Social Innovation and Gendered Resilience in the Informal Food Economy of Namibia

Lawrence N. Kazembe, Ndeyapo M. Nickanor,
Jonathan S. Crush and Halima Ahmed

Migration & Food Security (MiFOOD)

Paper No. 53

Series Editors: Sujata Ramachandran and Jonathan Crush

Abstract

Informal food trading is a vital source of livelihood and food security in African cities, yet traders operate under precarious conditions requiring constant adaptation. This study examines how social innovations enable resilience among informal traders in Windhoek, Namibia, with attention to gendered pathways. Using a cross-sectional survey of 470 traders, three innovation constructs - adaptive pricing, customer credit, and communications and e-payments were modelled alongside enterprise growth as a resilience outcome. Structural equation modelling (SEM) estimated direct and indirect effects of determinants such as education, startup capital, vendor type, and financing. The findings highlight social innovations as everyday mechanisms of resilience and call for gender-responsive policies to expand education, finance, and digital inclusion for informal traders.

Keywords

Social innovations; Informal economy; Resilience pathways; Gender and entrepreneurship; Structural equation modelling (SEM), Namibia

Suggested Citation

Kazembe, L. N., Nickanor, N. M., Crush, J. S. and Ahmed, H. (2025). Social Innovation and Gendered Resilience in the Informal Food Economy of Namibia. MiFOOD Paper No. 53, Waterloo.

Authors

Lawrence Kazembe, University of Namibia, Windhoek, Namibia: lkazembe@yahoo.com

Ndeyapo Nickanor, University of Namibia, Windhoek, Namibia: nnickanor@unam.na

Jonathan Crush, Balsillie School of International Affairs and Wilfrid Laurier University, Waterloo, Canada, and University of the Western Cape, Cape Town, South Africa: jcrush@balsillieschool.ca

Halima Ahmed, Balsillie School of International Affairs, Waterloo, Canada

Cover Image

Street food stalls owned by a woman and a man operating side by side in Windhoek, Namibia. Photo credit: Maria Salamone

This is the 53rd paper in the Working Paper Series published by the Migration and Food Security (MiFOOD) Network, an international network of researchers and organizations that focuses on the linkages between food security and international and internal migration in the Global South (www.mifood.org). The seven-year collaborative MiFOOD project is funded by a Partnership Grant from the Social Sciences and Humanities Research Council of Canada (SSHRC Grant No. 895-2021-1004). The research in this paper was conducted by the MiFOOD Women Feeding Cities (WFC) Project funded by the Government of Canada's New Frontiers in Research Fund (NFRF Grant No. NFRFI-2023-00324) and the International Development Research Centre (IDRC Grant No. 110148-001).

Published by the MiFOOD Network at the Balsillie School of International Affairs, Waterloo, Ontario, Canada

Introduction

Urbanization in Africa has been accompanied by the rapid expansion of informal economies that provide critical livelihoods for millions of the urban poor. In Sub-Saharan Africa, the informal economy accounts for more than 85% of total employment (ILO, 2023). In Namibia, over 60% of the employed population works informally, with women disproportionately concentrated in vulnerable, low-protection segments of the sector (NSA, 2018). Informal enterprises typically operate outside formal labour laws, tax regimes, and social protection systems, often in precarious spaces such as informal markets, roadside stalls, or mobile vending sites (Chen & Carré, 2020; Williams, 2023). Women dominate the informal food economy in African cities which provides an accessible entry point into income generation but simultaneously reinforces exposure to instability and risk (Chicho & Ongori, 2013; Kalaoane & Matamanda, 2024; Kinyanjui, 2014).

The risks and vulnerabilities of informal traders include insecure workspaces, limited access to finance, exclusion from government support and policy frameworks, and lack of formal protections such as contracts, insurance, or pensions. Informal traders are also highly susceptible to shocks such as pandemics or climate-related disruptions (Kedir et al., 2024). The COVID-19 pandemic amplified these vulnerabilities and exposed the fragility of informal livelihoods. Lockdowns, reduced demand, and disruptions to supply chains all underscored the absence of formal safety nets (Chen et al., 2021; Contreras et al., 2024; Donga & Chimucheka, 2024). Despite the challenges, informal traders demonstrate considerable adaptability and acumen, ensuring business survival and continuity through social innovation (Madichier et al., 2023).

The emerging literature on Windhoek's vibrant informal economy has focused on a number of important issues including the governance of informality (Kazembe et al., 2019), competition with supermarkets (Nickanor et al., 2019, 2020a), food safety practices (Sheehama & Singh, 2025), climate risks (Thorn et al., 2025), digital microwork (Keskinen et al., 2022), and the role of informal traders in making food accessible to the urban poor (Crush et al., 2018; Nickanor et al., 2023). These studies have established that the informal food trade in Windhoek is highly gendered with women occupying most of the city's market trading spaces. Additionally, two-thirds of informal food enterprises in Windhoek are owned and operated by women who must navigate overlapping vulnerabilities of economic insecurity, household responsibilities, regulatory constraints, and police raids while sustaining the city's food economy (Nickanor et al. 2020b).

On a more positive note, Leonard & Kiana (2024) show how WhatsApp and Instagram are being used by women traders to exchange knowledge, share pricing information, and discuss market access. However, it would be a mistake to view all informal traders as equally entrepreneurial. Crush et al. (2023), for example, distinguish between survivalists and opportunists in the informal food economy and conclude that only a minority of traders were opportunistic and entrepreneurial in orientation. More were survivalists without any alternative who needed to generate income for the everyday survival of their households. Business income and stock were transferred to meet household needs, reducing the amount available for reinvestment in the business.

The operating challenges and opportunities and facing women traders in the sector have been examined in several recent studies. Ziwoni et al. (2025) argue that informal traders in Windhoek contribute to economic resilience by creating jobs, generating income, providing affordable goods and services, fostering social inclusion, and stimulating local economic activity, and play a role in cultural preservation. The study also highlights significant challenges faced by these traders, including a lack of access to financial assistance, inadequate management and marketing skills, limited financial resources, insufficient infrastructure, and marginalization in formal urban planning, limiting growth potential and integration into city-wide development. Another recent study of over 200 young entrepreneurs in Windhoek (of whom 46% were women) found that three-quarters of youth-owned enterprises fail within their first three years, due to a combination of limited entrepreneurial skills, inadequate funding, and other systemic barriers (Andreas et al., 2025).

To date, there has been limited empirical work examining the role of social innovations as a resilience strategy in Windhoek, and even less is known about the gendered dimensions of innovation. This study addresses these gaps by analysing the types, determinants, and effectiveness of social innovations in the informal trading economy of the city, while exploring the mediating role of social innovations in gender-differentiated enterprise pathways for women and men. The main objective is therefore to examine the role of social innovations in enhancing enterprise resilience among informal food traders in Windhoek, with particular attention to gendered adaptations during shocks such as COVID-19. We model innovativeness as a latent construct and assess its relationship with determinants of innovation adoption, including gender, education, business formalization, and exposure to shocks. From the analysis, we draw policy implications for strengthening resilience in Namibia's informal economy, with a focus on women entrepreneurs.

This paper aims to address three main questions: What everyday social innovations do informal food traders in Windhoek deploy and are these strategies the same for women and men? Which trader and enterprise characteristics are associated with the adoption of social innovations and how do these determinants differ by gender? To what extent do these innovations increase the likelihood of enterprise growth and do they mediate the effects of education and capital differentially for women and men? The sections that follow outline the conceptual framework, describe the study design and structural equation model (SEM) methodology, present the empirical results, and conclude with a discussion of their theoretical and policy implications.

Conceptual Framing

Social innovation has become increasingly popular as a way of framing complex social and economic challenges, particularly in contexts where formal institutions are weak or absent (Caroli et al., 2018; Galego et al., 2021; Grilo & Moreira, 2022; Mulgan, 2019; van der Have & Rubalcaba, 2016). Broadly speaking, social innovations are new ideas, practices, products, services, governance mechanisms or institutional arrangements that enhance collective well-being and resilience (Cajaiba-Santana, 2014; Eichler & Schwartz, 2019; Nicholls & Murdock, 2012; Westley, 2012). Unlike formal sector innovations that are market-driven and capital-intensive, these practices in the informal economy emerge from necessity and are embedded in community trust, reciprocity, and social capital (Joshi et al., 2016; Muchie et al., 2017; Sheik et al., 2023). In the informal economy, social innovations are evident in the everyday coping strategies that enable enterprise survival amid structural and policy exclusion (Dees & Anderson, 2015; Mulgan , 2012, Mulgan et al., 2013). These adaptive responses position innovation not as a luxury but as a necessity for enterprise survival and growth.

Social innovations take the form of grassroots coping strategies such as flexible pricing, shifting locations, extending credit to customers, leveraging mobile technology, collective purchasing, and forming small-scale collaborative networks and associations (de Beer et al., 2016; Muchie et al., 2017; Sheik et al., 2023; Smith & Stirling, 2017). Such innovations are often overlooked in mainstream policy debates on urban food systems in Africa (Skinner, 2018), but can potentially function as a form of informal social protection, cushioning informal traders against shocks and building resilience (Canelas & Niño-Zarazúa, 2022; Guven et al., 2021 Miti et al., 2021). For women in particular, social innovations shed light on gendered resilience and the broader potential of informal economies as "hidden engines" of adaptive capacity (Kraemer-Mbula & Wamae, 2015; Mokomane, 2021; Ogando et al., 2017, 2022).

Resilience has been defined as the capacity of individuals, enterprises, or systems to absorb shocks, adapt to change, and sustain functionality in the face of adversity (Béné et al., 2012). In the informal economy, resilience is more often achieved through incremental, small-scale, and localized innovations rather than big policy interventions. Evidence from several African countries shows that informal traders employ low-level innovations that can collectively sustain enterprise survival during crises (Avenyo, 2018; Bolosha et al., 2022; Mramba et al., 2016; Peprah et al., 2019; Rama et al., 2022). The literature suggests that resilience in informal trading also depends on bundles of innovation strategies rather than isolated practices (Mulibana & Rena, 2021; Webb et al., 2013). Social trust and reciprocity can also play a role in enabling cooperation, knowledge sharing, and the diffusion of innovations (Akintimehin et.al., 2019, Ibidunni et al., 2020). Gender-based analysis of informal sector innovation is less common in the literature although one study of two Ghanaian cities identified no significant difference between male and female-owned enterprises (Avenyo et al., 2021). A related study found that female-owned enterprises were less likely to introduce product innovations but sold more innovative products (Avenyo & Kraemer-Mbula, 2021).

In this study we conceptualize social innovation as a multidimensional construct that enhances resilience in informal economies. We first adapted Schneckenberg et al.'s (2017) five dimensions of innovation: adaptive pricing, customer centricity, capability evolution, value co-creation, and ecosystem growth. These domains reflect how traders adapt, collaborate, and innovate to sustain their businesses and livelihoods in precarious urban economies.

- *Adaptive pricing* (AP) represents the capacity of informal traders to respond to fluctuations in consumer demand and purchasing power. By offering flexible prices, negotiating transactions, and adjusting payment terms, they can maintain customer flows even under volatile conditions. This flexibility is essential in markets characterized by economic shocks and highly elastic demand.

- *Customer centricity* (CC) emphasizes the relational dimensions of informal trading. Traders sustain loyalty and repeat patronage by extending credit, soliciting customer feedback, and reserving stock for regular clients. These practices not only strengthen customer relationships but also serve as informal risk-sharing mechanisms that embed businesses in wider social networks (Mulgan, 2019; Santos et al. 2021).

- *Capability evolution* (CE) refers to the ability of informal traders to continuously adapt through skills development, technological uptake, and coordination with suppliers. Practices such as mobile phone use for coordination or e-payments illustrate how digital tools expand the operational capacity of small-scale enterprises, reduce transaction costs, and enhance resilience (Ndemo & Weiss, 2017; Nguimkeu & Okou, 2021).

- *Value co-creation* (VC) highlights collaborative practices that directly respond to customer needs (Kabbaj et al. 2016; Qiang & Ghossein, 2020). Strategies such as selling in smaller quantities or engaging in mobile vending allow traders to tailor their offerings to low-income consumers, thereby aligning livelihood sustainability with consumer affordability. These practices demonstrate how traders and customers co-produce value in resource-constrained settings.

- *Ecosystem growth* (EG) captures the collective dimensions of innovation. Traders often collaborate with peers or suppliers through joint purchasing, supplier negotiations, or partnership arrangements. Such practices extend resilience beyond the individual enterprise by embedding traders within supportive networks and supply chains, enabling them to access economies of scale and strengthen bargaining power (López-Sánchez & Santos-Vijande, 2022; Murithi & Woldesenbet, 2022).

Together, these five domains define a multidimensional construct of innovativeness as a pathway to resilience. In this study, they are treated both as individual coping strategies and as indicators of a latent construct of "innovativeness." They highlight that resilience in informal economies is not achieved through isolated strategies but through a web of adaptive, relational, technological, and collective practices that reinforce one another. In turn, innovativeness is hypothesized to positively influence enterprise resilience, operationalized as the ability to sustain operations under shocks such as pandemic disruptions, the death of a breadwinner, drought and other natural disasters.

The framework is grounded in two theoretical strands. The first is institutional theory, which explains how informal entrepreneurs develop innovative practices to fill gaps created by weak or absent formal institutions (Adom & Adom, 2024; Eijdenberg et al., 2019; Williams, 2017). The other is grassroots innovation theory, which emphasizes bottom-up, community-driven solutions that prioritize social value and resilience over profit maximization (Maldonado-Mariscal, 2023; Sheikh & Bhaduri, 2020; Sheikh & Kumar, 2021). By integrating these two perspectives, the framework situates social innovations as de facto social protection that emerges organically within informal trading communities. The analysis thus tests the proposition that innovativeness mediates the relationship between trader vulnerabilities (gender, education, formalization status) and enterprise resilience.

Methods

This study draws on a cross-sectional survey of informal traders conducted in Windhoek, Namibia. Windhoek is an appropriate site given its rapid growth through in-migration, high levels of youth unemployment, and the prominence of the informal food sector. The sampling frame was derived from a city-wide census of 2,421 informal food traders. A stratified random sample was employed to ensure representation across key enterprise types, including street and informal market traders, open market stalls, tuckshops, home-based shops, and mobile traders. Proportional allocation within strata preserved comparability, yielding a final survey of 470 traders (Table 1).

A structured questionnaire was administered face-to-face by trained enumerators using digital tablets. Data captured five domains: (i) individual characteristics such as sex, age, education, and migration status; (ii) household characteristics including household size and dependence on business stock for food; (iii) enterprise characteristics covering year of establishment, location, type, startup capital, source of financing, ownership, and business worth; (iv) business practices such as transport and mobility, customer credit, record-keeping, and digital communication/payment technologies; and (v) entrepreneurial motivations distinguishing survivalist from opportunistic orientations.

Analytical Framework

The analysis began with descriptive statistics in order to characterize food traders and their enterprises, with attention to gendered distributions. Latent constructs were then developed to capture social innovations: Adaptive Pricing (AP), Customer Credit (CC), and Communications and E-payments (CE). A fourth construct, Enterprise Growth (EG), was measured as a binary outcome. Structural equation modelling (SEM) was employed to estimate the relationships between trader characteristics, enterprise determinants, and the innovation constructs. This approach allowed the simultaneous estimation of measurement and structural components, thereby capturing both the multidimensionality of social innovations and the direct and indirect pathways linking determinants such as startup year, vendor type, financing, capital, education, age, and ownership to resilience outcomes.

This study builds a full SEM framework grounded in five domains of innovation and a resilience outcome. The model is designed to capture both measurement and structural relations, account for categorical indicators, and assess mediation and gendered pathways. Table 2 gives a summary of the constructs and indicators, while Table 3 displays the model structure.

Table 1: Distribution of Sampled Enterprises by Type

Type	No.	%
Street traders	128	27.2
Informal market traders	70	14.9
Open market traders	67	14.3
Traders outside supermarkets	59	12.6
Tuck shops	39	8.3
Traders at taxi ranks/bus stop	35	7.4
Mobile traders	26	5.5
Home-based shops	21	4.5
Traders outside open markets	16	3.4
Other	9	1.9
Total	470	100.0

Table 2: Constructs, Indicators, and Latent Dimensions		
Factor	**Indicators**	**Notes on Measurement**
AP (Adaptive Pricing)	Discounts, Negotiation, Following market price	Binary items
CC (Customer Centricity)	Customer feedback, Extends credit, Keeps stock for regulars	Ordinal/Binary
CE (Capability Evolution)	Uses phone for coordination, Accepts mobile payments	Two-indicator factor (identified by fixing one loading)
VC (Value Co-creation)	Small-quantity sales, Mobile vending, etc.	Low prevalence; may require item parcels
EG (Ecosystem Growth)	Supplier negotiations, Bulk buying, Partnerships	May include composite indicators
INNOV (Innovativeness)	Higher-order factor indicated by AP, CC, CE, VC, EG	Second-order latent factor
RESIL (Resilience)	Business survival, Income recovery, Household well-being	Endogenous latent factor

The exogenous determinants included (observed):

- *gender* (female = 1, male = 0)
- *educ* (ordinal: none < primary < secondary < tertiary)
- *formal* (registered business = 1, else 0)
- *shock* (e.g. experienced COVID-19 trading shock = 1, else 0)
- *finance* (banked / business account = 1, else 0)
- *controls*: age, location (market/street/roadside), sole ownership (=1 if sole), startup year (=1 if after 2010), start-up capital (1 if 5000 NAD).

The model included five first-order latent factors (binary/ordinal indicators) representing distinct domains of innovation:

- AP (Adaptive Pricing): *ap_disc* (discounts), *ap_negot* (negotiates), *ap_follow* (follows market prices)
- CC (Customer Centricity): *cc_feedback* (customer feedback), *cc_credit* (extends credit), *cc_stock* (reserves stock for regulars)
- CE (Capability Evolution): ***ce_mobilecoord*** (coordinates via phone), *ce_mobilepay* (accepts mobile money)
- VC (Value Co-creation): indicators such as *vc_smallqty, vc_mobilevend*, etc. (low-prevalence practices)
- EG (Ecosystem Growth): *eg_negotSupp* (supplier negotiations), *eg_bulk* (bulk buying), *eg_partnership* (partnerships/shareholding)

These five factors loaded onto a second-order latent construct, Innovativeness (INNOV), which in turn predicted Resilience (RESIL), operationalized through indicators of business survival, income recovery, and household well-being.

- INNOV (Innovativeness): measured by AP, CC, CE, VC, EG.

Endogenous latent factor (resilience):

- RESIL: *res survive* (business survived), *res_income* (income recovered), *res_hhwell* (household well-being maintained).

Table 3: Model Structure

Measurement model:

- AP ⟵ {ap_disc, ap_negot, ap_follow}
- CC ⟵ {cc_feedback, cc_credit, cc_stock}
- CE ⟵ {ce_mobilecoord, ce_mobilepay}
- VC ⟵ {vc_smallqty, vc_mobilevend, …}
- EG ⟵ {eg_negotSupp, eg_bulk, eg_partnership}
- APa⟵ {AP}
- CEa⟵ {CE, EG}
- CCa⟵ {CC,VC}

- INNOV⟵ {APa, CEa, CCa}
- RESIL ⟵ {res_survive, res_income, res_hhwell}

Structural model:

- INNOV ~ α·gender + α·educ + α·formal + α·shock + α·finance + Y·controls
- RESIL ~ β·INNOV + β·gender + β·educ + β·formal + β·shock + β·finance + ϑ·controls

Moderation:

- Indirect paths capture moderation (e.g., gender ⟶ INNOV ⟶ RESIL).

Given that most indicators are binary or ordinal, the model was estimated using the robust weighted least squares estimator (WLSMV) in lavaan. This approach relies on polychoric correlations and thresholds rather than assuming normality, making it well suited for categorical data. Identification was achieved by fixing one factor loading or variance in the case of two-indicator factors (such as CE), while sparse items with very low prevalence were retained but interpreted cautiously, with the option of forming item parcels to stabilize estimation if necessary.

Because there were missing responses on several observed indicators, which weakened the reliability of factor loadings, we also refined the measurement model by consolidating related domains into two new constructs. Customer centricity and ecosystem growth were merged to form a new latent construct labeled Customer Credit (CCa). Similarly, capability evolution and value co-creation were combined into a single latent construct termed Communications and E-payments (CEa). The Adaptive Pricing (APa) dimension was retained in its original form. Figure 1 presents a conceptual framework linking determinants to social innovations APa, CCa and CEa, and to enterprise growth, with gender as a moderator. The model structure is captured in Table 3.

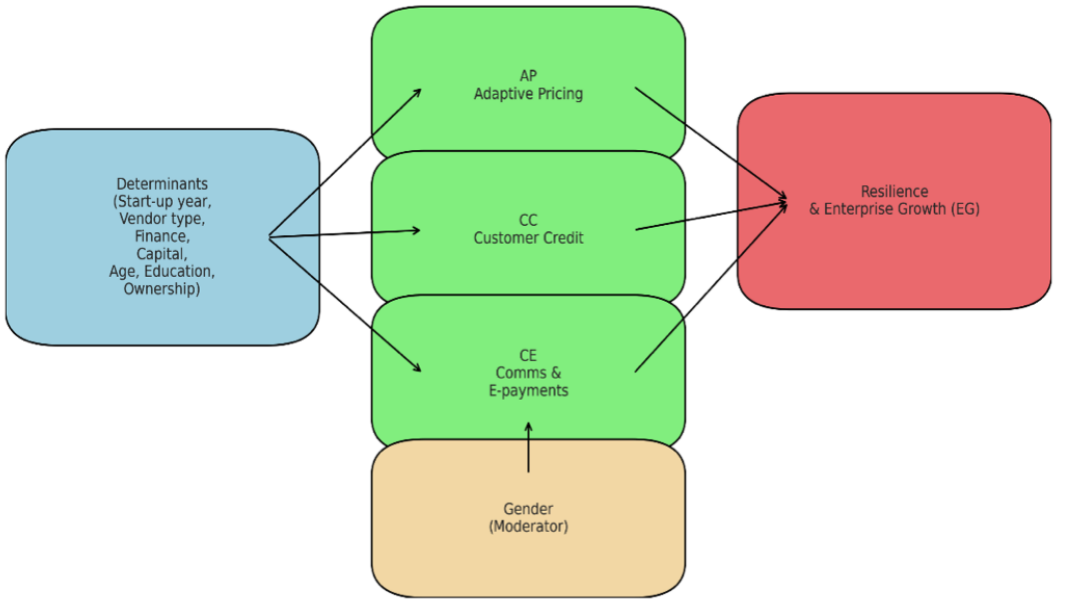
The sample size (N ≈ 470) is appropriate for this modelling strategy, provided the model remains parsimonious and avoids unnecessary cross-loadings. Missing data were handled using the pairwise approach embedded in WLSMV, though sensitivity checks with multiple imputation could be performed in future work. Overall, these estimation choices balance statistical rigour with the constraints of working in a data-scarce informal sector setting.

Since gender is central to the study's conceptual framework, measurement invariance testing was conducted between women and men traders. This proceeded in a stepwise fashion, beginning with configural invariance (same factor structure across groups), followed by tests of threshold and metric invariance (equivalence of item thresholds and loadings), and finally scalar invariance (equivalence of intercepts). In cases where full scalar invariance could not be achieved, partial invariance was allowed by freeing specific parameters, thereby enabling meaningful comparison of structural paths across genders. Therefore, gender was treated as a potential moderator rather than a mediator, because it is a pre-existing characteristic that may condition (but cannot be caused by) the relationships between shocks, innovation practices, and resilience.

To identify the factors associated with traders' innovation behaviour, we estimated a series of regression models in which trader and contextual characteristics (gender, education, capital, business type, market location, years in business, and COVID-19 shock exposure) were entered as predictors of each first-order innovation construct. The resulting coefficients were synthesised using a forest plot matrix, which provides a compact visual summary of the magnitude, direction, and statistical significance of each determinant across all innovation domains.

Each column of the matrix corresponds to a specific innovation construct (AP, CC, CE, VC, EG), while each row represents a determinant. Coefficients were standardised to allow comparison across models, and 95% confidence intervals were displayed to assess precision and significance. This approach helps identify patterns of influence—such as determinants that consistently support or inhibit innovation across multiple behavioural domains—thereby providing a

Figure 1: Conceptual Framework



multivariate perspective not easily captured through single-model reporting.

The forest plot is integrated into the analytical pipeline as a bridge between the individual predictors and the latent constructs used in structural equation modelling (SEM). By mapping which determinants shape the first-order behaviours, the forest plot informs the specification of pathways in the SEM and provides empirical justification for modelling latent innovation and resilience as outcomes of these underlying characteristics.

Model adequacy was assessed using a combination of global fit indices and reliability checks. Following conventional SEM guidelines, good model fit was indicated by comparative fit index (CFI) and Tucker–Lewis index (TLI) values of 0.95 or higher, with values above 0.90 considered acceptable. The root mean square error of approximation (RMSEA) was expected to remain below 0.06–0.08, while the standardized root mean square residual (SRMR) threshold was set at 0.08. Reliability of latent constructs was evaluated by inspecting standardized factor loadings (with loadings above 0.50 considered satisfactory) and by calculating composite reliability coefficients such as omega.

Profile of Informal Food Traders

Table 4 provides a descriptive profile of the surveyed traders disaggregated by gender and reports statistical tests of difference.

- Women represented 64% of the respondents which is consistent with the broader gender composition of informal trading in Windhoek.
- Enterprise type shows strong gender variation. Women were more likely to operate from tuckshops or home-based enterprises (27.6%) compared with men (12.3%), while men were more concentrated in street and market vending (87.7% vs. 72.4%). The chi-square test confirmed that this difference is statistically significant. This suggests that women are relatively more home-anchored in

Table 4. Characteristics of Traders by Sex

Characteristic	Women (%)	Men (%)	Total (%)	X^2	p-value
Enterprise type: street/market	72.4	87.7	77.7	13.37	0.0001
Enterprise type: tuckshop/home-based	27.6	12.3	22.3	27.61	0.0001
Age: Youth (<35years)	40.3	75.3	53.3	54.22	<0.001
Education >= Secondary	85.7	62.3	77.7	32.08	0.001
Start-up year: from 2010+	34.3	44.5	37.8	23.90	<0.001
Ownership: sole	86.7	82.1	85.1	6.11	0.05
Startup capital < NAD 5,000	70.5	58.0	66.2	6.78	0.009
Loan-related financing	16.9	10.5	14.7	2.97	0.085
Necessity-driven entry	34.4	33.3	34.0	1.02	0.894
Migrant to Windhoek: Yes	89.3	88.9	89.1	3.5	0.062

their trading, whereas men dominate the more public and mobile spaces.

- Age differences were even more pronounced. A striking 75.3% of men were under age 35 compared with only 40.3% of women. The informal food economy therefore appears to draw significantly younger men, whereas women vendors are older and often longer established, reflecting informal vending as a long-term livelihood strategy for women but a more transitional or early-career activity for men.

- Educational attainment differed sharply by gender, with 56.8% of women (vs. 32.1% of men) completing secondary school or higher, demonstrating that women's overrepresentation in informal food vending stems not from low education but from structural barriers to formal employment.

- Business start-up patterns differed significantly. Men were more likely than women to have started trading in 2010 or later (44.5% vs. 34.3%), suggesting either greater recent male entry into the informal economy or faster turnover among male traders.

- Sole ownership was high for both groups but slightly higher among women (86.7% vs. 82.1%), indicating women's greater likelihood to run independent operations rather than joint ventures or family partnerships.

- Startup capital distributions indicate that women were more likely to begin with limited resources. Over 70% of women reported initial capital below NAD 5,000 compared with 58% of men, and this difference was statistically significant. This reflects a gendered capital gap at business formation.

- Loan-related financing showed weaker gender differentiation. Only 16.9% of women and 10.5% of men accessed loans or external financing. While the difference approaches significance, it suggests that very few traders of either sex accessed formal credit, with women slightly more likely to do so.

- Necessity-driven entry into trading was reported by roughly one-third of both women (34.4%) and men (33.3%). The chi-square test was not significant, indicating that gender plays little role in determining whether entrepreneurs entered trading out of survival needs such as unemployment.

- Migration status also mirrored gender parity. Roughly 89% of both women and men are migrants to Windhoek, with no significant difference (p=0.062). This reflects the role of the informal economy as a common entry point for migrants regardless of gender.

The results paint a clear picture: *women are more educated, older, more home-bound, and more financially constrained,* yet they maintain higher levels of enterprise ownership and long-term engagement in the informal food economy. Men, meanwhile, enter younger, operate in more public and mobile spaces, negotiate capital more flexibly, and dominate street-based vending. These gendered patterns highlight structural inequalities in mobility, access to finance, labour-market opportunities, and caregiving responsibilities, all of which shape how men and women participate and survive in the informal trading landscape.

Social Innovation Practices

Enterprise failure is relatively common, so informal traders need to learn strategies and innovate to survive. Cost reduction, adaptive pricing, customer retention, and management of customer demand are primary drivers of innovation. Other motives to innovate include the desire to increase market share or enter new markets, to improve the product range, to increase the capacity to produce new goods, and to reduce costs. This study examined the five social innovations discussed in the conceptual framework above i.e. adaptive pricing, customer centricity, capability evolution, value co-creation, and ecosystem growth.

(1) *Adaptive pricing:* Figure 2 shows the five strategies employed by traders to adjust prices in response to market conditions. The findings show that women actively engage in a range of adaptive pricing strategies, but their approaches tend to prioritise stability, trust, and long-term customer relationships. Women are more inclined to maintain consistent pricing structures, rely on relational forms of exchange, and use pricing as a way to strengthen customer loyalty rather than to outcompete other traders. In contrast, men report higher use of competitive and flexible pricing tactics, including more frequent discounting, negotiation, and competitor-based pricing. This contrast highlights how women's pricing strategies are shaped by relational business practices that emphasise predictability and trust-building—patterns well documented in informal trading environments—while men's strategies tend to reflect more assertive market positioning. These gendered tendencies underscore the distinct ways women navigate pricing decisions within informal food markets, revealing adaptive behaviours grounded in social connection rather than competition.

(2) *Customer centricity:* Figure 3 shows that customer-oriented practices were widespread. Three-quarters of the traders (76.0%) reported obtaining feedback from their customers, while 56.8% regularly extended credit to trusted clients. The results suggests that men are more likely to use competitive and mobility-based strategies, such as securing high-traffic locations, undercutting competitors, and actively monitoring customer demand. Women, meanwhile, tend to emphasise relationship-based and trust-oriented strategies, such as extending credit and selling in bulk to known customers. This reflects broader gendered dynamics in informal food markets, with women prioritising customer loyalty, stability, and repeat trade; whereas men lean toward competitive positioning and opportunistic market placement.

(3) *Capability evolution:* Figure 4 presents the uptake of digital and technological strategies. About one-quarter of

traders (26.6%) used mobile phones to coordinate with suppliers and customers, and fewer (19.7%) reported accepting mobile money as a payment method. Across the sample, both sexes exhibit low physical mobility, reinforcing the idea that spatial constraints—regulatory, logistical, or social—limit traders' ability to relocate, especially women. Overall, women display greater digital payment innovation and adaptive product diversification, while men exhibit higher digital coordination with suppliers. These patterns highlight gendered strategies in informal market adaptation: women tend to innovate around customer-facing needs and financial safety, whereas men focus more on supply-side efficiencies.

(4) *Value co-creation*: Figure 5 shows that value co-creation strategies were comparatively rare. Across all five approaches assessed, fewer than 10% of business owners reported adopting these practices, highlighting the limited diffusion of collaborative customer–business innovations within the informal trading sector. Gendered patterns were evident. The results suggest that women's strategies emphasise proximity, predictability, and relational customer engagement, while men's strategies reflect greater spatial mobility and resource-driven flexibility. These differences are not merely personal choices but are shaped by structural conditions—including access to capital and transport, caregiving roles, and the safety of public spaces—that systematically shape how male and female traders participate in informal food markets.

(5) *Ecosystem growth*: Figure 6 depicts strategies related to collective or network-based enterprise growth. The most common practice was negotiating prices with suppliers (12.2%). Far fewer traders engaged in bulk purchasing with others (3.9%), and only 1.7% reported participating in shareholding or partnerships. Overall, the graph reinforces a broader pattern: men tend to rely more on individual, mobility-intensive, or negotiation-based strategies, while women rely more on collective, relationship-based, and socially embedded strategies. These differences are not simply per-

Figure 2: Adaptive Pricing

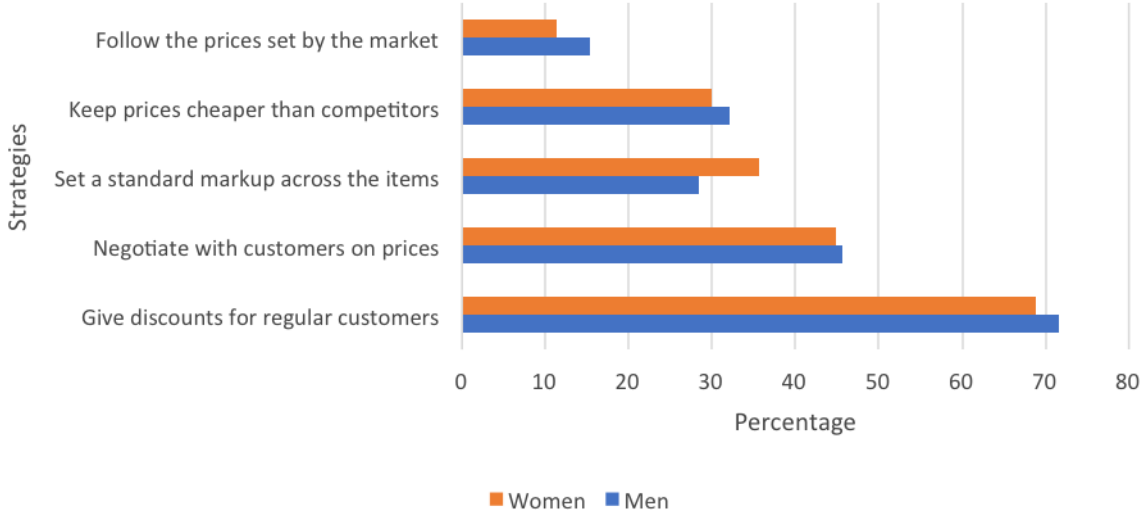


Figure 3: Customer Centricity

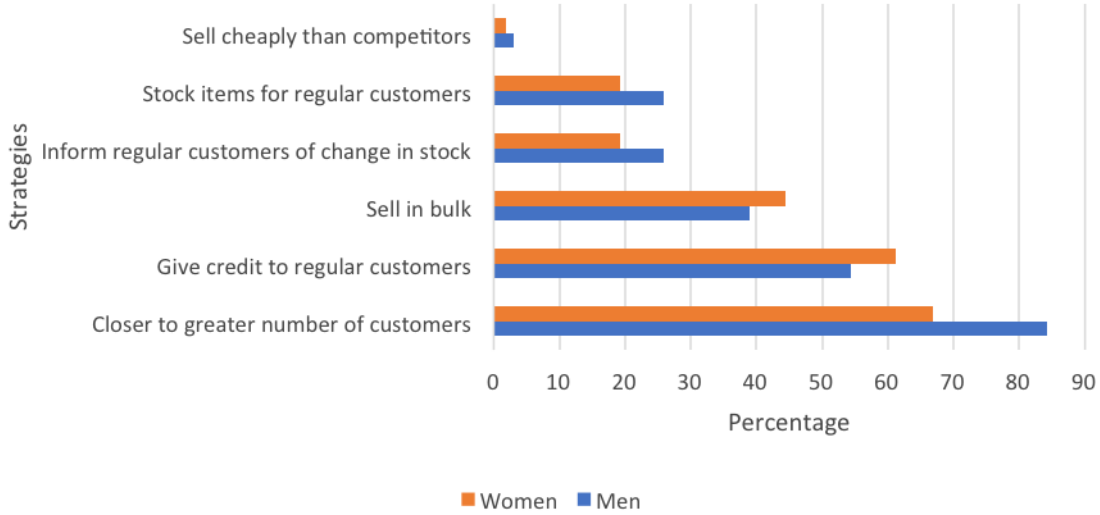


Figure 4: Capability Evolution

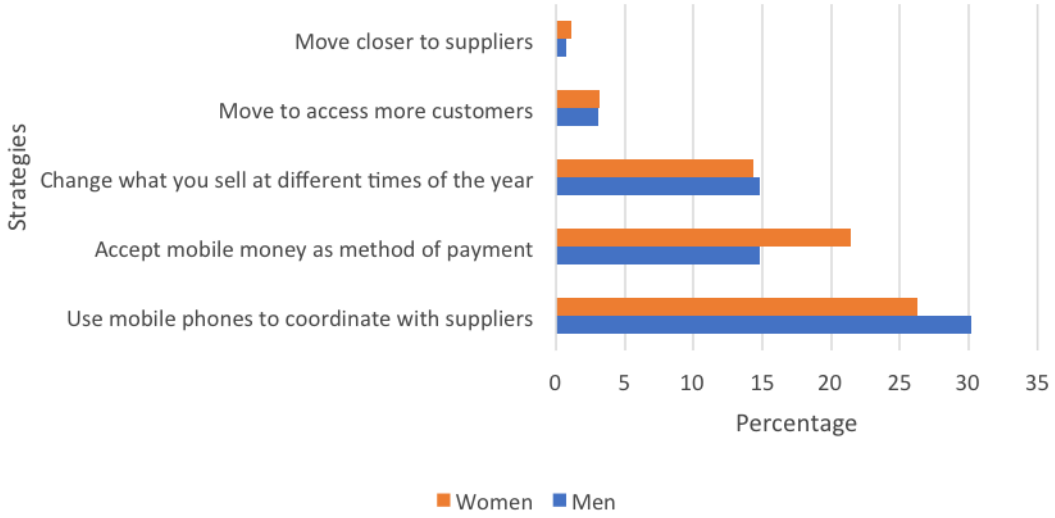


Figure 5: Value Co-Creation

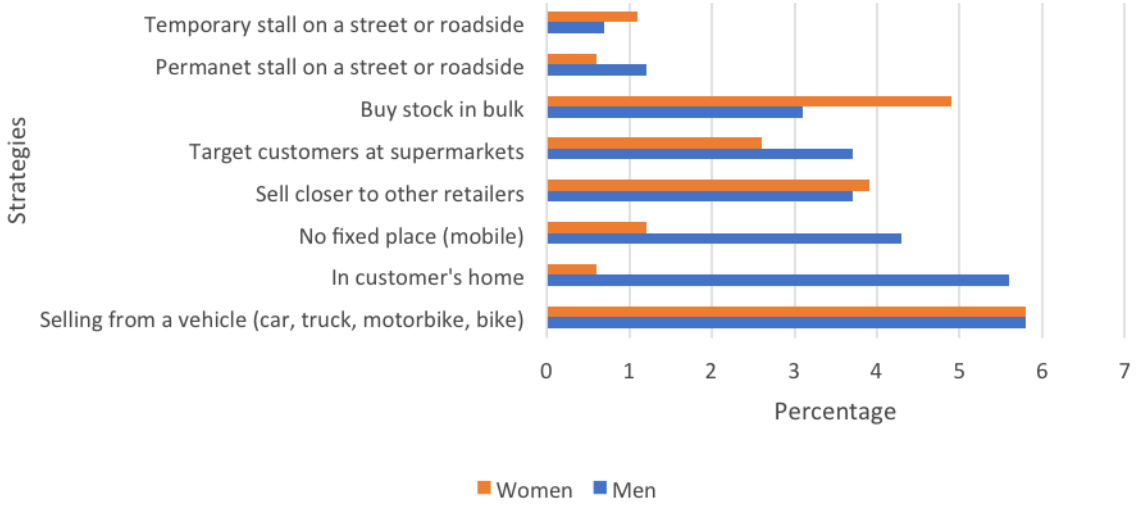
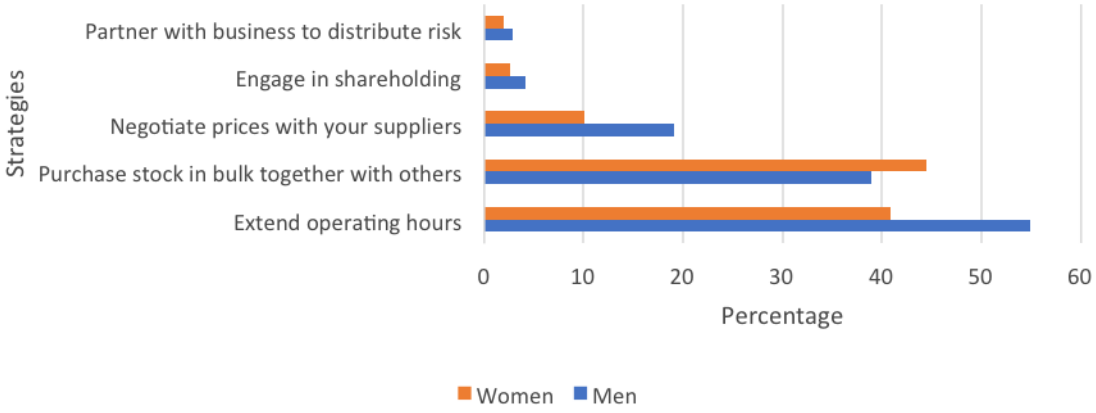


Figure 6: Ecosystem Growth



sonal preferences but reflect deeper structural conditions governing access to suppliers, capital, time, and safety.

The fitted SEM demonstrated an acceptable overall fit to the survey data. Fit statistics indicated that the model provided a good representation of the observed covariance structure. The comparative fit index (CFI = 0.958) and the Tucker–Lewis index (TLI = 0.947) exceeded the recommended threshold of 0.90, suggesting strong relative model fit (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA = 0.045, 90% CI [0.038–0.052]) was well below the 0.06 benchmark, indicating close fit of the model to the data. Similarly, the standardized root mean square residual (SRMR = 0.056) fell within the acceptable range of <0.08.

At the measurement level, factor loadings were generally strong and statistically significant ($p < 0.001$). Indicators of adaptive pricing (AP), customer centricity (CC), and ecosystem growth (EG) loaded consistently above 0.60, while capability evolution (CE) and value co-creation (VC) displayed moderate but acceptable loadings (>0.45). The second-order innovativeness construct (INNOV) was well

supported by its first-order domains, with standardized loadings ranging from 0.58 to 0.77. Taken together, these results suggest that the proposed multidimensional model of innovativeness and resilience provides a robust and parsimonious representation of the underlying data. The findings support the theoretical specification that resilience is partly mediated by innovation practices spanning pricing strategies, customer orientation, technological adaptation, collaborative practices, and ecosystem engagement.

Factor analyses confirmed the reliability of the three combined latent constructs of social innovation of Adaptive Pricing (AP), Customer Credit (CC), and Communications and E-payments (CE) (Table 5). Internal consistency was acceptable (Cronbach's α > 0.70 for each construct). Enterprise growth (EG) was defined as a binary variable indicating any reported growth in turnover, clientele, or business size.

Determinants of Social Innovations

Structural equation modelling was used to estimate the effects of determinants on AP, CC, and CE. The results of the analysis are presented in Table 6. Education and startup year significantly influenced Adaptive Pricing; vendor type and ownership structure predicted Customer Credit; and Communications and E-Payments was shaped by education, age group, and startup capital.

Regression analyses revealed strong and statistically significant associations between trader and enterprise characteristics and the adoption of social innovation practices (Figure 7). For Adaptive Pricing (AP), education emerged as a central determinant. Traders with at least secondary education were substantially more likely to employ strategies such as price negotiation and discounting. Specifically, holding secondary or higher education increased the odds of adopting AP strategies by [OR = 1.85, p < 0.01], underscoring the role of human capital in shaping adaptive behaviour. Startup year was also influential: businesses established within the last five years were 1.4 times more likely to adopt flexible pricing compared to older enterprises, suggesting that newer entrants are more responsive to competitive pressures.

In the case of Customer Credit (CC), vendor type played a decisive role. Market and street-based traders were significantly more likely to extend credit to customers than tuckshop or home-based enterprises (OR = 2.12, p < 0.01). Ownership structure further influenced this practice: sole proprietorships were less inclined to offer credit, with odds 40% lower (OR = 0.60, p < 0.05) than for shared or family-owned businesses. This highlights the embeddedness of credit provision within wider household and social networks.

For Communications and E-payments (CE), both demographic and financial factors were important. Younger traders (below 35 years) were 2.3 times more likely to adopt mobile coordination and e-payment systems than older peers, while those with secondary or higher education displayed significantly higher adoption (OR = 1.75, p < 0.01). Financial capacity also mattered: traders with higher startup capital (> NAD 5000) or access to loan-related financing were markedly more likely to adopt e-payment systems (OR = 2.05, p < 0.05), indicating that digital inclusion is constrained by both education and access to finance.

Stratified analysis revealed clear gender differences in the determinants of innovation. Figures 8 and 9 present gender-stratified plots, highlighting the distinct determinants for women and men. Among women traders, education and startup capital were particularly influential in shaping adoption of AP and CE, highlighting the importance of both human and financial capital. For men traders, vendor type and ownership structure played a stronger role, especially for CC, suggesting that institutional positioning mattered more for men. These gendered pathways emphasize the differentiated opportunities and constraints shaping women's and men's ability to innovate.

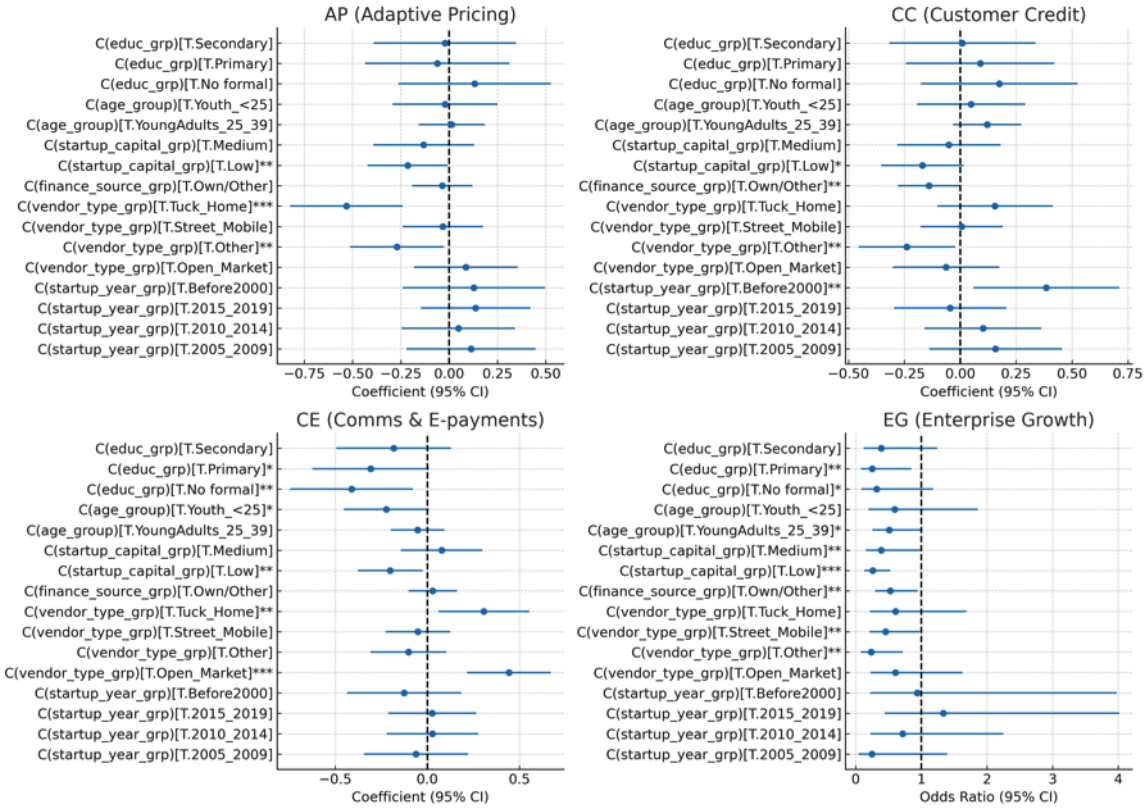
Table 5: Latent Construct Reliability and Indicators

Construct	Indicators	Factor Loadings	Cronbach's α
AP	Discounts, price negotiations	0.72–0.81	0.74
CC	Customer credit, stock on credit	0.70–0.79	0.71
CE	Mobile coordination, e-payments	0.76–0.83	0.78

Table 6: Direct Effects of Determinants on Social Innovations (SEM coefficients)

Determinant	Adaptive Pricing (Coef, SE)	Customer Credit (Coef, SE)	Communications and E-payments (Coef, SE)
Startup year (2010+)	0.28 (0.09)***	0.05 (0.07)	0.11 (0.08)
Vendor type (Market)	0.04 (0.10)	0.33 (0.09)***	0.02 (0.07)
Education ≥ Secondary	0.42 (0.08)***	0.18 (0.07)**	0.37 (0.09)***
Startup capital >NAD5,000	0.07 (0.09)	0.11 (0.08)	0.25 (0.10)**
Ownership (Sole)	−0.10 (0.08)	−0.22 (0.09)**	−0.05 (0.07)
** Note: p<0.01 ***, p<0.05 **, p<0.10 **			

Figure 7: Forest Plot Matrix Showing Determinants of AP, CC, CE, and EG



For Adaptive Pricing (AP), education is a key predictor across genders, but its magnitude is stronger for women. Women with secondary or higher education were [OR = 2.10, $p < 0.01$] more likely to employ discounting and negotiation than women with less education, compared with [OR = 1.40, $p < 0.05$] among men. Startup year also mattered: recently established women-owned businesses were significantly more flexible in pricing ([OR = 1.75, $p < 0.05$]), while the association for men was weaker and not statistically significant. This suggests that women's educational and entrepreneurial trajectories play a stronger role in shaping pricing adaptability.

In Customer Credit (CC), men's practices were more strongly shaped by vendor type. Male market/street vendors were [OR = 2.50, $p < 0.01$] more likely to extend credit than their tuckshop/home-based peers, while the corresponding effect for women was smaller. Conversely, ownership structure mattered more for women: sole proprietors were 40% less likely [OR = 0.60, $p < 0.05$] to provide credit compared with shared or family-owned women's businesses. This highlights how women's credit practices are embedded in household and kinship structures, while men's practices reflect the spatial dynamics of trading.

Adoption of Communications and E-payments (CE) was influenced by both demographic and financial characteristics, with sharper generational and educational divides among women. Younger women traders (<35 years) were [OR = 3.00, $p < 0.01$] more likely to use mobile coordination and payments than older women, compared with a smaller but significant effect for men [OR = 1.80, $p < 0.05$]. Education amplified women's likelihood of CE adoption [OR = 2.20, $p < 0.01$] compared to men [OR = 1.50, $p < 0.05$]. Startup capital and financing sources played a particularly strong role for men: access to loan-related financing increased men's likelihood of adopting e-payments by [OR = 2.70, $p < 0.01$], while the effect among women, though positive, was smaller [OR = 1.40, p = n.s.]. Taken together, these findings reveal that education and age are stronger enablers of innovation among women, while capital and financing structures matter more for men. This gendered divergence suggests that women's innovative capacity is constrained primarily by skills and social networks, whereas men's is linked more directly to financial resources and market positioning.

The forest plots clearly illustrate the magnitude and direction of associations, with gender-stratified plots emphasizing the distinctiveness of women's and men's pathways (Figures 8 and 9). For AP, CC, and CE, coefficients greater than zero reflect greater adoption of innovative practices, while for EG, odds ratios above one reflects higher likelihood of growth. The forest plots highlight the particularly strong role of education and startup capital for women, and vendor type and financing source for men.

For Enterprise Growth (EG), Firth bias-reduced logistic regression was employed due to small sample sizes in some categories of the outcome. Table 7 reports odds ratios (ORs) and 95% confidence intervals for determinants of EG.

Figure 8: Forest Plot Matrix Showing Determinants of AP, CC, CE, and EG among Women Traders

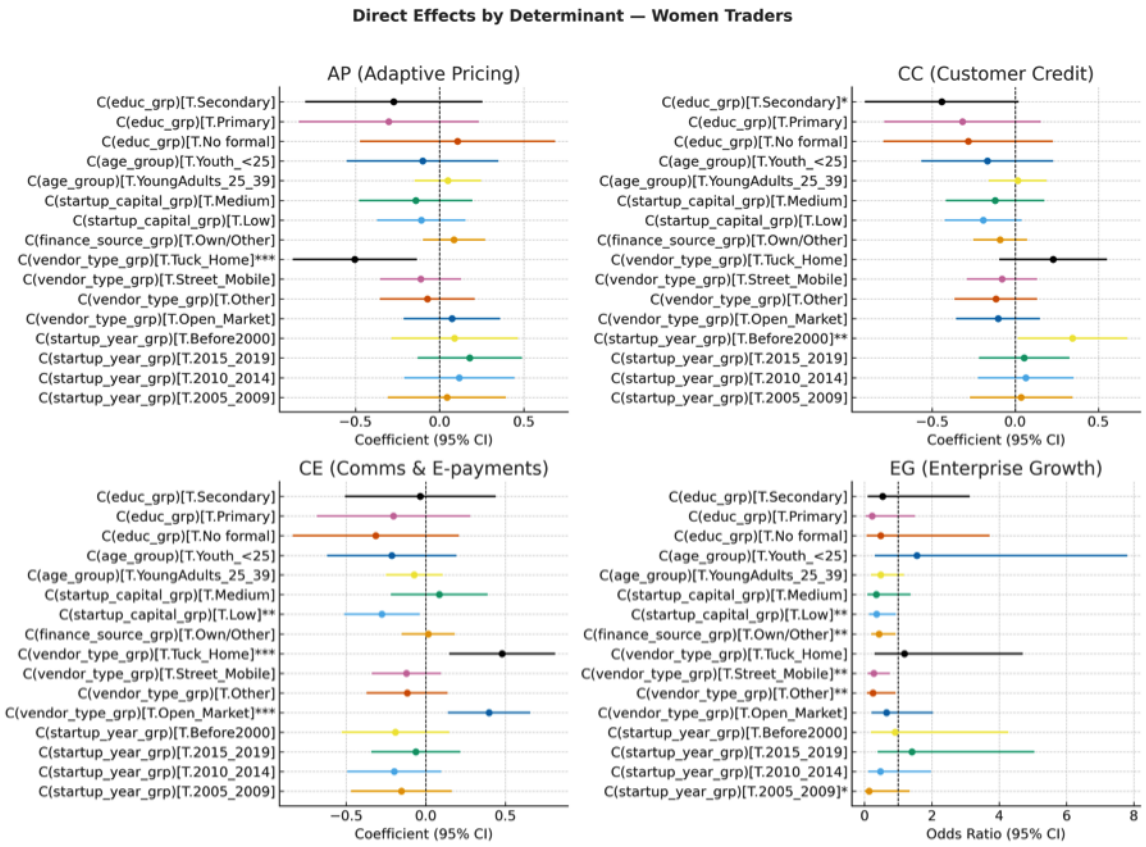


Figure 9: Forest Plot Matrix Showing Determinants of AP, CC, CE, and EG among Men Traders

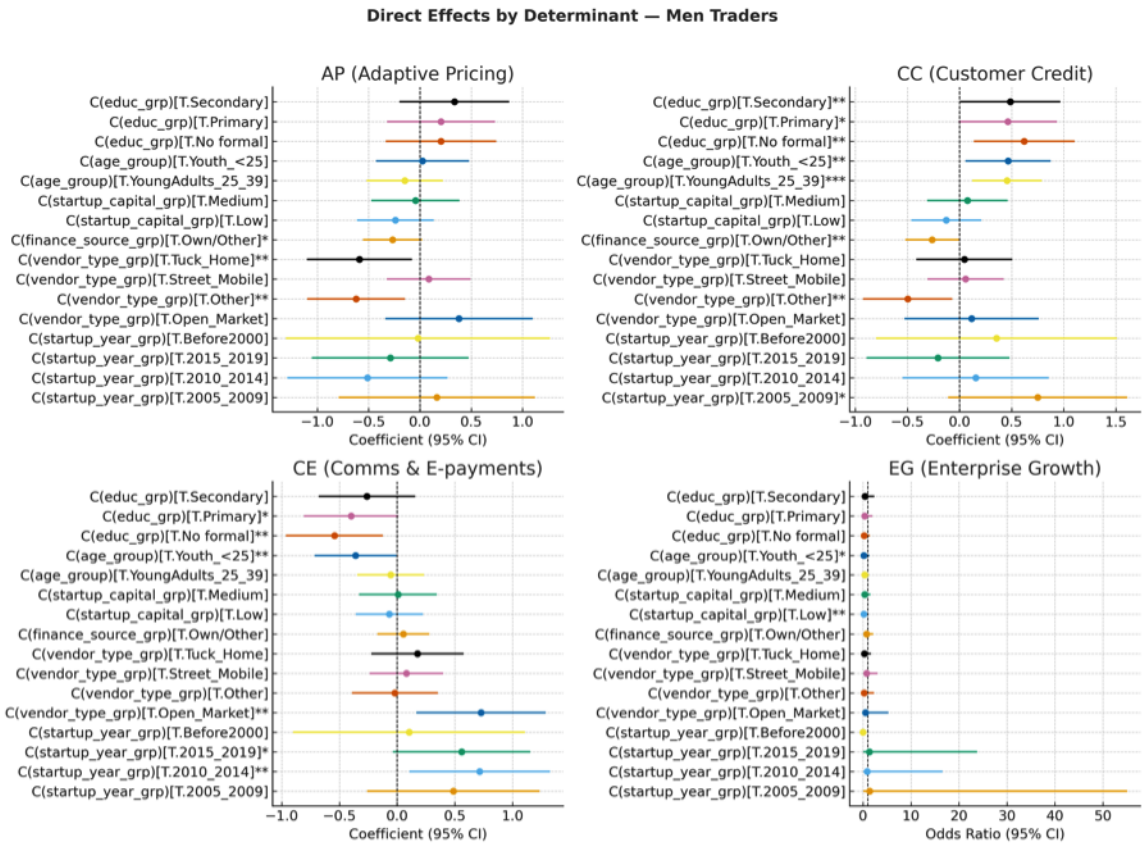


Table 7. Determinants of Enterprise Growth (Firth Logistic Regression, Odds Ratio [OR])		
Determinant	**Women Odds Ratio (95% CI)**	**Men Odds Ratio (95% CI)**
Startup year (2010+)	1.42 (0.88–2.32)	1.11 (0.70–1.76)
Vendor type (Market)	1.08 (0.65–1.79)	1.95 (1.15–3.30)**
Education ≥ Secondary	2.14 (1.26–3.64)**	1.21 (0.73–2.01)
Startup capital >5000	1.78 (1.05–3.00)**	1.33 (0.82–2.17)
Loan-related financing	1.32 (0.76–2.30)	2.08 (1.18–3.64)**

Table 8: Indirect Effects of Trader Characteristics on Enterprise Growth			
Pathway	**Indirect Effect (β)**	**Standard Error (SE)**	**p-value**
Education ⟶ AP ⟶ Enterprise Growth	0.10	0.04	0.021
Education ⟶ CE ⟶ Enterprise Growth	0.12	0.05	0.008
Startup Capital ⟶ CE ⟶ Enterprise Growth	0.09	0.04	0.037

For women, education and startup capital were the strongest predictors of growth, while for men, vendor type and financing source were significant.

Indirect effects, obtained through bootstrap mediation analyses, revealed that trader characteristics exert significant indirect influence on enterprise growth (Table 8). Education demonstrated a strong mediated pathway through both *adaptive pricing* (AP) and *communications and e-payments* (CE). Traders with at least secondary education were more likely to adopt AP and CE, and these innovations subsequently enhanced growth outcomes. The indirect effect of education via AP was $\beta = 0.10$, SE = 0.04, $p < 0.05$, while the pathway through CE was $\beta = 0.12$, SE = 0.05, $p < 0.01$, confirming the importance of human capital in shaping resilience through innovation.

Startup capital also contributed indirectly to enterprise growth through CE adoption. Traders with greater initial capital had a higher likelihood of adopting mobile coordination and e-payment systems, which in turn improved prospects for expansion. The indirect effect of startup capital via CE was $\beta = 0.09$, SE = 0.04, $p < 0.05$, highlighting the role of financial capacity in enabling digital inclusion and resilience. Overall, these findings underscore that the effects of education and capital on enterprise outcomes are not solely direct, but also operate through the mechanisms of innovation adoption, particularly in pricing strategies and digital technologies.

Conclusions

This study aimed to examine how informal food traders in Windhoek deploy social innovations to sustain enterprises and build resilience. At the outset we posed three main questions: what social innovations do informal food traders in Windhoek deploy and are these strategies the same for women and men? Which trader and enterprise characteristics are associated with the adoption of social innovations and how do these determinants differ by gender? To what extent do these innovations increase the likelihood of enterprise growth and do they mediate the effects of education and capital differentially for women and men? This discussion revisits these questions in light of the analysis of data from a representative survey of informal food enterprises in the city.

The results confirm that practices such as adaptive pricing, customer credit, and the adoption of digital technologies constitute critical mechanisms through which traders mitigate risk and maintain livelihoods. These innovations are not marginal adjustments; they are central to how traders navigate volatility, stabilize income flows, and secure food access for households The finding that education and startup capital shape the adoption of such innovations resonates with wider evidence that human and financial capital are foundational in enabling entrepreneurs to diversify strategies and innovate in resource-constrained settings (Mulgan, 2012, 2019; Ram et al., 2017; van der Have & Rubalcaba, 2016).

A key contribution of this study is the unveiling of the gendered pathways through which resilience is achieved. Women traders were found to rely more heavily on education and modest financial resources to innovate. This reflects broader gendered inequalities in access to productive assets: women often face greater barriers to credit markets and formal financing, making education and savings the primary resources at their disposal (Harshana & Vera, 2014; Ogando et al. 2017; Peprah et al., 2019, 2023). Men, on the other hand, leveraged structural positioning such as vendor type and greater access to loan-related financing. These divergent pathways demonstrate that resilience is not a uniform process but one mediated by social roles, institutional access, and structural constraints (Campos et al., 2019; Maslak, 2018; Vieginie & Robilliard, 2017).

The gender-disaggregated findings also challenge homogenized narratives of informal traders as a single undifferentiated category. Instead, they confirm the need for gender-responsive policies that recognize women's dependence on education and small-scale capital, as well as men's reliance on institutional and financial positioning (Malta et al., 2019). Without such recognition, interventions risk reinforcing inequalities rather than addressing them (Brush & Cooper, 2012; Chant & Sweetman, 2012; Williams, 2017). However,

the rarity of sustained enterprise growth, even in the presence of innovations, underscores the limits of resilience within informal economies. Growth appears to require not just innovation but also favourable structural conditions, such as access to finance, stable demand, and institutional support (Madichier et al., 2023; Murithi & Woldesenbet, 2022; Williams & Kedir, 2018). This is consistent with previous empirical work showing that while innovation can sustain enterprises, it rarely enables transformative scaling in contexts where markets are saturated and regulation is weak (Daniels, 2010; Mahadea & Zogli, 2018; Mugoda et al., 2020; Vidyarani & Maheshkumar, 2025). Growth in the informal sector should therefore be interpreted not as the norm but as an exception contingent on both individual agency and structural opportunity (Kraemer-Mbula & Wunsch-Vincent, 2015).

The indirect effects revealed in the SEM analysis confirm the conceptual framework: social innovations mediate the relationship between determinants and resilience outcomes. Education, for example, does not directly translate into growth, but its effect is realized through adaptive pricing and digital adoption (López-Sánchez & Santos-Vijande, 2022). Similarly, startup capital enables growth largely by allowing investment in digital practices. These findings position social innovations as the "missing middle" between resources and resilience. Without them, structural advantages may remain inert; with them, even limited resources can be leveraged into adaptive capacity (Murithi & Woldesenbet, 2022). The findings draw attention to the need for further research on the opportunities and constraints on digital adoption in the informal economy more generally (Dutta et al., 2023; Mannah-Blankson et al., 2025; Nguimkeu & Okou, 2021).

The findings of this study also have important implications for policy and practice in strengthening resilience and innovation among informal traders in Windhoek. First, the strong gender differences in educational attainment point to the need for greater investment in women's education and financial literacy. Previous research has shown that education enhances women's ability to adopt innovative practices, improve productivity, and navigate markets more effectively (Brush & Cooper, 2012; Chinomona & Maziriri, 2015). Expanding training programs in business skills, literacy, and digital competencies could therefore have a multiplier effect on women's entrepreneurial capacity and household resilience. Second, the evidence highlights the importance of facilitating access to microfinance and startup capital. Women are disproportionately constrained by low initial resources, while men rely more heavily on loan-related financing for expansion. Studies of micro-entrepreneurship consistently show that small infusions of capital improve women's business survival and growth (Amoah & Amoah, 2018; Banerjee et al., 2015). Tailored financial products that combine credit with capacity-building and flexible repayment schemes would be especially impactful.

Third, the role of capability evolution (CE) in enhancing resilience draws attention to the possibilities for greater digital inclusion. Mobile technologies and digital payment platforms enable informal traders to coordinate supply chains, access customers, and diversify revenue sources (Daramola & Etim, 2022; Kimuli et al., 2021; Momanyi et al., 2024; Donner & Escobari, 2010; Okeleke, 2020). Policies that reduce the cost of mobile data and expand mobile money infrastructure are therefore essential to embedding informal traders in broader value chains. This dynamic resonates with broader evidence on the need for interventions such as micro-insurance or credit guarantee schemes that could help cushion traders against loan default, sustaining this critical resilience mechanism (Kolawole et al., 2024; Lubabatu et al., 2024).

Finally, the study underscores the necessity of gender-responsive strategies, policy frameworks, and interventions. Women and men do not face identical barriers, nor do they mobilize resources in the same way (Wirba et al., 2021). Gender-blind interventions risk reinforcing existing inequalities, while gender-sensitive approaches are more likely to build equitable pathways to resilience (Campos et al., 2019; Chant & Sweetman, 2012). Supporting women's home-based enterprises, while also addressing men's expansion into public vending spaces, requires differentiated but complementary policy approaches.

The analysis in this paper underscores how traders navigate structural constraints and obstacles in a precarious urban informal economy. The findings demonstrate that social innovations are not peripheral, but central to the everyday resilience strategies of traders who must continuously adapt to volatility and resource scarcity. Methodologically, the study demonstrates the value of combining structural equation modelling with Firth bias-reduced logistic regression to capture both the multidimensionality of innovations and the rare but important outcome of growth. This analytical strategy offers a robust template for future research on resilience in resource-constrained contexts.

A major contribution of this study is its attention to gendered pathways. Women's innovations were strongly influenced by education and modest capital, while men's capacity to innovate and grow depended more on vendor type and access to loan-related financing. These results highlight the differentiated opportunities and constraints shaping resilience and call for gender-responsive interventions that strengthen human and financial capital while improving equitable access to finance and institutional support. However, while innovations sustain livelihoods and provide adaptive capacity, they may be insufficient by themselves to transform enterprises. Policy interventions would therefore need to go beyond promoting innovation in isolation, to addressing financial, institutional, and infrastructural systemic barriers that limit the potential of informal entrepreneurship.

Overall, this study highlights that informal traders are not passive actors but active innovators who continuously adapt to constraints. Recognizing and supporting their strategies is crucial for building inclusive urban resilience and achieving sustainable enterprise development. These results contribute to wider debates on urban resilience and the role of the informal economy in African cities. By demonstrating that resilience is mediated by social innovations and structured by gender, this study helps to bridge literatures on informal entrepreneurship, gender and development, and

urban food systems, and highlight the need for inclusive, gender-sensitive policies that strengthen the informal economy as a cornerstone of social protection and resilience.

References

Adom, K., & Ackom, B. (2024). Towards a greater understanding of the prevalence of immigrant entrepreneurship in the informal economy of Ghana: An institutional theory perspective. *Journal of African Business, 25*(2), 264-286.

Akintimehin, O.O., Eniola, A.A., Alabi, O.J. et al. (2019). Social capital and its effect on business performance in the Nigeria informal sector. *Heliyon, 5*(7).

Amoah, S.K., & Amoah, A.K. (2018). The role of microfinance in promoting small and medium enterprises in Ghana. *International Journal of Finance and Economics, 7*, 151-157.

Andreas, A.T., Asa, A.R., Nautwima, J.P., & Sunde, T. (2025). Entrepreneurial skills and MSE performance: examining the moderation effect of education on youth-owned businesses. *Cogent Business & Management, 12*(1).

Avenyo, E. K. (2018). Informal sector innovation in Ghana: Data set and descriptive analysis. *UNU-MERIT Working Paper 2018-030*. Maastricht.

Avenyo, E.K., & Kraemer-Mbula, E. (2021). Innovation and the performance of informal enterprises in developing countries: a gender perspective. *International Journal of Gender and Entrepreneurship, 13*(4), 277-301.

Avenyo, E.K., Francois, J.N., & Zinyemba, T.P. (2021). On gender and spatial gaps in Africa's informal sector: Evidence from urban Ghana. *Economics Letters, 199*, 109732.

Banerjee, A., Duflo, E., Glennerster, R., & Kinnan, C. (2015). The miracle of microfinance? Evidence from a randomized evaluation. *American Economic Journal: Applied Economics, 7*(1), 22-53.

Béné, C., Godfrey Wood, R., Newsham, A., & Davies, M. (2012). Resilience: New utopia or new tyranny? Reflection about the potentials and limits of the concept of resilience in relation to vulnerability reduction programmes. *IDS Working Paper, 405,* University of Sussex.

Bolosha, A., Sinyolo, S., & Ramoroka, K.H. (2022). Factors influencing innovation among small, micro and medium enterprises (SMMEs) in marginalized settings: Evidence from South Africa. *Innovation and Development, 13*(3), 583-601.

Brush, C. G., & Cooper, S. Y. (2012). Female entrepreneurship and economic development: An international perspective. *Entrepreneurship and Regional Development, 24*(1-2), 1-6.

Cajaiba-Santana, G. (2014). Social innovation: Moving the field forward. A conceptual framework. *Technological Forecasting and Social Change, 82*, 42-51.

Campos, F.M.L., Chavez, Z.L., Coleman, R.D. et al. (2019) *Profiting from Parity: Unlocking the Potential of Women's Businesses in Africa, Volume 1: Main Report*. Working Paper 135420, World Bank.

Canelas, C., & Niño-Zarazúa, M. (2022). Social protection and the informal economy: What do we know? *Social Development Working Paper Series,* ESCAP, Bangkok.

Chant, S., & Sweetman, C. (2012). Fixing women or fixing the world? 'Smart economics,' efficiency approaches, and gender equality in development. *Gender & Development, 20*(3), 517-529.

Caroli, M. G., Fracassi, E., Maiolini, R., & Carnini Pulino, S. (2018). Exploring social innovation components and attributes: a taxonomy proposal. *Journal of Social Entrepreneurship, 9*(2), 94-109.

Chen, M., & Carré, F. (Eds.) (2020). *The Informal Economy Revisited: Examining the Past, Envisioning the Future.* Routledge.

Chen, M., Ismail, E.G.G., Rogan, M. et al. (2021). COVID-19 and informal work: Distinct pathways of impact and recovery in 11 cities around the world. *Working Paper No. 42,* WIEGO.

Chicho, N., & Ongori, H. (2013). An assessment of challenges faced by microenterprises in Botswana: A case of street food vendors in Gaborone. *International Journal of Learning and Development, 3*(5), 56-67.

Chinomona, E., & Maziriri, E.T. (2015). Women in action: Challenges facing women entrepreneurs in the Gauteng province of South Africa. *International Business & Economics Research Journal, 14*(6), 835-850.

Contreras, I., Oseni, G., Palacios-Lopez, A. et al. (2024). Inequalities in job and income loss in countries with high prevalence of informal employment in Sub-Saharan Africa during the COVID-19 crisis. *Statistical Journal of the IAOS, 40*(4), 890-907.

Crush, J., Nickanor, N., & Kazembe, L. (2018). Informal food deserts and household food insecurity in Windhoek, Namibia. *Sustainability, 11*(1), 37.

Crush, J., Kazembe, L.N., & Nickanor, N. (2023). Opportunity and survival in the urban informal food sector of Namibia, *Businesses, 3*(1),129-149.

Daniels, S. (2010). *Making do: Innovation in Kenya's Informal Economy.* Analogue Digital.

Daramola, O., & Etim, E. (2022). Affordances of digital platforms in sub-Saharan Africa: An analytical review. *Electronic Journal of Information Systems in Developing Countries, 88*(4), e12213.

de Beer J, Fu K, Wunsch-Vincent S. (2016). *Innovation in the informal economy. In Informal Economy in Developing Nations: Hidden Engine of Innovation?* (pp. 53-99). Cambridge University Press.

Dees J.G, & Anderson, B.B. (2015). Enterprising social innovation: Focusing research on the most intriguing form of social entrepreneurship. *Occasional Paper Series Vol. 7 No. 2*, Association for Research on Nonprofit Organizations and Voluntary Action (ARNOVA), Indianapolis.

Donga, G., & Chimucheka, T. (2024). Challenges and opportunities of the COVID-19 pandemic on women entrepreneurs operating in the informal food sector: a post COVID-19 analyses. *International Journal of Research in Business and Social Science, 13*(2), 216-228.

Donner, J., & Escobari, M.X. (2010). A review of evidence on

mobile use by micro and small enterprises in developing countries. *Journal of International Development, 22*(5), 641-658.

Dutta, N., Kar, S., & Guha, S. (2023). Informal sector in India and adoption of digital technologies. *Indian Growth and Development Review, 16*(3), 230-246.

Eichler, G.M., & Schwarz, E.J. (2019). What Sustainable Development Goals do social innovations address? A systematic review and content analysis of social innovation literature. *Sustainability, 11*(2), 522.

Eijdenberg, E.L., Thompson, N.A., Verduijn, K., & Essers, C. (2019). Entrepreneurial activities in a developing country: an institutional theory perspective. *International Journal of Entrepreneurial Behavior & Research, 25*(3), 414-432.

Galego, D., Moulaert, F., Brans, M., & Santinha, G. (2021). Social innovation and governance: A scoping review. *Innovation: European Journal of Social Science Research, 35*(2), 265-290.

Grilo, R., & Moreira, A.C. (2022). The social as the heart of social innovation and social entrepreneurship: An emerging area or an old crossroads? *International Journal of Innovation Studies, 6*(2), 53-66.

Guven, M., Jain, H., & Joubert, C. (2021). *Social Protection for the Informal Economy: Operational Lessons for Developing Countries in Africa and Beyond*. World Bank.

Harshana, K., & Vera, T.-R. (2014). Women in informal sector in Mauritius: A survival mode. *Equality Diversity and Inclusion: An International Journal, 33*(8), 750-763

Ibidunni, A.S., Kolawole, A.I., Olokundun, M.A., & Ogbari, M. (2020). Knowledge transfer and innovation performance of small and medium enterprises (SMEs): An informal economy analysis. *Heliyon, 6*(6), e04740.

ILO (2023). *Women and Men in the Informal Economy: A Statistical Update*. International Labour Office.

Joshi, R., John, C., Sood, S., & Burdon, S. (2016). Nature and spirit of exchange and interpersonal relationships fostering grassroots innovations. *Journal of Developing Areas, 50*(5), 399-409.

Kalaoane, R.C., & Matamanda, A.R. (2024). Women in the urban informal economy and pathways towards inclusive cities. In *Pandemic Recovery? Reframing and Rescaling Societal Challenges* (pp 78-93). Edward Elgar.

Kazembe, L.N., Nickanor, N., & Crush, J. (2019). Informalized containment: food markets and the governance of the informal food sector in Windhoek, Namibia. *Environment & Urbanization, 31*(2), 461-480.

Kedir, A., Odhiambo, S., & Murinde, V. (2014). African economies: Recovery agenda from multiple shocks. *Journal of African Economies, 33*(2).

Keskinen, P., Winschiers?Theophilus, H., Chivuno?Kuria, S., Müller, A., & Nieminen, M. (2022). Digital microwork as a livelihood strategy in a Namibian informal settlement. *Electronic Journal of Information Systems in Developing Countries, 88*(1), e12197.

Kimuli, S.N.L., Sendawula, K., & Nagujja, S. (2021). Digital technologies in micro and small enterprise: Evidence from Uganda's informal sector during the COVID-19 pandemic. *World Journal of Science, Technology and Sustainable Development, 18*(2), 93-108.

Kinyanjui, M.N. (2014). *Women and the Informal Economy in Urban Africa: From the Margins to the Centre*. Zed Books.

Kolawole, T.O., Shobalaje, E.. & Owoeye, T.P. (2024). Contribution of digitized micro-credit to economic growth in Nigeria. *Fuoye Journal of Educational Management, 1*, 1-13.

Kraemer-Mbula, E., & Wamae, W. (2015). *Innovation and the Development Agenda*. OECD Publishing.

Kraemer-Mbula, E., & Wunsch-Vincent, S. (2015). *The Informal Economy in Developing Nations: Hidden Engine of Innovation?* Cambridge University Press.

Leonard, A., & Kiana, L. (2024). The influence of social media on knowledge-sharing practices among women entrepreneurs in Windhoek, Namibia. *Regional Journal of Information and Knowledge Management, 8*(2), 149-169.

Lubabatu, B.C., Abubakar, S.U., & Haruna, D.H. (2024). Effect of micro-credit on micro business development among women entrepreneurs. *African Journal of Management and Business Research, 16*, 100-113.

Kabbaj M., Hadi, K., Elamrani, J., & Lemtaoui, M. (2016). A study of the social entrepreneurship ecosystem: The case of Morocco. *Journal of Developmental Entrepreneurship, 21*(4),1650021.

López-Sánchez, J.A., & Santos-Vijande, M.L. (2022). Key capabilities for frugal innovation in developed economies: insights into the current transition towards sustainability. *Sustainability Science, 17*, 191-207.

Madichier, N.O., Gbadamosi, A., & Rwelamila, P.D. (Eds.) (2023). *Entrepreneurship and the Informal Sector: Challenges and Opportunities for African Business Development.* Routledge.

Mahadea, D., & Zogli, L.K J. (2018). Constraints to growth in informal sector activities and formalisation: A case study of Ghanaian slums. *Southern African Journal of Entrepreneurship and Small Business Management*, 10(1), 1-9.

Maldonado-Mariscal, K. (2023). Grassroots innovation and social innovation in perspective. *Frontiers in Sociology, 8,* 1247293.

Malta, V., Kolovich, L., Leyva, A.M. et al. (2019). Informality and Gender Gaps Going Hand in Hand. Working Paper WP/19/112, International Monetary Fund.

Mannah-Blankson, T., Asiseh, F., Boateng, S.S., & Butu, M.M. (2025). Adoption patterns and impact of digital technologies among Ghanaian market women. In *African Women Entrepreneurs in the Informal Economy* (pp. 283-317). Palgrave Macmillan.

Maslak, M.A. (2018). *Education and Female Entrepreneurship in Asia*. Palgrave Macmillan.

Miti, J.J., Perkiö, M., Metteri, A., & Atkins, S. (2021). The informal sector and social protection. In *Handbook on Social Protection Systems* (pp. 389-402). Edward Elgar.

Mokomane, Z. (2021). Balancing care and work roles

among women working in the informal sector in South Africa. *International Journal of Care and Caring, 5*(1), 129-147.

Momanyi, C., Rasugu Riechi, A., & Khatete, I. (2024). Digital skills and the use of digital platforms in the informal sector: A case study among jua kali artisans in Nairobi in Kenya. *International Journal for Research in Vocational Education and Training, 11*(1), 96-118.

Mramba, N., Apiola, M., Kolog, E.A., & Sutinen, E. (2016). Technology for street traders in Tanzania: A design science research approach. *African Journal of Science, Technology, Innovation and Development, 8*(1), 121-133.

Muchie, M., Bhaduri, S., Baskaran, A., & Sheikh, F. (Eds.) (2017). *Informal Sector Innovations: Insights from the Global South*. Routledge.

Mugoda, S., Esaku, S., Nakimu, R K., & Bbaale, E. (2020). The portrait of Uganda's informal sector: What main obstacles do the sector face? *Cogent Economics & Finance, 8*(1), 1843255.

Mulgan G. (2012). Social innovation theories: Can theory catch up with practice? In *Challenge Social Innovation* (pp. 19-42). Springer.

Mulgan G. (2019). *Social Innovation: How Societies Find the Power to Change.* Cambridge University Press.

Mulgan, G., Joseph, K., & Norman, W. (2013). Indicators for social innovation. In *Handbook of Innovation Indicators and Measurement* (pp. 420-440). Edward Elgar.

Mulibana, L., & Rena, R. (2021). Innovation activities of informal micro-enterprises in Gauteng, South Africa: A systematic review of the literature. *African Journal of Science, Technology, Innovation and Development, 13*(4), 425-435.

Murithi W.K., & Woldesenbet, K. (2022) The interaction between family businesses and institutional environment in Africa: An exploration of contextual issues. In *Palgrave Handbook of African Entrepreneurship*. Palgrave Macmillan.

Ndemo, B., & Weiss, T. (2017). *Digital Kenya: An Entrepreneurial Revolution in the Making*. Springer Nature.

Nguimkeu, P., & Okou, C. (2021). Leveraging digital technologies to boost productivity in the informal sector in Sub-Saharan Africa. *Review of Policy Research, 38*(6), 707-731.

Nicholls, A., & Murdock, A. (2012). *Social Innovation: Blurring Boundaries to Reconfigure Markets*. Palgrave Macmillan.

Nickanor, N., Crush, J. & Kazembe, L. (2019). The informal food sector and cohabitation with supermarkets in Windhoek, Namibia. *Urban Forum, 30*, 425-442.

Nickanor, N., Kazembe, L., Crush, J., & Wagner, J. (2020a). Revisiting Africa's supermarket revolution: The case of Windhoek, Namibia. *Development Southern Africa, 38*(2), 230-247.

Nickanor, N, Kazembe, L, Crush, J, & Shinyemba, T. (2020b). Inclusive growth and the informal food sector in Windhoek, Namibia. *HCP Report No. 23,* Hungry Cities Partnership, Cape Town.

Nickanor, N. M., Tawodzera, G., & Kazembe, L. N. (2023). The threat of COVID-19 on food security: a modelling perspective of scenarios in the informal settlements in Windhoek. *Land, 12*(3), 718.

NSA (2018). *Namibia Labour Force Survey 2018*. Namibia Statistics Agency.

Ogando, A.C., Roever, S., & Rogan, M. (2017). Gender and informal livelihoods: Coping strategies and perceptions of waste pickers in Sub-Saharan Africa and Latin America. *International Journal of Sociology and Social Policy, 37*(7/8), 435-451.

Ogando, A C., Rogan, M., & Moussié, R. (2022). Impacts of the COVID-19 pandemic and unpaid care work on informal workers' livelihoods. *International Labour Review, 161*(2), 171-194.

Okeleke, K. *The Mobile Economy: Sub-Saharan Africa 2020.* GSMA Intelligence.

Peprah, V., Buor, D., & Forkuor, D. (2019). Characteristics of informal sector activities and challenges faced by women in Kumasi Metropolis, Ghana. *Cogent Social Sciences, 5*(1), 1620154.

Peprah, C., Peprah, V., & Ocloo, K. A. (2023). Improving the socio-economic welfare of women through informal sector activities in Ghana. *Environment, Development and Sustainability, 25*(4), 3005-3028.

Qiang C.Z., Ghossein T (2020). *Out of the Shadows: Unlocking the Economic Potential of Informal Businesses.* World Bank.

Rama, A., Celestin, B. N., Chen, S., & Martin, K. (2022). Assessment of eco-innovation drivers within the informal sector in Ghana. *Sustainability, 14*(11), 6903.

Ram, M., Edwards, P., Jones, T., & Villaries-Varela, M. (2017). From the informal economy to the meaning of informality: Developing theory on firms and their workers. *International Journal of Sociology and Social Policy, 37*(7/8), 361-373.

Santos, E., Fernandes, C.I., & Ferreira, J.J. (2021). The driving motives behind informal entrepreneurship: The effects of economic-financial crisis, recession and inequality. *International Journal of Entrepreneurship and Innovation, 22*(1), 5-17.

Schneckenberg, S., Velamuri, V.K., Comberg, C., & Spieth, P. (2017). Business model innovation and decision making: Uncovering mechanisms for coping with uncertainty. *R&D Management, 47*(3),404-419.

Sheehama, W.L., & Singh, T. (2025). Food Safety in informal markets: How knowledge and attitudes influence vendor practices in Namibia. *International journal of environmental research and public health, 22*(4), 631.

Sheikh, F.A., & Bhaduri, S. (2020). Grassroots innovations in the informal economy: Insights from value theory. *Oxford Development Studies, 48*(1), 85-99.

Sheikh, F.A., & Kumar, H. (2021). Grassroots innovation: Mainstreaming the discourse of informal sector. In *Handbook on Alternative Theories of Innovation* (pp. 212-232). Edward Elgar.

Sheik, A., van Rooyen, D., & Mazzei, M. (2023). Social innovation in South Africa: Building inclusive economies? *Social Enterprise Journal, 19*(1), 1-22.

Skinner, C. Contributing Yet Excluded? Informal Food Retail in African Cities. In *Urban Food Systems Governance and Poverty in African Cities* (pp. 104-115). Routledge.

Smith, A., & Stirling, A. (2017). Innovation, sustainability and democracy: An analysis of grassroots contributions. *Journal of Self-Governance and Management Economics, 6*(1), 64-97.

Thorn, J.P., Maruza, T.C., & Stoffberg, M. (2025). Climate justice and informal trader's access to urban green spaces. *Cities, 159*, 105725.

van der Have, R.P., & Rubalcaba, L. (2016). Social innovation research: An emerging area of innovation studies? *Research Policy, 45*(9), 1923-1935.

Vidyarani, K., & Maheshkumar, T. (2025). Business obstacles to the growth of small and medium-sized enterprises in India: Evidence from enterprise surveys. *Journal of the International Council for Small Business* (online).

Vieginie, C., & Robilliard, A.-S. (2017). Gender analysis of labour market outcome In Sub-Saharan Africa: Recent Evidence from Cameroon and Mali. *UN WOMEN Discussion Paper*, New York.

Webb, J.W., Bruton, G.D., Tihanyi, L., & Ireland, R.D. (2013). Research on entrepreneurship in the informal economy: Framing a research agenda. *Journal of Business Venturing, 28*(5), 598-614.

Westley, F. (2012). Social innovation and resilience: How one enhances the other. *Ecology and Society, 17*(2), 11.

Williams, C.C. (2017). ***Entrepreneurship in the Informal Sector: An Institutional Perspective***. Routledge.

Williams, C.C. (2023). *A Modern Guide to the Informal Economy*. Edward Elgar.

Williams, C.C., & Kedir, A.M. (2018). Explaining cross-country variations in the prevalence of informal sector competitors. *International Entrepreneurship and Management Journal, 14*(1), 1-20.

Wirba, E.L., Akem, F.A., & Baye, F.M. (2021). Earnings gap between men and women in the informal labour market in Cameroon. *Review of Development Economics, 25,* 1466-1491.

Ziwoni, C., Marisa, C., & Marisa, J. (2025) The transformative power and challenges of informal traders in shaping urban development in incubation centre, Windhoek, Namibia. *International Journal of Innovative Science and Research Technology, 10*(6), 209-212.