using three items adopted from Homburg et al. (2015). *App aesthetics* reflects a micro-supplier's perception of an app's appearance, as measured by three items adopted from Homburg et al. (2015). *Sales promotion offers* refer to micro-supplier's perceived intensity/frequency of such offers (i.e., by the mobile financial service provider), as measured through three items from Yoo, Donthu, and Lee (2000). *Customer development support* refers to micro-suppliers' perception of the mobile financial service provider's assistance in developing knowledge, and competence, as measured through four items adapted from Akareem et al. (2021) and Karpen et al. (2015).

Engagement with app-based mobile financial services was treated as a higher-order multidimensional variable comprising cognitive, affective, and behavioral dimensions (Hollebeek et al. 2014), as perceived by micro-suppliers. We adopted four items from Geyskens and Steenkamp (2000) to measure micro-retailers' perceived non-coercive micro-supplier power. To measure retailer-perceived relationship satisfaction, three items were adapted from Grace and Weaven (2011). Web Appendix C shows the correlations between the constructs, including the control variables, reliability, and average variance extracted (AVE) values.

7. Results

7.1. Measurement model results

To analyze the measurement model, confirmatory factor analysis (CFA) was performed using the lavaan package in R (Rosseel, 2012). The CFA model fit indices ($\chi 2 = 884.9$, $\chi 2/df = 2.4$, $p < .01$, confirmatory fit index (CFI) = 0.93, Tucker-Lewis index (TLI) = 0.92, root mean square error of approximation (RMSEA) = 0.07) were satisfactory, supporting the measures' construct validity (Hair, Barry, Rolph, & Rolph, 2010). For each item, factor loadings of 0.50 or above suggested adequate item reliability (Hair et al., 2010). Moreover, composite reliability scores ranged from 0.84 to 0.96, thus exceeding the recommended 0.70 threshold (Hair et al., 2010). All AVE values >0.50, suggesting convergent validity (Hair et al., 2010; see Web Appendix C). The square root of the AVE for each construct exceeded the corresponding correlations between the other constructs, supporting discriminant validity.

7.2. Common method bias testing

As the constructs in our study were measured using self-report surveys, a theoretically unrelated construct was included (i.e., attitude towards social media advertisements) as a marker variable. *Post-hoc* CMB testing showed that all the variable correlations remained statistically significant after inclusion of the marker variable, indicating that CMB is not an issue (Malhotra, Kim, & Patil, 2006). As noted, the dyadic sample used in our study also mitigated any CMB-related issues (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

7.3. Endogeneity testing

CMB testing, and the inclusion of control variables for both micro-suppliers and micro-retailers, reduced endogeneity bias concerns. However, the possibility remained that app design, and marketing strategy factors (stimuli) may be correlated with the error term of micro-suppliers' engagement with app-based mobile financial services (Semadeni, Withers, & Trevis Certo, 2014). Similarly, micro-suppliers' engagement, and non-coercive power, might be correlated with the error term of relationship satisfaction. As Zaefarian, Robson, Najafi-Tavani, and Spyropoulou (2023) recommend, testing was conducted to check our conceptual model's robustness to endogeneity. Park and Gupta (2012) highlight that in the absence of a recognizable instrument variable, the Gaussian Copula estimation approach can be applied (Park & Gupta, 2012). Therefore, using the REndo package in R, Gaussian copulas were computed for each of the explanatory variables. Non-significant copula coefficients ensured that the explanatory variables were not subject to endogeneity bias (Zaefarian et al., 2023; see Web Appendix D).

7.4. Main effects

The proposed main effect hypotheses were tested using the lavaan package in R (Rosseel, 2012), as shown in Table 4. According to Hair et al. (2010), model fitness was achieved by the fit indices ($\chi 2 = 45.8$, DF = 20, $p < .01$), confirmatory fit index (CFI) = 0.92, root mean square error of approximation (RMSEA) = 0.07, and standardized root mean square residual (SRMR) = 0.03.

Table 4 shows that customer development support acts as significant positive driver (stimulus) of engagement ($\beta = 0.33$, SE = 0.05, $p < .01$), supporting H1. We predicted a positive relationship between sales promotion offers and micro-suppliers' engagement with app-based mobile financial services in H2. Surprisingly, our findings show a negative, significant association between them ($\beta = -0.25$, SE = 0.06, $p < .01$), leading us to reject H2. This unexpected finding suggests that, contrary to traditional marketing expectations, short-term promotional offers may not effectively drive sustained engagement among micro-suppliers in subsistence markets. The negative impact likely arises from a mismatch between the immediate benefits offered by promotions and the micro-suppliers' need for reliable, long-term solutions. This suggests the need to rethink promotional strategies to better meet the unique demands of B2B subsistence marketplaces.

App aesthetics was found to have a small positive effect on engagement, but this effect is not statistically significant ($\beta = 0.06$, SE = 0.05, $p = .27$). Therefore, H3 is not supported. App functionality positively affects micro-suppliers' app engagement ($\beta = 0.17$, SE = 0.14, $p = .00$), supporting H4. Our findings related to hypotheses H3 and H4 suggest that micro-suppliers who serve subsistence consumers through micro-retailers, prioritize the functional aspects of app-design rather than their visual appeal. This suggests that B2B micro-entrepreneurs' primary concern is whether the app delivers on its utilitarian promises made by the mobile financial service provider.

Micro-suppliers' engagement with app-based mobile financial services was found to boost micro-retailers' perceived non-coercive supplier power ($\beta = 0.28$, SE = 0.05, $p < .01$), supporting H5. Furthermore,

Table 4
Path Effects.

Relationship	Est (std.)	SE	p	CI (lower)	CI (upper)	Conclusion
Direct effects						
CDS → ENG	0.33	0.05	0.00	0.17	0.40	H1: Supported
SPO → ENG	−0.24	0.05	0.00	−0.36	−0.13	H2: Not Supported
AA → ENG	0.06	0.05	0.27	−0.04	0.15	H3: Not Supported
AF → ENG	0.17	0.14	0.00	0.12	0.71	H4: Supported
ENG → NCP	0.28	0.05	0.00	0.14	0.36	H5: Supported
NCP → RS	0.24	0.02	0.00	0.06	0.15	H6: Supported
Non-Hypothesized Relationships						
Controls						
Supplier Experience → ENG	0.08	0.02	0.20	−0.01	0.06	
Supplier size → ENG	−0.01	0.04	0.84	−0.09	0.07	
Supplier type → ENG	−0.08	0.31	0.17	−1.0	0.17	
Supplier income →ENG	0.01	0.24	0.82	−0.43	0.53	
Retailer Experience → NCP	−0.02	0.06	0.79	−0.14	0.11	
Retailer size → NCP	−0.00	0.16	0.94	−0.33	0.29	
Retailer type → NCP	−0.14	0.24	0.01	−1.09	−0.14	
Retailer income→ NCP	−0.01	0.25	0.87	−0.52	0.44	
Retailer Experience → RS	0.07	0.03	0.24	−0.02	0.08	
Retailer size → RS	0.10	0.07	0.09	−0.02	0.26	
Retailer type → RS	0.10	0.11	0.05	−0.01	0.43	
Retailer income→ RS	−0.01	0.10	0.95	−0.21	0.20	
Ad hoc *analysis: Specific Indirect effects*						
ENG → NCP → RS	0.07	0.01	0.01	0.01	0.05	
CDS → ENG → NCP	0.09	0.02	0.00	0.03	0.12	
SPO → ENG → NCP	−0.07	0.02	0.00	−0.10	−0.02	
AA → ENG → NCP	0.01	0.01	0.28	−0.01	0.04	
AF → ENG → NCP	0.04	0.04	0.01	0.03	0.21	
CDS → ENG → NCP → RS	0.02	0.00	0.01	0.00	0.01	
SPO → ENG → NCP → RS	−0.01	0.00	0.01	−0.01	−0.03	
AA → ENG → NCP → RS	0.00	0.00	0.32	−0.00	0.00	
AF → ENG → NCP → RS	0.01	0.01	0.03	0.00	0.02	

Notes - CDS = customer development support, SPO = sales promotion offers, AA = app aesthetics, AF = app functionality, ENG = app-based mobile financial services engagement, NCP = non-coercive power of suppliers, RS = relationship satisfaction; ENG (R^2, VIF range) = 0.277, 1.03–1.48; NCP (R^2, VIF range) = 0.101, 1.00–1.01; RS (R^2, VIF range) = 0.12, 1.0–1.04.

micro-retailers' response to perceived non-coercive supplier power was found to positively affect relationship satisfaction with their suppliers (β = 0.25, SE = 0.02, p < .01), supporting H6.

7.5. Additional analyses

Our model (Fig. 2) outlines how different stimuli lead to varied responses through sequential mediated paths. For example, enhancing customer development support boosts micro-suppliers' engagement with app-based financial services, affecting micro-retailers' reactions to the non-coercive power of suppliers and their overall relationship satisfaction. Besides direct relationships, our analysis also suggests indirect effects, such as the mediation of the relationship between micro-suppliers' engagement and B2B satisfaction by micro-retailers' response to non-coercive power. Using specific mediated path analysis in R-software, we found that increased customer development support and app functionality positively influence B2B relationship satisfaction, whereas increased sales promotion offers have a negative impact. Notably, no significant mediated effects were observed between app aesthetics and relationship satisfaction. Additionally, micro-retailers' responses to non-coercive power were found to mediate the link between micro-suppliers' app engagement and relationship satisfaction (Table 4).

8. Discussion and implications

Our study explored two critical questions: a) *what factors drive micro-enterprises sustained engagement with technology-based services in B2B subsistence marketplaces, and b) how does this engagement impact the power and relationship dynamics in subsistence retail supply value chains?* Our findings reveal that strategies focusing on customer development support, sales promotion offers, and prioritizing app functionality over aesthetics significantly enhance engagement and relationship satisfaction. Relationship marketing strategies, as opposed to transaction-focused ones, are shown to be more effective in fostering non-coercive power dynamics and improving relational outcomes. This detailed examination offers substantive insights into the operational strategies that can transform power structures and enhance the efficiency and inclusivity of subsistence B2B markets, highlighting the pivotal role of technology in these contexts.

8.1. Theoretical implications

Our findings contribute to theory in several ways. First, our study makes a significant theoretical contribution by holistically integrating the S-O-R framework and S-D logic in the B2B context. Our findings challenge the consumer psychology rooted S-O-R framework that assumes a response (behavior) can only be generated through an individual's response to their organism and stimuli, where response, organism, and stimuli originate from a single entity (Jacoby, 2002). Our findings show that app-based mobile financial service providers' specific marketing strategy and app design features serve as a stimulus that impacts not only the organism's (supplier's) internal state but also the other entity's (micro-retailer's) response. This finding not only extends the applicability of the S-O-R framework in the B2B context. It does so by demonstrating that a firm's interactions within one organization can elicit responses from its partner organization (Cowan et al., 2015). Furthermore, it also corroborates the S-D Logic that emphasizes the organism's role in shaping its responses in collaboration with the stimulus provider as a value co-creator (Hollebeek, 2019; Vargo et al., 2023; Vargo & Lusch, 2011).

Second, we explored and demonstrated the significant positive role of relational customer development support (H1), and the unexpected negative effect of transactional sales promotion offers (H2) on technology-driven service engagement. We do so by drawing on the stimulus-organism relationship component of our SOR-based conceptual model. Our empirical findings related to H1 corroborate past research. It underscores the importance of developing relational customer development support strategies to foster customer engagement, particularly for new technology-enabled service innovations (Kim et al., 2015). Interestingly, the significant negative association found between sales promotion offers and customer engagement suggest that such promotional strategies may be less effective or even counterproductive in B2B subsistence marketplaces. In these settings, the demand for long-term value and trust in service reliability may outweigh the appeal of short-term financial incentives. This finding challenges the universal efficacy of sales promotions (Mukherjee et al., 2022; Palepu & Sharma, 2019) by demonstrating a significant negative association in B2B subsistence marketplaces. This advancement refines the S-O-R framework, emphasizing that the effectiveness of stimuli, such as marketing strategies, is highly dependent on the specific context and the unique dynamics of the target market. It highlights the need for a tailored approach within the S-O-R model, underscoring that stimuli responses vary significantly with environmental and organism characteristics. It provides a deeper understanding of the S-O-R framework, advocating for marketing strategies that align with distinct market needs.

Third, the comparative examination of app aesthetics (H3) and functionality (H4) holds significant implications for the acumen of technology engagement in subsistence markets. Although H3 was rejected, indicating that aesthetics alone may not significantly boost engagement, the acceptance of H4 underscores the practical utility and value emphasized by S-D logic in the co-creation process. This highlights a critical extension of both the S-O-R framework and TAM, suggesting that beyond aesthetic appeal, functional attributes play a more decisive role in influencing sustained user engagement. These findings challenge and refine the S-O-R framework by underscoring the organism's (users') deeper cognitive processing of functional stimuli over superficial attributes. Thus, technology engagement strategies focused primarily on aesthetics need to be revisited. Additionally, this outcome enriches the TAM framework by demonstrating that while aesthetics contributes to perceived ease of use, it is the functionality that predominantly impacts perceived usefulness, thus driving sustained technological engagement. Furthermore, by aligning these findings with S-D logic (Möller, 2013), we extend the theoretical discourse. We do so by emphasizing the necessity of functional value in technology's role within B2B subsistence marketplaces. Thus, the model's applicability is enhanced in contexts where practical benefits outweigh aesthetic considerations.

Fourth, our analyses addressed the intersection of technology adoption and B2B relationships, an interdisciplinary area that has received scant investigation (Viswanathan & Sreekumar, 2019). To the best of our knowledge, our findings empirically support the interconnected nature of technology adoption and B2B relational dynamics in subsistence retail supply value chains. This provides a novel extension to the S-O-R framework by integrating it with S-D logic. Thus, this work moves beyond the traditional compartmentalization of these domains and contributes significantly to theory development. This integration offers a deeper understanding of how S-D logic can elucidate non-coercive power dynamics. It enhances understanding of the roles that technology plays in B2B relationships and power structures, particularly in subsistence markets (Vargo et al., 2023). These theoretical extensions are important for developing frameworks that more accurately reflect the complexities of technology's impact on business interactions and power dynamics in B2B contexts.

8.2. Managerial implications

This study provides actionable insights for practitioners and policy-makers in subsistence markets. First, based on our integration of S-D logic and the S-O-R framework, firms are advised to focus on fostering value co-creation between micro-suppliers and -retailers. Managers are encouraged to develop strategies that not only facilitate technological adoption but also promote a culture of collaboration and mutual innovation (e.g., through platforms for dialogue and feedback between

micro-suppliers and -retailers), ensuring the co-development of technological solutions to meet the unique needs of subsistence markets. This can be achieved through targeted support initiatives, including the development of comprehensive training programs to enhance app proficiency, creating dedicated customer service channels, and maintain regular communication pertaining to mobile app updates and improvements. Such efforts will strengthen the relationship between technology service providers and their B2B clients in subsistence markets.

Second, given the inverse relationship between transactional sales promotion efforts and engagement, our findings suggest strategic reprioritization. Firms should reconsider the effectiveness of traditional promotional strategies and instead explore value-based engagement strategies, including community-centric initiatives or services tailored to the specific constraints and needs of subsistence markets, emphasizing long-term engagement over short-term transactions. Third, users' preference for functionality (vs. aesthetics) in technology solutions emphasizes the need for a practical focus. Service providers should prioritize the development of user-friendly, reliable, and efficient solutions that address subsistence market-based participants' operational challenges. For example, simplifying user interfaces and ensuring robust offline functionality can enhance the usability and utility of technology in these contexts. Finally, the potential of technology to foster non-coercive power dynamics and enhance B2B relationship satisfaction highlights the importance of equitable, and respectful interactions. Providers can foster positive B2B relationships by ensuring transparent communication, shared decision-making, and strategies that promote mutual benefits through value co-creation.

The implications for policymaking center on fostering digital and financial inclusion including sustainable growth. The advocacy of initiatives that enhance the technological competencies of micro-suppliers and -retailers, including investments in digital literacy, infrastructure development, and supportive regulations, are crucial. These policies can help protect vulnerable entrepreneurs from exploitation and contribute to the overall resilience and sustainability of subsistence marketplaces. Furthermore, for policymakers, our study highlights the importance of relationship-building over transaction-focused strategies in subsistence marketplaces. This shift provides valuable insights when developing regulations that support ethical marketing practices and sustainable business models. Additionally, our findings on non-coercive power dynamics highlight the need for policies that encourage equitable power distribution and relationship satisfaction in B2B contexts. Policymakers should support initiatives that help micro-suppliers and retailers negotiate fair terms, understand their rights, and engage in mutually beneficial partnerships.

9. Limitations and further research

Our study presents significant insights but also reveals limitations that suggest areas for future research. Firstly, our research is limited to one cultural and geographical context. Expanding this study to various socio-economic environments, such as different cultures with varying levels of individualism or collectivism, or contrasting low-income settings like Bangladesh and Brazil, could provide valuable comparative insights (Hollebeek, Muniz-Martinez, et al., 2022). Secondly, our initial investigation into non-coercive power dynamics and technology engagement in B2B relationships indicates the need for more in-depth study. This relatively unexplored area could greatly enhance our understanding of both mainstream and subsistence markets. Future studies could extend our research through more detailed survey-based or experimental methodologies, exploring the intricate interactions between power dynamics and technology across different market settings. Over the last decade, with exponential penetration and access to smartphones, a substantive proportion of subsistence entrepreneurs are now capable of using smartphone apps, including app-based mobile financial services (Chaudhuri et al., 2022), however not all of them may have the same level of digital literacy skills. Thus, future studies may investigate factors such as absorption capacity/digital literacy levels of subsistence entrepreneurs, when assessing their engagement with technology enabled services. Studies may also investigate other possible factors that could moderate the relationship between S-O-R components in subsistence B2B settings. Finally, our findings suggest that traditional sales promotion strategies may not be as effective in subsistence markets. This highlights the need for further research into alternative promotional methods that are better aligned with the unique characteristics of these ever-evolving subsistence markets.

CRediT authorship contribution statement

Ahmed Shahriar Ferdous: Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Husain Salilul Akareem:** Writing – review & editing, Writing – original draft, Validation, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Madhu Viswanathan:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Conceptualization. **Linda D. Hollebeek:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Allison Ringer:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization.

Data availability

The data that has been used is confidential.

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Appendix A. Supplementary data

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