Beliefs over Contracts*

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Abstract

We study how firms choose among incentive contracts and how accurately managers predict their effects. Using a survey of managerial beliefs and a large-scale field experiment, we randomly assign agents at the market level to several widely used, expenditure-equivalent incentive schemes. In the field, the best-performing contract increases agent output and firm revenue by over 20% relative to the status quo, despite being ranked lower by managers, whereas the worst-performing contract performs as predicted. Managers correctly identify underperforming contracts but systematically underestimate top-performing ones. We document the sources of performance differences—labor supply responses rather than selection or pricing and the determinants of managerial predictability: contract complexity and managerial hierarchy. Our results highlight the importance of contract design for firm performance and reveal systematic limits to managerial cognition in shaping incentives.

JEL: D86, D91, G23, L21, O12, O16

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I Introduction

Firms throughout the economy rely on contracts to align the incentives of agents with organizational objectives. From sales forces and franchisees to platform workers and frontline service providers, contracts determine how effort translates into pay and how revenues are shared between principals and agents. A central premise in the theory and empirical analysis of optimal contracting is that principals understand how agents respond to alternative incentive schemes and can therefore select contracts that maximize expected profits subject to incentive compatibility and participation constraints (Holmström 1979; Grossman and Hart 1983). In practice, however, contract choice is delegated to managers who face uncertainty, limited information, and cognitive constraints. Whether managers correctly identify which contracts work best—and why—remains largely untested.

This paper studies managerial beliefs over incentive contracts and evaluates their accuracy and consequences using a nationwide, at-scale field experiment. We combine direct elicitation of managerial beliefs with randomized assignment of alternative, expenditure-equivalent incentive schemes in a real-world workplace setting. Our central research question is simple yet fundamental: when managers choose among commonly used contracts, do they correctly predict which ones will generate the highest performance, and what are the consequences for firm outcomes? We explore four specific questions. First, which contracts do managers and firms believe will perform best and why? Second, which contracts perform best in practice? Third, how accurate are managerial beliefs? Fourth, what drive both performance differences across contracts and managerial predictability?

We address these questions in partnership with MTN MobileMoney in Ghana, the market leader in the mobile money industry. MTN is a large multinational with multi-layered management hierarchy and operates a nationwide network of agents who provide cash-in and cash-out services and serve as the primary interface between consumers and digital financial infrastructure (Annan 2025a). Agents are compensated under centrally determined

contracts and exert discretion over labor supply—hours, days, and intensity of work. This environment allows us to study contract choice in a setting where incentives are first-order determinants of output and where firms routinely experiment informally with alternative compensation schemes.

We design and implement a market-level randomized controlled trial that assigns agents to one of five widely used incentive contracts: (i) a simple linear commission (the industry status quo), (ii) a threshold bonus, (iii) a franchising-style contract with an upfront fee and higher marginal pay, (iv) a tournament that rewards top performers within a locality, and (v) a flat weekly bonus independent of output. Importantly, all contracts are designed to be expenditure-equivalent ex ante, so that differences in performance reflect incentive effects rather than mechanical differences in expected pay. To establish expenditure equivalence, we develop a simple framework in which the firm maximizes expected profit while agents choose effort to maximize utility subject to participation. The simple linear contract serves as a natural benchmark; we derive the resulting equilibrium effort and total bonus expenditure under this scheme. For the alternative contracts, we set payments so that total expected wage expenditure matches that of the benchmark, ensuring that expected firm payouts are equal across all schemes.

Before the experiment, we elicit detailed beliefs and preferences from managers at multiple levels of the firm hierarchy. Presuming expenditure equivalence, managers rank each contract in terms of expected profitability for the firm and expected agent dropout, report confidence in their rankings, and provide qualitative explanations for their choices. To preserve the incentive compatibility of managerial beliefs, we link experimental assignment to the belief elicitation: contracts ranked more highly by managers are, as pre-committed, assigned to a larger share of markets. These belief data allow us to directly compare ex ante managerial predictions with ex post realized outcomes from the field experiment. The experiment tests the impact of different contract structures on agent output and, critically, on managers' ability to predict these impacts, thereby isolating the role of managerial misperceptions in

driving firm performance. We combine five complementary data sources: (i) a baseline survey of 6,025 agents across 704 communities (markets) in all 16 regions nationwide; (ii) a census survey of 456 managers across all regions, eliciting beliefs and contract rankings; (iii) detailed administrative transaction data from MTN on agent outcomes and inputs, covering about 2,300 onboarded agents across 473 communities; (iv) an audit study measuring consumer protection and compliance; and (v) supplemental endline surveys.

We have four sets of results. Our first main finding is that contract design has large effects on firm performance. The tournament contract increases total revenue by more than 20 percent relative to the simple linear status quo. These gains are economically meaningful and persistent over the three-month intervention period. In contrast, threshold and flat bonus contracts substantially reduce revenue. Despite their prevalence in practice, not all commonly used incentive schemes perform equally well.

Our second main finding is that managerial beliefs are systematically biased. Managers are generally successful at identifying underperforming contracts: the flat bonus is widely predicted to perform poorly and does so in practice. However, managers substantially underestimate the performance of the best contract. The tournament scheme, which generates the largest revenue gains, is ranked below the threshold contract by a majority of managers. As a result, the correlation between predicted and realized contract performance is modest. Managers appear to rely on *simplifying* heuristics that help them avoid clearly bad contracts but lead them to overlook highly effective ones. The prediction-performance gaps reveal cognitive biases in how managers design contracts and emphasize the cost of heuristics for firm performance.

Our third main finding concerns mechanisms. We examine five potential channels that could explain performance differences across contracts: (i) selection out of contracts through differential dropout, (ii) selection into contracts based on agent preferences, (iii) sorting on risk, competitiveness, or other preference parameters, (iv) changes in prices, relationships, or misconduct, and (v) changes in labor supply. The data consistently point to labor sup-

ply as the primary mechanism. Tournament and threshold contracts induce agents to work more days, longer hours, and open earlier or close later. We find no evidence of increased prices charged to consumers or higher misconduct under high-powered incentives. Moreover, labor supply responses persist even after incentives are removed but only for the tournament contract, consistent with habit formation rather than intertemporal substitution. Incidentally, this persistent increases in labor suppy for the tournament contract is consistent with competition being a major driver of habit formation in labor supply.

Our fourth main finding turns to understanding why some managers are more predictive than others. We document two robust patterns. First, prediction errors are larger for more complex contracts, such as tournaments and thresholds, suggesting that cognitive load plays an important role in contract choice. Second, managers closer to frontline operations—those with more frequent interaction with agents—are significantly more accurate in predicting performance. Senior managers, while knowledgeable about the formal incentive compatibility of contracts, systematically misjudge participation constraints and behavioral responses. We refer to this pattern as an "ivory tower" tradeoff in managerial decision-making.

We make three main contributions to the existing literature. First, and most obviously, there is an extremely large (beginning with Holmstrom 1979) theoretical and empirical literature on the effectiveness of different bonus schemes. On the empirical side, which is most closely related to our work, research has primarily focused on workers' responses to particular incentive schemes, ranging from understanding the basic impact of incentives (e.g., Ehrenberg and Bognanno 1990; Shearer 2004), to the relative optimality of different forms of incentives (e.g., Tournaments vs piece rate, relative vs absolute; as in Bull et al. 1987). More recently, there has been extensive discussion of how behavioural concerns can impact responses to contracts - e.g., the relative impact incentives being framed as gains or losses (Pierce et al. 2023) or the impact of social concerns such as peer effects (Bandiera et al. 2005) or gift-exchange (Falk 2007). However, there has been little systematic exploration of why different firms and managers choose different incentives, and whether they understand

the relative optimality of different potential schemes. Thus, we build on this literature by looking at not only what incentivizes workers best, but what factors influence which bonus scheme a firm chooses, which is novel and interesting.

Second, there is a smaller, and more recent literature exploring the effectiveness of other forms of managerial preferences (Bloom and Van Reenen 2010), which looks not just at what sort of practices tend to improve firm performance, but also why firms tend to not adopt best practices. However, they tend not to focus on the incentive schemes specifically. Related, a small literature has not only examined how contracts can change performance, but also looked at the relative impact of improvement of performance of existing workers, versus the selection of workers into and out of contracts (Dohmen and Falk 2011; Andrabi and Brown 2023). We know of one other paper that elicits beliefs over relative performance under different incentive schemes by DellaVigna and Pope (2018). However, their focus is on (i) performance in the lab rather than in the field; (ii) looks at the predictions of academic experts rather than managers responsible for contract assignment; and (iii) focuses primarily on behavioral dimensions of contracting—such as gift exchange—rather than on comparative performance across canonical incentive schemes such as tournaments, piece rates, threshold contracts, and franchising. We not only examine managerial beliefs over incentive contracts in real-world workplace settings, but also document the factors that make some managers systematically more predictive than others.

Third, there is a growing literature examining how incentive schemes can be redesigned in vertical relationships. A central yet under-examined question concerns the ability of services platform providers—such as mobile money operators, Amazon, and other digital intermediaries—to structure incentives for their frontline service agents. The design of these incentives has first-order implications for market competition, financial inclusion, and consumer protection in markets for digital financial services, including mobile money. Our work provides new evidence to assess whether alternative contract structures can outperform the status quo. We show that the prevailing simple linear scheme—widely used across the mo-

bile money industry in sub-Saharan Africa and the Middle East, and common in many other industries—is not necessarily optimal. Its ubiquity reflects operational simplicity and ease of implementation rather than proven efficiency. In contrast, tournament-like incentive schemes generate substantially higher revenue performance, suggesting meaningful scope for further experimentation with contract design. In doing so, we contribute to a small but growing literature on restructuring incentives between platform providers and intermediary service agents. Related work has examined agent misconduct (Annan 2025a), the equilibrium effects of randomized entry of intermediary agents on financial and non-financial service provision (Annan 2025b), the countervailing effects of mobile money interoperability on provider pricing and financial inclusion (Brunnermeier et al. 2025), and, more recently, the role of market competition in disciplining the behavior of frontline delivery agents in public service provision (Haseeb et al. 2025).

More broadly, our results challenge a central but often implicit assumption in optimal contracting: that principals can correctly select among feasible contracts. In reality, even well-intentioned and experienced managers may systematically mispredict the effects of incentives. These limits to managerial cognition can lead firms to leave substantial profits on the table. Structured experimentation, feedback, and learning about incentives may be as important as the formal design of contracts themselves.

We proceed as follows: In Section II, we describe the institutional setting and data, with particular emphasis on our partnership with MTN. Section III describes the experimental design. Section IV develops a framework for contract design and implementation. Section V presents the main results and heterogeneity. In Sections VI and VII, we discuss the interpretations of the results and examine the determinants of managerial predictability. We conclude with Section VIII.

II Institutional Setting and Data

This section describes the institutional environment, the structure of the mobile money indus-

try in Ghana, MTN MobileMoney's organizational structure and contracting environment, and the data used in the analysis. The setting is particularly well suited to studying incentive contracts because (i) agent effort is a first-order determinant of output, (ii) compensation contracts are centrally designed and taken as given by agents, and (iii) rich administrative records allow high-frequency measurement of performance.

A. Partner and Industry Context: MTN MobileMoney in Ghana

We partner with MTN MobileMoney Limited, the largest mobile money service provider in Ghana. The firm provides mobile money financial services nationwide, spanning both rural and urban areas, and accounts for approximately 95 percent of transaction volume in the market. While other providers—including AirtelTigo Money, Vodafone Cash (VodaCash), and G-Money—operate in Ghana, MTN MobileMoney is the dominant platform and the primary interface through which households and businesses access digital financial services, a position reflected in the firm's slogan, "MTN Everywhere You Go."

MTN MobileMoney is part of MTN Group, a large multinational telecommunications company with operations in more than 20 countries across Africa and the Middle East. Its mobile money business operates within a multi-layered management hierarchy that mirrors the organizational structure of large multinational firms. Managers at different levels are responsible for distinct tasks, including commercialization, sales, supervision, and incentive design. Strategic decisions regarding pricing, product design, and compensation are made by senior executives and departmental heads, while implementation and day-to-day supervision are carried out through strategic business units, regional offices, and district-level field teams. Figure A.1 presents a stylized organogram of the MTN MobileMoney hierarchy, highlighting the multiple layers separating senior management from lower-level managers.

MTN MobileMoney operates a nationwide network of retail agents who provide cash-in (deposits) and cash-out (withdrawals) services. Retail agents act as representatives of the service platform provider and directly handle cash-in/cash-out mobile money transactions

with customers. The agents serve as the primary interface between consumers and the digital financial system and play a critical role in financial inclusion, particularly for unbanked and underbanked populations. Their operations closely resemble those of tellers in retail banking branches more commonly seen in developed countries (Annan 2025a). Agents operate fixed outlets, manage liquidity, and supply labor effort, while prices and services are set centrally by the firm. Agents earn commissions according to a formula that specifies the relationship between output and rewards.[1]

The service provider unilaterally determines the compensation contract. Agents take the contract as given and choose effort optimally in response, adjusting hours worked, days open, and intensity of service. To illustrate the status quo contract, consider a cash-out transaction of 1,000 Ghanaian cedis (GHS). The customer pays a 1 percent transaction fee of 10 GHS, of which 40 percent—4 GHS—is paid to the agent handling the transaction. This simple linear commission scheme is common across mobile money providers in Ghana and widely used in other industries with sales or service agents, making it a natural benchmark for our analysis.

Interviews with managers indicate that there is no clear or formal guideline for designing contracts to induce optimal effort from agents. Instead, contract choices are shaped by experience, heuristics, and informal feedback. This absence of a systematic framework for incentive design motivates the need for a rigorous comparison of alternative compensation schemes.

Geographically, Ghana is divided into 16 regions and 261 districts, the largest and second-largest subnational administrative units, respectively. To manage operations at this scale, MTN MobileMoney employs a five-layer management system. At the top are national-level managers, including the Chief Executive Officer (CEO) and a small number of general man-

[1]Agents are non-exclusive: they may provide services for multiple providers simultaneously and also sell non-financial goods and services, including groceries, building materials, clothing, and pharmaceuticals (Figure B.2). These complementary activities account for less than 7% of agents' total revenues and represent a minor line of business. We return to this dimension in our heterogeneity analysis.

agers (GMs). The second layer consists of Area Sales Managers (ASMs), each corresponding to an administrative region. The third layer comprises 65 Territory Sales Controllers (TSCs), each overseeing a territory within regions, sized on average to four districts. The fourth layer includes 261 Area Account Developers (AADs), each corresponding to an administrative district. TSCs manage AADs and ensure the appropriate deployment of incentives in the field. TSC managers also influence higher-level decisions, bridging the information gap between lower-level and senior managers. The lowest layer consists of acquisition ambassadors, with an average of 15 per district, who work closely with agents on onboarding and day-to-day support.

To support implementation and deepen collaboration, the authors worked with MTN to hire a full-time research staff member embedded within the firm. This staff member was solely responsible for coordinating the authors' research projects, liaising with managers and field teams, and facilitating data access and compliance. In addition, MTN formed a five-member internal support team drawn from business analytics and compliance, finance, customer service, and commercial units to assist with day-to-day implementation. This arrangement reduced implementation frictions, improved adherence to research protocols, and strengthened the internal validity of the study.

B. Data and Measurements

We combine five complementary data sources to measure outcomes, behaviors, and managerial beliefs.

Baseline Agent Survey. Prior to the experiment, we conducted a nationwide baseline survey of 6,025 mobile money agents operating in 704 localities across 90 districts and all 16 regions of Ghana. Figure A.2 shows the spread of agents. Agents were sampled to ensure comprehensive geographic coverage, reflect the underlying distribution of MTN agents, and maintain feasibility of fieldwork. The survey collected detailed information on agent demographics, outlet characteristics, operating days and hours, liquidity, and stated preferences

(see Appendix B.4 for details).

Manager Survey and Beliefs Elicitation. We surveyed 456 managers from MTN and MobileMoney Limited, spanning the full organizational hierarchy. Respondents include canvassers and acquisition officers, district and regional supervisors, and senior executives, including members of the C-suite such as the national CEO. Managers were surveyed across all 16 regions and 91 districts using an analogous instrument. Figure A.3 shows the spread of managers.

Beliefs Elicitation—As the core component part of the baseline survey, managers were asked to rank five expenditure-equivalent incentive contracts based on their expected profitability for MTN and expected agent dropout. They reported confidence in their rankings, provided qualitative explanations for their choices, and described what they considered the profit-maximizing scheme for MTN, including both the five presented contracts and any alternatives they could think of (Appendix B.3 provides details). Managers were explicitly instructed that all contracts implied the same total expected expenditure across agents, so any differences in expected profit would arise solely from differences in agent effort. The schemes were presented with examples, and managers were asked to explain them in turn to confirm understanding. Managers then answered two questions: (i) *which scheme would make them personally better off*, and (ii) *how to rank all schemes by expected profit to MTN and by expected agent dropout*. Experimental assignment is tied to managerial rankings: contracts ranked more highly are assigned to a larger share of markets. Additionally, managers with the most accurate ex-post rankings received financial rewards. This design elicits truthful reporting and ensures that managerial beliefs directly shape contract deployment, so gaps between predicted and realized outcomes reflect misperceptions rather than limited authority or implementation frictions.

Administrative Data. Our primary evaluation data come from MTN's administrative

records. During the randomized controlled trial, MTN provided weekly data on agent performance, compensation, participation, and market-level outcomes. The experimental sample comprises approximately 2,300 onboarded agents operating in 473 communities across 64 districts and nine regions in the southern and middle belts of Ghana. Outcomes—including agent inputs such as liquidity, noncompliance measured by invalid transactions, number of working days per week, and daily opening hours inferred from transaction records—are observed at high frequency. We also obtained detailed historical administrative data from MTN on agent transactions prior to the experiment; these data informed the design of the incentive contracts and support supplementary analyses.

Audit Study. To assess potential unintended consequences of incentive schemes, we conducted an audit study on a subsample of agents, including all agents enrolled in the field experiment. The audit consisted of unannounced visits and mystery shopper exercises designed to measure prices charged to consumers and compliance with platform rules and consumer protection standards. Trained secret shoppers (n=20) were provided with physical cash and e-money to conduct real transactions at agent locations (Appendix B.5 provides details). We fixed the transaction value at 240 GHS—the modal transaction size inferred from pre-experiment administrative data—and included all mobile money–relevant transaction types: cash-in, cash-out, over-the-counter transfers, SIM purchase, account opening, and airtime purchase. We define misconduct as transactions in which agents overcharged relative to provider-approved tariff rates. We also measure additional service quality outcomes, including agent absence, failed transactions, and price transparency.

Endline Surveys. Following the intervention, we administered endline surveys to both agents and managers to measure updated beliefs, learning about the incentive schemes, satisfaction, business outcomes, and effort responses. We combine these survey data with the administrative, experimental, and audit data to examine the mechanisms underlying our

results.

Table 1 shows the timetable of all research activities.

C. Baseline Summary Statisitics

Tables A.4, A.5, A.6, and A.7 report summary statistics for agents and managers in the baseline sample.

Agents: Of the 6,025 agents surveyed nationwide, about 40% are female, and a similar share report being married. Agents are on average 30 years old, with 59% having completed senior high school as their highest level of education and an average of 5 years of experience in frontline sales and retail. They report average monthly commissions of USD 74 (USD 1 = 15.5 GHS). A majortity of agents—approximately 70%—believe that the current compensation scheme is inadequate, and only 31% report frequent interactions with their managers. In terms of business operations, 69% own and operate their outlets, and over 52% also sell non-mobile money, non-financial goods and services, including complementary activites such as groceries, building materials, clothing, and pharmaceuticals. Average monthly revenue from mobile money services is USD 10,985, with average profits of USD 50, implying a profit rate (profits/revenue; Basu 2019) of approximately 0.5%. Revenues from non-financial goods and services amount to only 4.2% of mobile money revenues, but yield a substantially higher profit rate of 10.5%.

Managers: A total of 456 managers were surveyed nationwide. These managers are MTN staff overseeing mobile money activities at different levels of management and supervision. 17% are female, and 40% are married. Managers have an average age of 32 years. 35% have at least a bachelor's degree as their highest level of education, and they have over 6 years of experience in sales and retail on average. Less than 50% of managers believe that the current scheme is adequate to motivate agents. This variation in dissatisfaction with the existing compensation scheme—reported by agents and a substantial share of managers—further motivates our analysis of alternative incentive designs and their effects on agent effort and firm

performance.

III Experiment: Design

The Five Contracts

We study five widely used incentive contracts, all designed and implemented to be ex-ante expenditure-equivalent.

1. **Simple linear (status quo):** Agents earn a commission w proportional to output ($w\times$output). This contract represents the industry standard and serves as a benchmark for comparison. It provides constant marginal incentives and is straightforward to understand and implement.

2. **Threshold:** Agents earn a lump-sum bonus B if weekly output exceeds a predetermined target t. This contract creates strong nonlinear incentives, encouraging agents to reach the threshold but providing no additional reward beyond it. It explores whether agents respond to "all-or-nothing" targets.

3. **Franchising:** Agents pay an upfront fee k in exchange for a higher per-unit commission ($w+z$). This structure shifts some risk to the agent while increasing potential marginal returns. It mirrors a franchising arrangement where agents invest in their ability to earn higher returns per unit.

4. **Tournament:** Top performers within a locality receive extra bonus, while lower-ranked agents receive little or nothing. This rank-based contract introduces relative performance incentives, encouraging competition among agents within the same market.

5. **Flat bonus:** Agents receive a fixed weekly payment b, independent of output.

We focused on these contracts for three reasons. First, they are commonly used in practice

and feasible for MTN to implement, as confirmed by a technical pilot. Second, the set includes the status quo contract. Third, the flat bonus provides a benchmark to test whether managers attend to and understand the contract options presented, and to evaluate the consequences of switching to non-performance-based compensation.

Randomization

We implement a market-level design, randomly assigning communities in 9 regions to one of five incentive contracts. Randomization is stratified by baseline revenue, number of agents, and MTN's commercial zones, with any misfits resolved through random assignment.

The randomization is directly linked to managerial beliefs elicited prior to the experiment, as pre-committed, to preserve incentive compatibility. This ensures that contracts ranked more highly by managers—based on expected profitability for MTN and expected agent dropout—are assigned to a larger share of communities. To achieve this, we use a non-uniform randomization scheme. Communities were assigned to contracts in proportions reflecting the managerial rankings. For example, if managers ranked the threshold scheme as top choice 30% of the time, then roughly 30% of communities would receive it; if managers ranked the flat bonus top 10% of the time, roughly 10% of communities would receive it. However, for statistical power, in practice we only preserve the managerial rankings order and then unequally assign communities according to 25.0% (for the best or top-ranked contract: threshold), 22.5% (simple linear), 20.0% (franchising), 17.5% (tournament), and 15.0% (for the worst or bottom-ranked contract: flat bonus).

Validity of Design: Pre-Experiment Randomization Balance Tests

To ensure that the randomization of contract schemes produced comparable groups, we conducted baseline balance tests on key agent and business characteristics. The validity checks were carried out across four core domains: (i) demographic outcomes, (ii) job characteristics and incentives, (iii) firm-level performance outcomes, and (iv) administrative data outcomes.

Each test regressed a pre-experiment outcome on treatment indicators, controlling for stratification dummies and clustering standard errors at the community level. The simple linear (status quo) contract serves as the reference group. Results, reported in Appendix Tables A.1, A.2, and A.3, provide strong evidence of balance across treatment arms, with no statistically significant differences observed.

Implementation of the Field Experiment

The main intervention ran for three months, from May to July 2025, with weekly payouts. Each agent received one of the five incentive contracts for the full trial period, according to their community assignment. Weekly compensation was calculated based on the specific contract rules and disbursed directly to the agent.

As part of the research design, agents could exit the experiment at any time if dissatisfied, allowing us to observe both effort and dropout behavior. Upon dropout, agents reverted to the firm's standard linear scheme, which differs slightly from our experimental linear contract: our linear scheme pays weekly for all cash-in and cash-out transactions, which we do to be in harmony with the setup of the other alternative contracts, whereas the standard scheme pays monthly for cash-ins and daily for cash-outs. A key feature of our setup is that we continuously observe output and effort for all agents who drop out, enabling us to evaluate the implications of selection out of contracts. As designed, the contracts were implemented to achieve ex-ante expenditure equivalence in practice. Implementation fidelity was carefully monitored: agent outputs were recorded in real time, payments were verified against contract rules, and contracts were deployed consistently to prevent spillovers across treatment arms.

IV Designing Contracts

We develop a simple unified framework to compare incentive effects across alternative com-

pensation contracts by imposing expenditure equivalence. The firm maximizes expected profit. Agents choose effort to maximize utility subject to participation constraints. The linear commission contract—the industry status quo in our setting—serves as the benchmark. We first derive effort and total expected wage expenditure under the linear contract. For each alternative contract, payments are then designed so that total expected wage expenditure matches that of the benchmark. Expected firm payouts are therefore identical across all schemes. Holding expected expenditures equivalent isolates the role of contract form: differences in outcomes reflect differences in marginal incentives and participation responses, not differences in pay levels. This framework guides the experimental design and the elicitation of managerial beliefs.

Environment, Preferences, and Effort Choice

Consider an agent who chooses effort $e \geq 0$ under contract c. Effort maps linearly into output, which we normalize so that output equals effort. Compensation under contract c is denoted by $w_c(e)$ and may be deterministic or stochastic depending on the contract structure.

Agents are risk neutral over income and incur convex costs of effort. Utility under contract c is given by

$$U_c(e) = \mathbb{E}[w_c(e)] - \frac{\theta e^{\gamma+1}}{\gamma+1},$$

where $\theta > 0$ indexes the marginal disutility of effort and $\gamma > 0$ governs the curvature of effort costs. This formulation allows for nonlinear labor supply responses to incentives.

An interior optimum satisfies the first-order condition

$$\frac{d}{de}\mathbb{E}[w_c(e)] = \theta e^{\gamma},$$

which equates the marginal expected return to effort under the contract to the marginal cost of effort. All differences across contracts operate through the marginal incentive term on the left-hand side.

Linear Commission Contract (Status Quo)

Under the linear commission contract, the agent is paid a constant rate w per unit of output,

$$w_c(e) = we.$$

The first-order condition simplifies to

$$w = \theta e^{\gamma},$$

which yields optimal effort

$$e^*(w, \theta, \gamma) = \left(\frac{w}{\theta}\right)^{1/\gamma}.$$

Expected agent earnings are we^*. Let p denote firm revenue per unit of output. Firm profit per agent is then $(p - w)e^*$. The linear contract serves as a natural benchmark: it is simple and transparent, but provides limited scope for concentrating incentives at specific performance margins.

Threshold Bonus Contract

Under a threshold contract, the agent receives a fixed bonus B if effort exceeds a threshold t and zero otherwise. Expected compensation is therefore $\Pr(e \geq t) \cdot B$. In the deterministic effort benchmark, the agent either exerts effort just sufficient to reach the threshold or chooses zero effort.

To facilitate comparison with the linear contract, we parameterize the threshold scheme to be expenditure-equivalent. Specifically, (B, t) are chosen such that expected earnings under the threshold contract equal those under the linear contract,

$$\Pr(e \geq t) \cdot B = we^*.$$

With deterministic effort, setting $t = e^*$ and choosing B accordingly achieves equivalence.

Although expected payouts are equalized, the threshold contract concentrates incentives at a single margin. This structure can discourage participation among low-productivity or high-cost agents while strongly motivating those near the threshold.

Franchising-Style Contract

The franchising contract raises the marginal commission rate to $w+z$ but charges an upfront fixed fee k. Under this scheme, the agent behaves as if facing a linear contract with wage $w + z$, implying optimal effort

$$e^*(w + z) = \left(\frac{w + z}{\theta}\right)^{1/\gamma}.$$

The fixed fee k is chosen to maintain expenditure equivalence with the baseline linear contract,

$$k = (w + z)e^*(w + z) - we^*(w).$$

This contract amplifies marginal incentives while holding expected firm payments fixed, but may deter participation if agents face liquidity constraints or borrowing limits.

Tournament Contract

We next consider a symmetric two-agent tournament. Two agents compete for a winner prize W, while the loser receives zero. Let $F(e)$ denote the cumulative distribution function of equilibrium effort. In a mixed-strategy equilibrium, agents must be indifferent across effort levels in the support, implying

$$F(e)W - \frac{\theta e^{\gamma+1}}{\gamma + 1} = C, \quad e \in [0, \bar{e}],$$

where C is a constant.

Rearranging yields

$$F(e) = \frac{\theta e^{\gamma+1}/(\gamma+1) + C}{W}.$$

The constants are chosen such that $F(0) = 0$ and $F(\bar{e}) = 1$.

To maintain expenditure equivalence with the linear contract in a two-agent environment, the prize is set to $W = 2we^*$. Tournaments generate highly convex incentives, inducing high effort among competitive agents but also substantial dispersion in outcomes.

Flat Bonus Contract

Under the flat bonus contract, the agent receives a fixed payment b independent of effort. Expected compensation is therefore constant, and marginal incentives are zero. Effort collapses to the minimum level consistent with participation.

To maintain expenditure equivalence and ensure that the participation constraint binds, the bonus is set to

$$b = we^*.$$

This contract fully insures agents against risk but provides no performance incentives, making it a useful lower bound for effort and output.

Discussion

Across all contracts, expected firm expenditures are held identical by construction. Despite this equivalence, the contracts differ sharply in their marginal incentives, risk exposure, and participation implications. For example, some contracts offer strong performance-contingent rewards, encouraging high effort but potentially increasing the variance in agent outcomes, while others provide more stable but less performance-sensitive pay. These differences create distinct risk exposures for both agents and the firm, which may influence participation decisions, effort allocation, and responsiveness to incentives. Moreover, some designs may be more attractive to risk-averse or low-cost agents, while others may disproportionately

appeal to highly motivated or high-ability agents. This heterogeneity in participation can, in turn, amplify or dampen the expected impact of the contracts on firm performance. These theoretical distinctions motivate the experimental comparison of contract performance and the analysis of managerial beliefs that follow.

V Experiment: Results

I—Beliefs Over Contracts

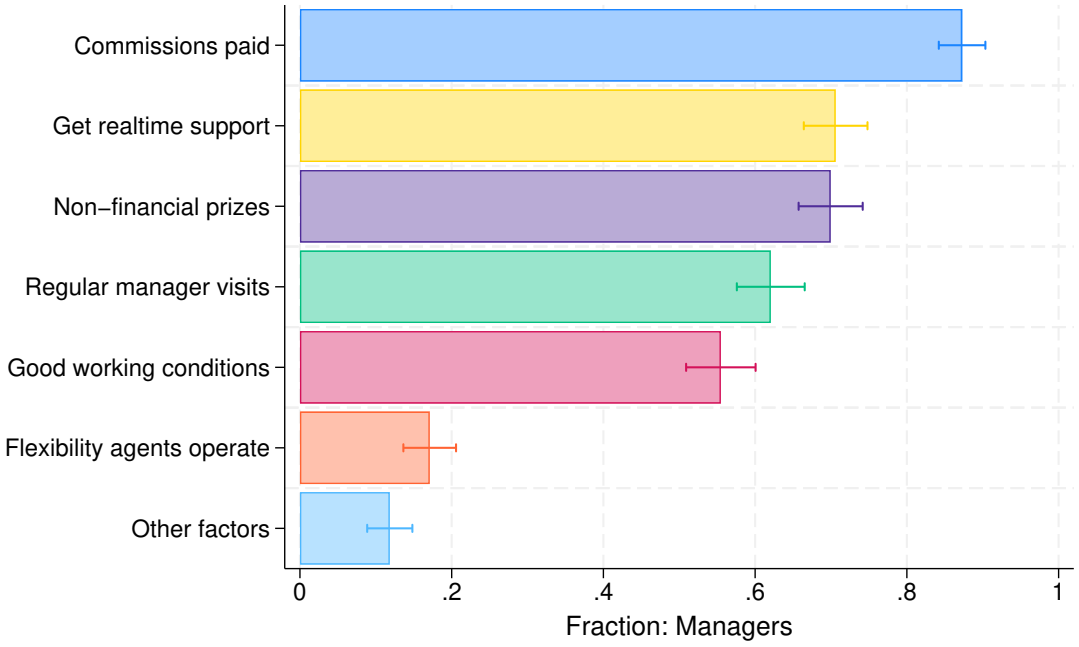
We document managerial beliefs over incentive contracts prior to the experimental intervention. We elicit managers' rankings of contracts based on standard conditions in the analysis of incentive design: Incentive Compatibility (IC)—how strongly a contract links pay to effort and revenue—and Individual Rationality (IR)—how participation constraints are affected through dropout risk. We also elicit beliefs about non-monetary incentives, managers' own preferred contracts, and the reasoning underlying their rankings. Together, these results provide a structured description of managerial beliefs and the heuristics that shape them.

Beliefs About Incentives for Agent Performance (1)

We begin by documenting managers' beliefs about which incentives most effectively induce agent effort and output. Figure 1 summarizes responses to a pre-experimental survey asking managers to identify the monetary and non-monetary incentives they believe most strongly motivate agents. Managers overwhelmingly emphasize financial incentives, particularly commissions and bonuses. Over 90 percent of managers select commissions as inducing the greatest effort, far exceeding non-financial mechanisms such as in-kind prizes, working conditions, or flexibility. Non-monetary incentives are not viewed as irrelevant, but they are consistently ranked as secondary. This pattern indicates a strong managerial prior that effort provision is primarily governed by direct monetary rewards rather than relational or organizational

features.

Figure 1: Drivers of Agent Effort and Output



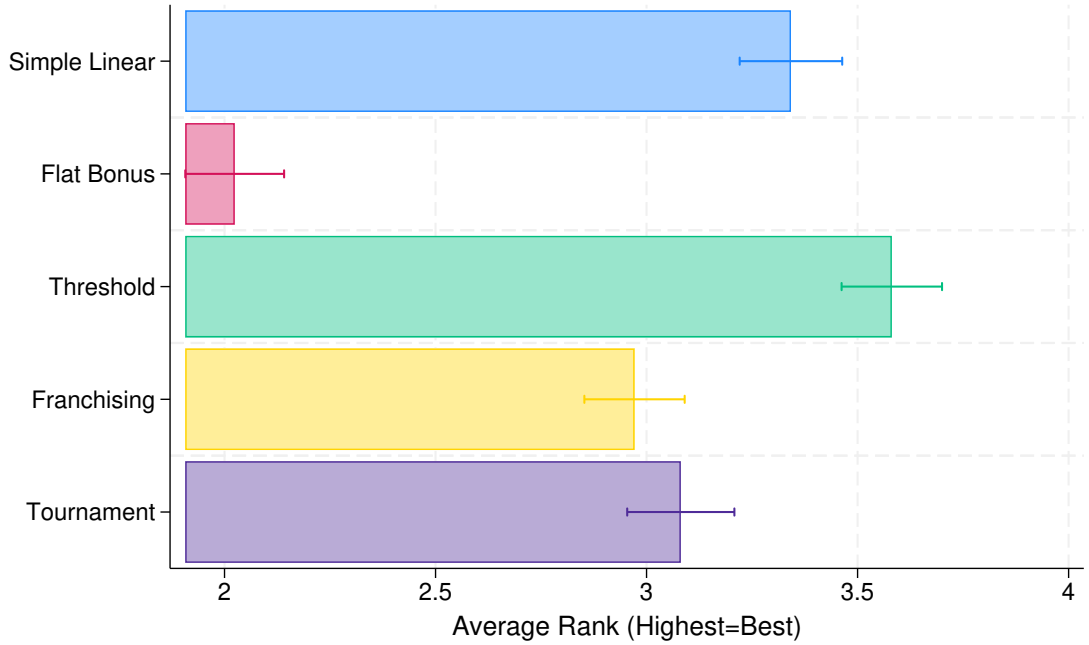
Rankings Over Incentive Compatibility (Revenue Maximization) (2)

We next turn to managers' beliefs over IC, elicited by asking them to rank expenditure-equivalent contracts by their ability to maximize revenue to MTN. Because all schemes cost the firm the same in expectation, differences in rankings reflect beliefs about behavioral responses rather than expenditures. Figure 2 presents the average rankings. Managers rank threshold contracts as generating the highest revenues, followed by simple linear, with franchising and tournament contracts ranked lower, and flat bonuses ranked the lowest. This ordering exhibits relatively high confidence: managers report an average confidence of 3.6 out of 4 in their understanding and ranking of the schemes[2]. This suggests that managers are not only able to distinguish the relative effectiveness of different contracts but also hold their assessments with substantial certainty, reinforcing the reliability of the observed ordinal

[2]Survey Question—How confident are you in understanding the schemes and in your choices or rankings of schemes? 1=No confident at all; 2=Somewhat unconfident/unconfident; 3=Somewhat confident/confident; 4=Very confident (certain). N=456.

patterns.

Figure 2: Managers – Rank in Order of Max. Revenues to MTN



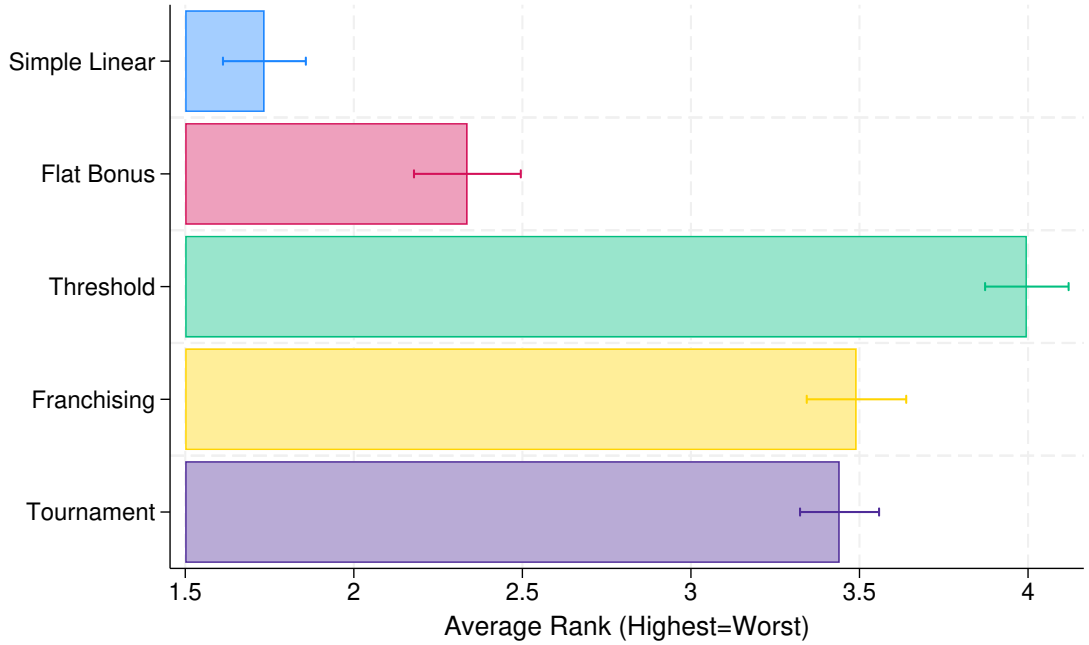
Rankings Over Individual Rationality (Dropout Risk) (3)

We then elicit beliefs about participation constraints by asking managers to rank the same contracts in terms of expected agent dropout, from highest to lowest. Figure 3 reports the results. Managers believe threshold contracts generate the highest dropout, while simple linear contracts generate the lowest. Tournament and franchising contracts fall in between. Confidence in these rankings is extremely high, with an average rating of 3.7 out of 4, indicating that managers are strongly certain about the relative performance of the contracts. Moreover, the ordinal pattern is unambiguous.

Taken together, the IC and IR rankings reveal a consistent belief: managers view threshold contracts as simultaneously powerful and risky, inducing high effort but potentially reducing participation. Importantly, these beliefs reflect a clear tradeoff rather than confusion: managers appear to understand that the same features that motivate effort may also increase dropout. By contrast, the simple linear status quo contract ranks favorably under both IC

and IR, whereas tournament contracts rank lower.

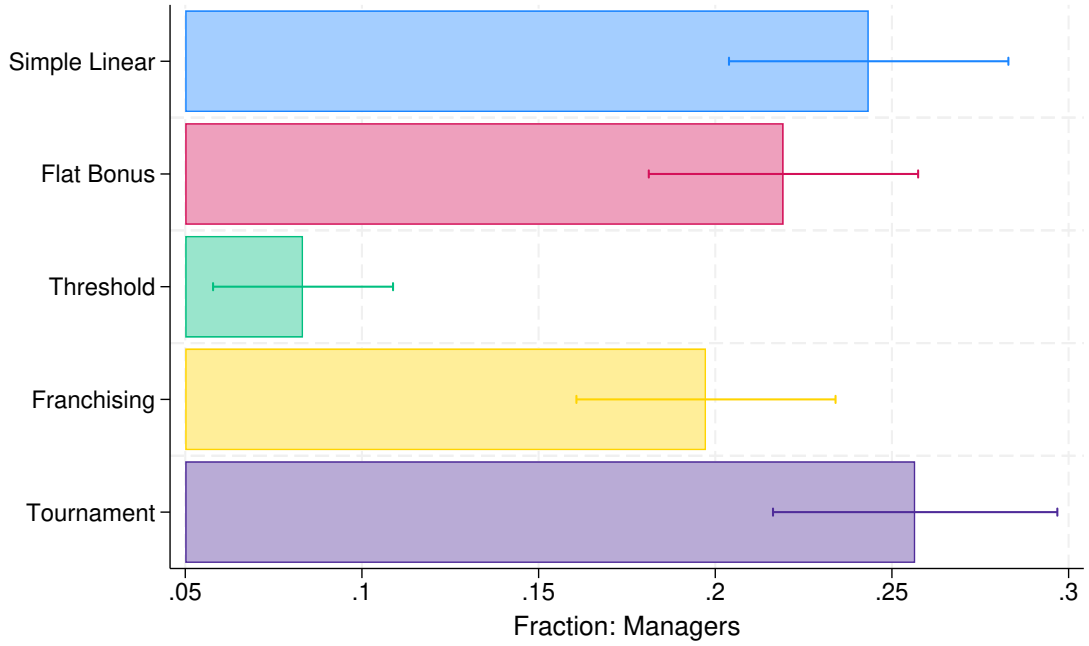
Figure 3: Managers – Rank in Order of Dropout Rates



Managers' Preferred Contracts and Objective Misalignment (4)

We next assess whether managers' own preferred contracts align with the contracts they believe maximize firm objectives. Managers are asked to select the single contract they would most prefer to choose, absent any imposed objective. Figure 4 shows that preferred contracts differ systematically from those believed to maximize revenue or minimize dropout. While threshold contracts are often believed to maximize revenue, they are less frequently chosen as the preferred option. Instead, managers disproportionately select simpler or intermediate schemes. What objectives could some managers be having? This divergence indicates that managers' choices are not fully explained by revenue maximization or dropout minimization alone. In approximately 53 percent of cases, managers' preferred contract differs from the one they previously identified as best for MTN. This pattern suggests potential misalignment between managerial objectives and firm profit, which could arise from concern for agent welfare, private benefits to managers, risk-sharing preferences, or implementation ease.

Figure 4: Managers – Preferred Scheme That Would Make Personally Better Off



Verbal Descriptions of the Optimal Contract (5)

To further examine how managers think of optimal incentive design, we ask them to describe—in their own words—what they would consider a profit-maximizing contract for MTN. Figure 5 summarizes these responses using a word cloud. Managers most frequently reference thresholds, simple or linear, franchise, targets, and tournaments, reinforcing the promise of the 5 options we study. However, these descriptions often combine elements in ways that do not correspond to any single theoretically optimal contract. This suggests that while managers have strong intuitions about desirable features, these intuitions do not map cleanly onto formal incentive schemes.

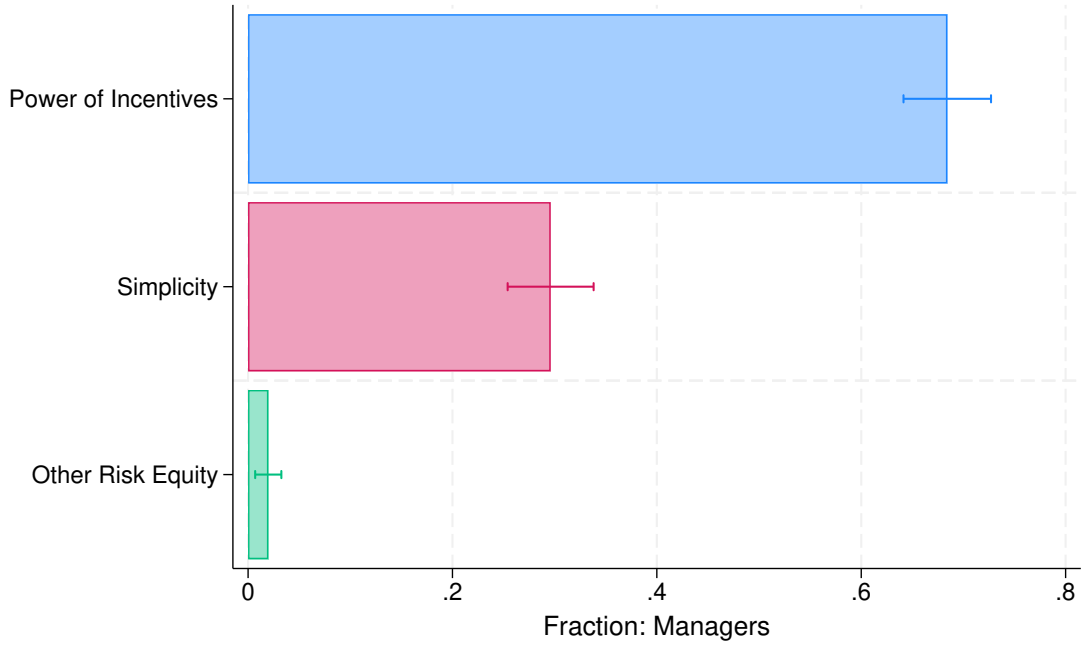
Figure 5: Managers — Description of Optimal Contract in Words



Managers' Reasons for Their Rankings (6)

Finally, we examine the reasoning managers provide for their rankings. Figure 6 reports the frequency of stated reasons. A commonly cited rationale is simplicity, interpreted as a mental shortcut that reduces cognitive load and eases implementation. Managers most frequently cite the "power of incentives," but rarely mention risk-sharing or equity considerations. Reasons related to misunderstanding or lack of comprehension are infrequently reported, suggesting that rankings reflect deliberate heuristics rather than confusion. These findings highlight the central role of simplicity as a heuristic in how managers design contracts. Even when managers recognize that complex schemes may induce higher effort, they appear reluctant to favor them, potentially due to concerns about implementation, communication, or monitoring.

Figure 6: Managers — Reasons for Rankings



Overall, we document a coherent set of managerial beliefs over incentive contracts. Managers strongly favor monetary incentives, believe that threshold contracts induce the greatest effort and revenues while also entailing higher dropout, and frequently prefer simpler schemes. In their rankings, threshold contracts are consistently placed highest and flat bonuses lowest; tournaments rank lower in terms of incentive compatibility. *Mutatis mutandis*, managers rank threshold contracts highest and simple linear contracts lowest, with tournaments also ranking poorly with respect to individual rationality. Critically, simplicity—serving as a mental shortcut that reduces cognitive load and complexity—emerges as a frequently cited rationale underlying these rankings. Together, these patterns reveal systematic heuristics and potential objective misalignment that may shape contract design and choice in practice. In the sections that follow, we combine these elicited beliefs with experimental variation in contract assignment to assess the extent to which managerial beliefs predict realized outcomes, and whether deviations from optimal contracts reflect misperceptions rather than implementation constraints.

II—Treatment Effects

We present and discuss the treatment effects. We estimate treatment effects using versions of the model

$$y_{imst} = \alpha + \sum_k \beta_k . Treatment_{ms,k} + \eta_s + \phi y_{base,ims} + \mathbf{X}'_{ims}\xi + \epsilon_{imst}$$

which links various outcomes y_{imst} of subject (agent or manager) i in market (locality) m in randomization strata s and period t to the random treatment variables $Treatment_{ms,k}$, stratification-unit dummies η_s, baseline outcomes $y_{base,ims}$, and additional vector of controls $\mathbf{X}_{ims}$. Baseline outcomes are included to increase precision and to control for potential confounds (if any).

$Treatment_{ms,k}$ is a 0-1 indicator for whether a market received a specific contract program, and thus β_k captures the corresponding treatment effect. We denote by β_1, β_2, β_3, and β_4 the separate treatment effects for flat bonus, franchising, threshold, and tournament contracts, respectively, relative to the control contract (the simple linear status quo). We report cluster-robust standard errors at the locality level. All survey-based continuous outcome variables are winsorized at the 95th percentile. For robustness, we also report the main results that adjust for multiple hypothesis testing (Romano and Wolf 2005), implement post-double-selection LASSO over the control vector $\mathbf{X}_{ims}$ (Belloni et al. 2014), and apply doubly robust inverse probability weighting (Molina-Millán and Macours 2021).

A. Discussion: Validility of Design and Robustness

Before presenting the main treatment effects, we take stock of several steps implemented to ensure the validity of our research design and the robustness of our results. First, pre-trial outcomes for agents, managers, and markets are well balanced, with no significant differences across treatment arms, consistent with successful randomization and the identification of treatment effects. Second, we explicitly track dropout, which is both a key outcome of

interest and a potential source of selection. Performance outcomes for dropouts do not differ across alternative contracts relative to the control simple linear contract, suggesting that dropout-related selection does not bias our performance results. Third, we control for key predictors of dropout, including baseline outcomes and productivity, to account for residual differences across units. Fourth, we report post-double-selection LASSO (PDSLASSO) estimates with a rich set of covariates to adjust for potential imbalances and dropout (Belloni et al. 2014). Fifth, we implement doubly robust inverse probability weighting, which combines PDSLASSO with inverse-probability weighting to adjust for general noncompliance (Molina-Millán and Macours 2021). Finally, to address the issue of multiple testing, we adjust p-values across families of outcomes following Romano and Wolf (2005). Together, these procedures ensure that our estimates are internally valid and robust to potential biases arising from imbalances, noncompliance, and multiple hypothesis testing, while preserving dropout as an outcome of independent interest.

B. Treatment Effects on Participation (IR): Signing, Dropout, and Retention

We examine whether the contract programs affected participation outcomes, including signing, dropout, and retention. Table 2 reports the estimated treatment effects across contracts. Of the 3,375 agents approached, 2,507 consented to participate, yielding a 74 percent consent rate, and 2,245 ultimately onboarded. During the trial, 704 agents exited, corresponding to a 30 percent dropout rate. Dropouts were concentrated early, with attrition declining steadily over time and eventually reaching zero—a pattern consistent with agents learning about the contracts and adjusting their participation decisions. Figures 7 and 8 illustrate these dynamics across treatment arms.

Dropout rates vary substantially by contract type. Threshold (and flat bonus) contracts exhibit the highest early attrition, whereas tournaments and the simple linear status quo exhibit the lowest. Treatment effect estimates in Table 2 show that dropout under threshold contracts is significantly higher than under the control contract, whereas differences between

simple linear and tournament contracts are not statistically significant (p=0.463).

These results indicate that the contract programs generate economically meaningful differences in participation. In particular, all contracts except tournaments produce statistically and economically significant reductions in dropout relative to the control simple linear contract. The early concentration of dropouts followed by stabilization suggests that agents adapt their participation decisions over time, consistent with a learning process during the experiment.

C. Treatment Effects on Incentive Compatibility (IC): Effort and Output

We evaluate the effects of the contract programs on incentive compatibility outcomes, measured by agent effort and output, including total revenue, MTN revenue, and agent earnings. Figures 9 and 10 present graphical evidence of the treatment effects, illustrating both the dynamics of performance over time and average differences across contracts.

The graphical evidence shows that the tournament program generates the largest and most persistent improvements in agent performance. Increases in total revenue under tournaments emerge after the third week of the intervention and remain sustained throughout the trial, rather than being concentrated in any specific period. This pattern indicates that the tournament scheme consistently induces higher effort over time. By contrast, the non-tournament contracts exhibit negative performance effects, with flat bonus and threshold contracts displaying the most pronounced declines dynamically. These patterns are consistent across both MTN revenues and agent earnings, indicating that the gains under tournaments are shared between the firm and its agents.

Treatment effect estimates reported in Table 3 confirm these visual patterns. Relative to the simple linear status quo, tournament contracts increase total revenue by approximately 20 percent, a statistically significant effect that is roughly evenly split between MTN revenue and agent earnings. Franchising is not statistically distinguishable from the control contract (p=0.265), while threshold and flat bonus contracts reduce total revenue relative to the status

quo. The magnitude and persistence of these effects suggest that tournament incentives are uniquely effective at sustaining high effort, whereas alternative contracts either fail to improve performance or actively depress it.

These performance results demonstrate that the design of incentive schemes matters not only for peak output but also for sustaining effort over time. Tournament contracts appear to align agents' and the firm's interests particularly well, generating large and persistent increases in both total revenue and agent earnings. By contrast, the alternative contracts yield either negligible or negative performance effects relative to the status quo. In subsequent analyses, we examine post-intervention effort measures to assess whether these effects persist or attenuate once the incentives are removed.

D. Heterogeneity

The main analyses assume uniform effects of the incentive contract programs. We next examine heterogeneity along five pre-specified dimensions: agent gender, market location (urban versus rural), firm size (measured by baseline revenue), outlet characteristics (owner-operated and provision of non-MTN services), and market structure (competition and volatility, measured by the number of agents and baseline sales variability). These analyses help identify the complier subpopulations driving the overall treatment effects and the conditions under which different contracts perform most or least effectively. The positive effects of tournament contracts on agent performance are concentrated among male agents, those operating in urban markets, larger firms, and markets with greater competition and lower volatility. By contrast, the negative effects of flat bonus—and, to a lesser extent, threshold contracts—are concentrated among male agents, larger firms, and agents who own and operate their outlets or provide additional non-MTN services.

These patterns indicate that both agent characteristics and market context shape responsiveness to incentive schemes. Tournament contracts are particularly effective in larger, more competitive, and stable markets, and among agents with greater baseline capacity, suggest-

ing that these conditions amplify effort responses. Conversely, flat bonus contracts tend to depress performance in settings where agents have greater autonomy or operate multiple services, highlighting the importance of aligning contract design with both agent and market characteristics. The results are provided in Appendix Table A.8.

VI Interpreting the Results

What drives the differences in performance across contracts? We next examine the mechanisms underlying the observed differences in performance across contract schemes. We evaluate five potential explanations: (i) selection out of contracts through differential dropout; (ii) selection into preferred contracts; (iii) sorting on underlying preference heterogeneity; (iv) changes in pricing behavior or market relationships; and (v) changes in agent effort and labor supply. Across the first four channels, we find limited empirical support. By contrast, we find strong evidence that tournament contracts—and, during the intervention, threshold contracts—induce increases in agent labor supply. Importantly, only the effort responses under tournament incentives persist beyond the incentive period; labor supply under the other contracts converges back to the simple linear control once incentives are removed. This pattern is consistent with habit formation in labor supply arising under competitive incentives rather than with short-run intertemporal substitution. We therefore interpret the differences in performance across contracts as primarily driven by changes in agent labor effort, with these effects persisting under tournament incentives.

(1) Selection Out of Contracts: Dropout Effects

We first assess whether differential selection out of contracts explains the performance effects. Tables A.9 and A.10 examine outcomes for agents who exited the experiment, using both administrative data and endline survey measures. As noted earlier, we continue to

observe output for all agents throughout the study period, including after they drop out of the contract program. Across specifications, we find no statistically significant differences in post-dropout performance across contract types. In particular, agents who dropped out under tournament contracts do not perform differently from dropouts under the simple linear control. Consistent with the participation results reported earlier, dropout rates under tournaments are not statistically different from those under the status quo contract. Together, these findings indicate that differential dropout—whose outcomes we continue to observe—is unlikely to account for the observed performance gains under tournaments.

(2) Selection Into Contracts: Assignment to Preferred Schemes

We next test whether performance effects arise because agents perform better when assigned to contracts they prefer. Tables A.13 and A.14 compare outcomes for agents whose assigned contract coincided with their stated preference to those whose assignment did not. Across both administrative and survey-based outcomes, we find no evidence that receiving a preferred contract improves performance, nor that preference alignment differentially benefits any specific contract type. These results suggest that selection into preferred schemes does not drive the observed treatment effects.

(3) Selection on Preference Heterogeneity

A third possibility is that contracts differentially attract or motivate agents with particular preferences. Using endline survey measures, we examine heterogeneity along five preference parameters: risk aversion, patience, competition aversion, reciprocity or favor preferences, and cognitive ability. Tables A.15, A.16, and A.17 report the results. Overall, we find limited evidence that these preference parameters explain differences in performance across contracts. While some coefficients are individually significant, the magnitudes are small and the patterns are neither consistent nor contract-specific. Preference heterogeneity therefore appears unlikely to be the primary mechanism underlying the large performance effects ob-

served under tournament incentives.

(4) Pricing Behavior and Market Relationships

We next examine whether contracts affect performance through changes in pricing, misconduct, or market relationships. Endline survey data indicate no significant changes in agent–customer, agent–manager, or agent–agent relationships across contract types (Table A.17). In addition, an independent audit study finds no evidence of increased overcharging, fee manipulation, or noncompliance under tournament contracts (Table A.18). These findings rule out pricing distortions or relational changes as explanations for the observed revenue gains.

(5) Effort and Labor Supply Responses

Finally, we examine whether contract programs affect performance by inducing changes in effort. Table 4 shows that threshold and tournament contracts significantly increase multiple measures of labor supply, including days worked per week, hours worked per day, and the likelihood of opening earlier or closing later. We aggregate these components into a standardized labor supply index following Anderson (2008), which rises sharply under tournament incentives. Figure 11 plots the dynamics of labor supply over time for a subset of contract schemes—simple linear (control), flat bonus, and tournament. Relative to the simple linear contract, flat bonus contracts are associated with lower labor effort during the intervention period; following the end of the intervention, labor supply under flat bonus converges back to the control trajectory. In contrast, tournament contracts generate a pronounced increase in labor effort during the intervention, and this increase persists after incentives are removed. The persistence of elevated labor supply under tournaments, together with convergence under flat bonus, is inconsistent with pure intertemporal reallocation of effort and instead points to habit formation in labor supply. These patterns raise the possibility that competitive incentives themselves may serve as a source of habit formation.

Taken together, these results point to effort as the dominant mechanism driving performance differences across contracts. Tournament contracts, in particular, induce sustained increases in labor supply, providing a parsimonious explanation for their large and persistent revenue effects. Consistent with this interpretation, we find little evidence that the results are driven by selection into or out of contracts, changes in pricing behavior, or shifts in market relationships, reinforcing the view that the primary channel operates through effort rather than selection or price effects.

VII Managerial Predictability

How accurately do managers predict the performance of alternative incentive contracts, and what drives such predictability—or its absence? We address these questions by comparing managerial beliefs about contract performance to realized experimental outcomes, and by examining which managerial characteristics are associated with more accurate predictions. Throughout, we distinguish between incentive compatibility (IC)—measured by realized revenue—and individual rationality (IR)—measured by agent dropout. By comparing managerial beliefs to realized outcomes, we assess not only which contracts perform best, but also why firms may fail to adopt them.

A. Managerial Predictability: Beliefs versus Outcomes

We begin by assessing how managerial predictions align with realized contract performance. Descriptively, managers' beliefs diverge sharply from experimental outcomes. While tournament contracts generate the largest and most persistent gains in revenue (IC) and the lowest dropout rates (IR) in the field, managers systematically fail to anticipate their effectiveness. Instead, managers most frequently rank threshold contracts as the best-performing scheme.

To quantify predictability, we denote by A_c the realized (field) ranking of contract c based on estimated treatment effects, and by P_{ic} manager i's predicted ranking of the same contract. We then regress realized rankings on predicted rankings, separately for revenue and dropout. Across both dimensions, the correlation between beliefs and outcomes is weak to modest. For revenue outcomes, managers correctly identify flat bonus contracts as the worst-performing scheme but substantially underestimate the gains from tournaments. The correlation between predicted and realized revenue rankings is 0.187, with an R^2 of 0.035, indicating that managerial beliefs explain little of the cross-contract variation in realized performance. For participation outcomes, managers correctly anticipate high dropout under threshold contracts but fail to predict the relatively low dropout associated with tournaments. The corresponding correlation is 0.280 ($R^2 = 0.115$). Controlling for contract fixed effects and observable drivers of prediction attenuates these correlations, often to near zero. Overall, managerial predictions explain only a small fraction of the variation in realized contract performance (see Table A.19).

Taken together, these findings suggest that managers are better at identifying clearly poor-performing contracts than at recognizing high-performing ones, particularly when gains arise from non-linear or competitive incentives. The systematic underestimation of tournaments is consistent with the use of simplifying heuristics in contract design (Figure 6), favoring intuitively simple schemes over contracts whose effectiveness depends on more complex behavioral responses. These patterns point to systematic misperceptions in how managers evaluate and design incentive contracts.

B. Drivers of Managerial Predictability

We next examine the sources of managerial predictability. We define prediction error as the absolute difference between realized and predicted contract rankings for each manager–contract pair, computed separately for revenue (IC) and dropout (IR). We regress

prediction error on a rich set of managerial characteristics, including demographics, organizational hierarchy, experience, proximity to frontline agents, exposure to performance-linked pay, behavioral traits (risk aversion, patience, competitiveness), and characteristics of the markets managers oversee. Results are reported in Table 5.

Three main patterns emerge. First, prediction accuracy decreases sharply with contract complexity. Relative to linear or simple schemes (status quo, flat bonus, franchising), both threshold and tournament contracts generate significantly larger prediction errors for managers. This pattern holds for both revenue and dropout, indicating that non-linear and competitive incentives are systematically harder to forecast. Complexity, rather than lack of familiarity with particular contracts, appears to be a primary source of misperception.

Second, managerial hierarchy plays a nuanced role. For revenue outcomes, senior and headquarters-based managers are significantly more accurate than entry-level, field-based managers. Indeed, senior managers are the only group whose prediction errors are statistically lower than those of canvassers. This "HQ advantage" suggests that higher-level managers possess a stronger understanding of the incentive compatibility properties of contracts, possibly reflecting accumulated experience, selection into senior roles, or greater exposure to aggregate performance data. By contrast, for participation outcomes, the pattern reverses: senior managers systematically misjudge dropout responses, while managers closer to frontline operations perform relatively better. Senior managers appear to understand the revenue aspects of incentives but underestimate how agents respond along the participation margin.

Third, proximity to operations matters more than individual personality traits (not all coefficients are displayed to simplify Table 5). Managers who interact more frequently with agents, or who have previously had their own compensation tied to agent performance, exhibit significantly lower prediction errors for both IC and IR outcomes. In contrast, behavioral traits such as risk aversion, patience, or competitiveness are largely uncorrelated with predictive accuracy. Prediction errors are thus driven primarily by structural distance within the organization rather than by inherent managerial preferences (Weidmann et al.,

forthcoming).

In summary, our findings point to an "ivory tower" trade-off in managerial decision-making. Complex incentive schemes—especially tournaments and thresholds—consistently generate larger prediction errors. Senior managers understand the formal incentive compatibility of contracts but misjudge participation constraints and attrition, while managers closer to the field better anticipate agent dropout but struggle to forecast revenue effects. These results help explain why highly effective contracts—such as tournaments, despite being widely used in theory and in some industries—may be underadopted in practice: their success depends on behavioral responses that are difficult to anticipate without experimentation. Conversely, the prevalence of simple linear incentives may reflect their robustness to misprediction rather than their optimality.

VIII Conclusions

We measured how managers evaluate and select incentive contracts and compared their predictions with actual contract performance. Managers reliably avoid poorly performing contracts but systematically underestimate the potential of high-performing contracts. These prediction gaps, in turn, are correlated with realized firm outcomes: misjudged contracts lead to lower revenues even when theoretically optimal contracts exist. Performance differences across contracts are primarily driven by labor supply responses rather than selection or pricing, while contract complexity and managerial hierarchy drive managerial predictability.

Our study consisted of two main parts: a baseline survey and a nationwide randomized field experiment. The baseline survey measured managers' beliefs and preferences over contracts. The field experiment tested the impact of different widely used, expenditure-equivalent contract structures on agent output and on the predictability of managers in understanding these impacts. We randomized contract schemes—assigned based on man-

agers' beliefs—across mobile money agents in Ghana and evaluated their performance using detailed administrative data, supplemented by surveys of managers and agents and an audit study.

Our findings suggest that managerial misperceptions and heuristics are an important source of inefficiencies in contract design. While traditional contract theory assumes that principals can select optimal contracts based on agents' behavioral responses, our evidence shows that even when the underlying incentives are well-understood, cognitive biases prevent managers from fully realizing potential gains. Although such misperception-based frictions may produce outcomes similar to conventional frictions, such as heterogeneous labor supply responses, they generate distinctive predictions. For example, interventions that provide managers with clear performance feedback or decision-support tools can materially change beliefs and contract allocation, whereas standard models assuming perfect managerial foresight would predict no change.

The findings point to potential policy and managerial interventions. Structured feedback, experimentation, and tools that help managers better predict contract outcomes could substantially improve firm performance. This paper also provides an inspiration and guidance for future empirical work including—but not limited to—further market-level field experiments that generate evidence on questions around firm beliefs about contracts. It will be interesting to use randomized contract interventions to ultimately understand the extent of disagreements in beliefs between managers vs agents and how this could be used to improve both the design and *targetting of contracts*—Can we combine observables in a village, individual beliefs, and—critically—disagreements in beliefs between managers and agents to predict what kind of contract will perform better or worse?

Finally, our study connects the literature on contracts with insights from behavioral industrial organization (for reviews, see Ellison 2006; Grubb 2015; Heidhues and Kőszegi 2018). Just as consumers often fail to select optimal options due to misperceptions or cognitive biases and that "informed" firms can design contracts to exploit such consumer biases

(Kőszegi 2014), managers—despite incentives and experience—can misjudge contracts. This raises the possibility that broader lessons from behavioral industrial organization may apply to the organization of firms and highlights the importance of further research on the interaction between managerial cognition, incentives, and firm performance.

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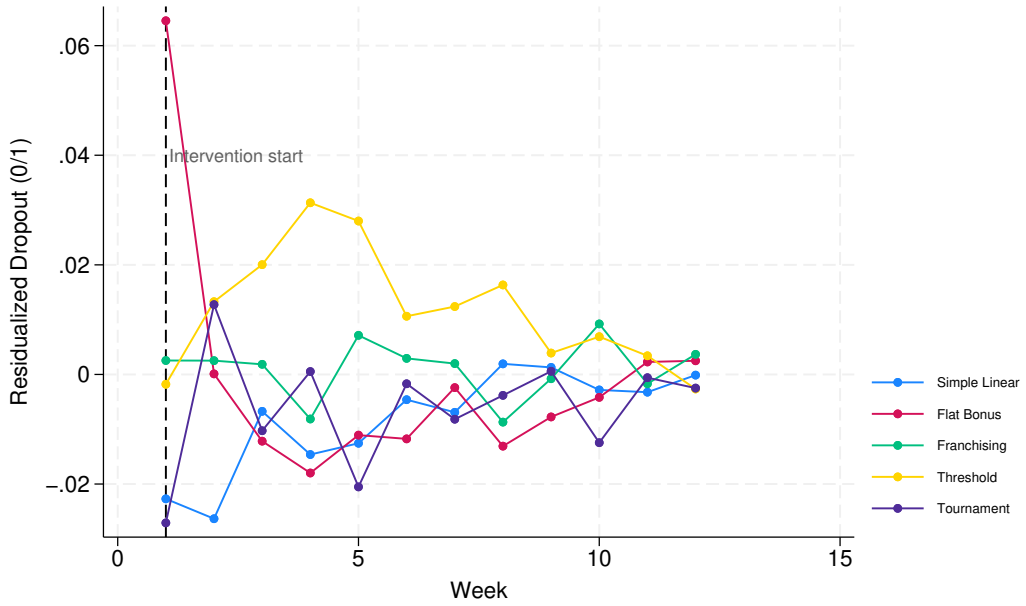
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Main Results for Text

Table 1: Study timeline

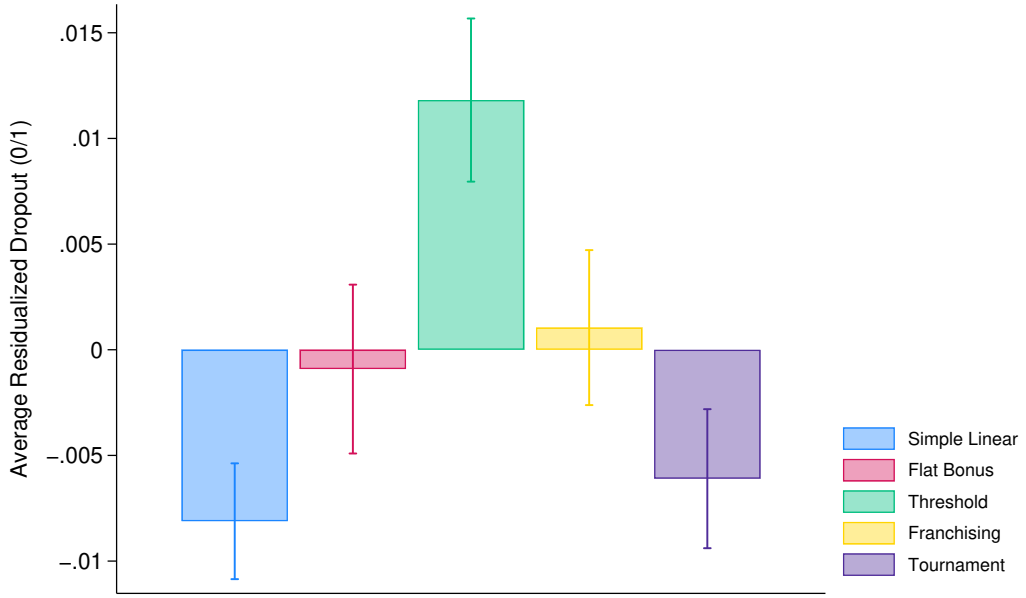
	DATE	ACTIVITY	
Part 1	July 2023-Jul 2024	**Piloting** -Industry consultations and partnerships -Surveys: managers and agents	
Part 2	September-December 2024	**Baseline** -Manager census: measure beliefs & preferences -Agent surveys	
Part 3	January-March 2025	**Technical Pilot Work** -Evaluate implementation details	
Part 4	April-July 2025	**Intervention** -Markets assignment -Contracts design -Randomized contracts in force	
Part 5	July-September 2025 July	**Endline** -Audit study -Market surveys: managers and agents	
	January 2024-September 2025	**Main Dataset** -Administrative data from MTN	

Figure 7: Dropout Rates by Contract Type Over Time (Residualized)



Note: Observations are at the agent x market x week level (administrative data). The displayed dropout rates are contract-specific residuals from an OLS regression of dropout status (0/1) on week and randomization strata fixed effects.

Figure 8: Dropout Rates by Contract Type



Note: Observations are at the agent x market x week level (administrative data). The displayed dropout rates are contract-specific averages of residuals from an OLS regression of dropout status (0/1) on week and randomization strata fixed effects.

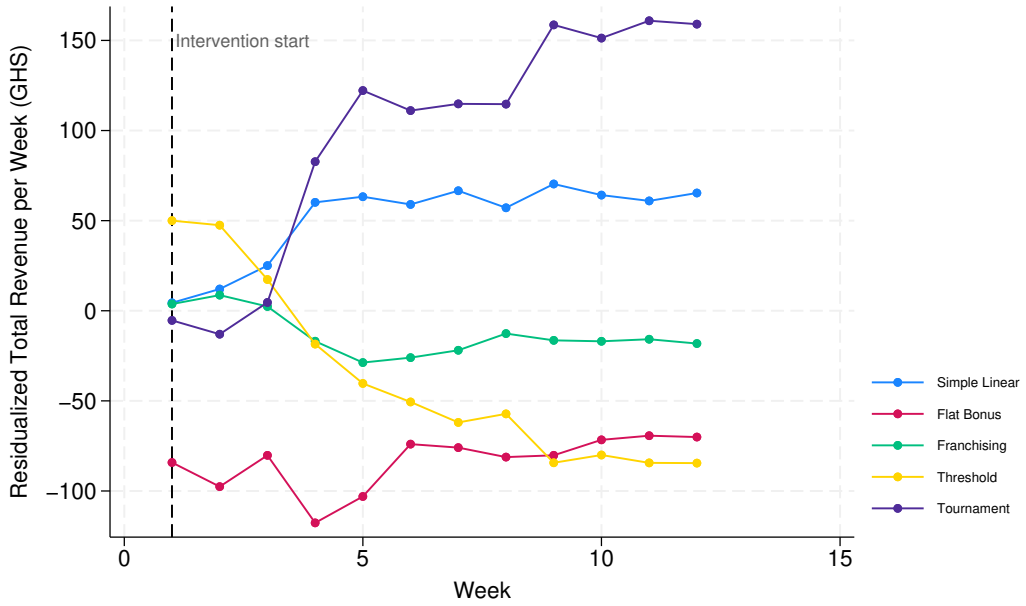
Table 2: Treatment Effects on Dropout Rates

	(1) Dropout (0/1) b/se	(2) Dropout (0/1) b/se
Flat Bonus	0.008**	0.008**
	(0.003)	(0.003)
Franchising	0.010***	0.011***
	(0.003)	(0.003)
Threshold	0.021***	0.021***
	(0.003)	(0.003)
Tournament	0.003	0.003
	(0.003)	(0.003)
Observations	26939	26939
Mean of dep. var. in control	0.017	
SD of dep. var. in control	0.131	
Data source	Administrative	Administrative
Specification	OLS	PDS Lasso

Note: Observations are at the agent x market x week level. The specification includes controls for randomization strata and baseline productivity. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets. The PDS LASSO specification represents a post-double selection LASSO model which selects on various agent demographics such as gender, HH income, and HH size, as well as some business characteristics such as work experience, working capital, and indicators for owner-operator status and being assigned their preferred contract.

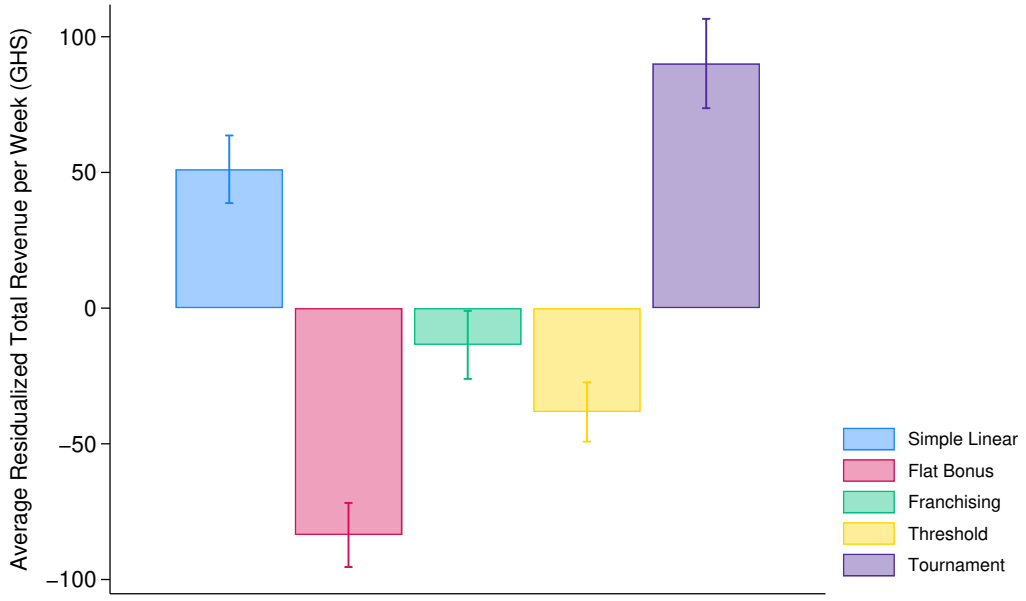
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Figure 9: Total Revenue by Contract Type Over Time (Residualized)



Note: Observations are at the agent x market x week level (administrative data). The displayed revenues are contract-specific residuals from an OLS regression of Total Revenue (GHS) on week and randomization strata fixed effects.

Figure 10: Total Revenue by Contract Type



Note: Observations are at the agent x market x week level (administrative data). The displayed revenues are contract-specific averages of residuals from an OLS regression of Total Revenue (GHS) on week and randomization strata fixed effects

Table 3: Treatment Effects on Revenues

	Total Revenue (weekly)			MTN Revenue (weekly)			Agent Revenue (weekly)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Flat Bonus	-135.436***	-157.437***	-158.201***	-72.488***	-83.917***	-84.323***	-63.048***	-73.606***	-73.939***
	(37.820)	(39.683)	(39.955)	(20.062)	(21.134)	(21.289)	(17.887)	(18.673)	(18.789)
Franchising	-32.647	-59.575**	-60.779**	-17.298	-31.434**	-31.955**	-15.457	-28.216**	-28.876**
	(29.247)	(28.422)	(28.829)	(15.313)	(14.981)	(15.204)	(14.050)	(13.565)	(13.746)
Threshold	-85.063***	-85.742***	-86.219***	-43.649***	-43.950***	-44.159***	-41.447***	-41.823***	-42.100***
	(26.071)	(25.175)	(25.470)	(13.926)	(13.459)	(13.632)	(12.236)	(11.813)	(11.933)
Tournament	83.905***	71.441**	72.569**	42.776***	36.364**	36.856**	41.098***	35.069**	35.698**
	(29.530)	(29.133)	(29.672)	(15.693)	(15.422)	(15.685)	(13.923)	(13.795)	(14.072)
Observations	25582	25582	25558	25582	25582	25558	25582	25582	25558
Mean of dep. var. in control	446.570			226.527			220.043		
SD of dep. var. in control	596.953			316.670			282.809		
Data source	Admin.	Admin.	Admin.	Admin.	Admin.	Admin.	Admin.	Admin.	Admin.
Specification	OLS	PDS Lasso	PDS Lasso + IPW	OLS	PDS Lasso	PDS Lasso + IPW	OLS	PDS Lasso	PDS Lasso + IPW
MHT-adjusted q-values:									
Flat Bonus	0.002	.	.	0.002	.	.	0.002	.	.
Franchising	0.073	.	.	0.073	.	.	0.073	.	.
Threshold	0.003	.	.	0.003	.	.	0.002	.	.
Tournament	0.004	.	.	0.005	.	.	0.004	.	.

Note: Observations are at the agent x market x week level. The specification includes controls for randomization strata and baseline productivity. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets. The PDS LASSO specification represents a post-double selection LASSO model which selects on various agent demographics such as gender, HH income, and HH size, as well as some business characteristics such as work experience, working capital, and indicators for owner-operator status and being assigned their preferred contract. The PDS LASSO + IPW specification represents the same PDS LASSO approach described here but with inverse propensity weights, which are the inverse of the probability that an agent stays in the experimental sample conditional on the same demographic variables used in the selection. The multiple hypothesis tests (MHT) in the bottom rows are conducted using the Benjamini, Krieger, and Yekutieli (2006) correction algorithm in Stata's Minq command on the family of estimates in OLS columns.

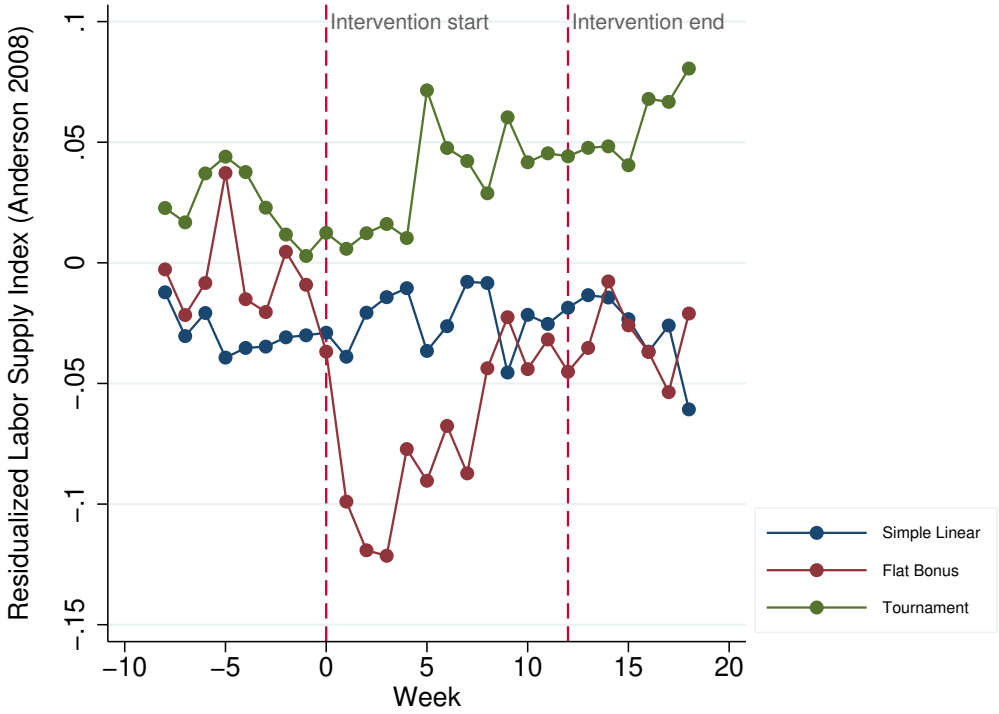
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table 4: Treatment Effects on Effort and Labor Supply

	(1) Labor Supply Index b/se	(2) Work hrs/day b/se	(3) Work days/wk b/se	(4) Open early/close late b/se
Flat Bonus	0.121	-0.033	-0.008	0.116**
	(0.079)	(0.150)	(0.052)	(0.050)
Franchising	-0.005	0.016	-0.009	-0.001
	(0.079)	(0.140)	(0.044)	(0.050)
Threshold	0.215***	0.300**	0.072*	0.082*
	(0.072)	(0.130)	(0.039)	(0.047)
Tournament	0.164*	0.058	0.079*	0.074
	(0.085)	(0.149)	(0.041)	(0.048)
Observations	2306	2306	2306	2306
Mean of dep. var. in control	-0.085	12.600	6.308	0.542
SD of dep. var. in control	1.028	1.860	0.645	0.499
Data source	Endline	Endline	Endline	Endline
MHT-adjusted q-values:				
Flat Bonus	0.201	0.767	0.767	0.124
Franchising	0.767	0.767	0.767	0.767
Threshold	0.052	0.124	0.158	0.182
Tournament	0.158	0.767	0.158	0.201

Note: Observations are at the agent x market level, regardless of dropout status. The specification includes controls for randomization strata. The labor supply index (SWINDEX, Anderson 2008) aggregates agents' operating hours per day, workdays per week, and whether they open early or close late. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets. The multiple hypothesis tests (MHT) in the bottom rows are conducted using the Benjamini, Krieger, and Yekutieli (2006) correction algorithm in Stata's Minq command on the set of all 16 estimates presented in this table.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Figure 11: Labor Supply by Contract Type Over Time (Residualized)



Note: Observations are at the agent x market x week level (administrative data). The labor supply index (SWINDEX, Anderson 2008) aggregates agents' operating hours per day, workdays per week, and whether they open early or close late. The displayed labor supply are contract-specific residuals from an OLS regression of the labor supply index on week and randomization strata fixed effects.

Table 5: Drivers of Managerial Predictability

	IC Prediction Error $\lvert P_{ic} - A_c \rvert$		IR Prediction Error $\lvert P_{ic} - A_c \rvert$	
	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
Contract = Flat Bonus	-0.120	-0.169	0.489***	0.480***
	(0.139)	(0.140)	(0.125)	(0.133)
Contract = Threshold	0.583***	0.575***	0.680***	0.701***
	(0.126)	(0.141)	(0.163)	(0.169)
Contract = Franchising	-0.084	-0.071	-0.022	-0.035
	(0.058)	(0.066)	(0.077)	(0.082)
Contract = Tournament	0.746***	0.756***	0.632***	0.598***
	(0.144)	(0.152)	(0.119)	(0.122)
Manager = Ambassador	-0.088	-0.060	-0.030	-0.026
	(0.095)	(0.154)	(0.078)	(0.075)
Manager = AAD	-0.076	-0.244	0.264**	0.248*
	(0.120)	(0.154)	(0.123)	(0.123)
Manager = TSC	-0.148	-0.522***	0.373***	0.377***
	(0.145)	(0.177)	(0.120)	(0.126)
Manager = ASM or c/head	0.071	-0.288	0.812***	0.976***
	(0.235)	(0.313)	(0.229)	(0.188)
Manager = HQ/CEO	-0.342**	-0.618***	0.480***	0.483***
	(0.133)	(0.143)	(0.139)	(0.149)
Interaction freq = Low	-0.256***	-0.186**	0.384***	0.405***
	(0.092)	(0.074)	(0.052)	(0.055)
Interaction freq = Med	-0.207**	-0.186*	0.358***	0.377***
	(0.082)	(0.107)	(0.096)	(0.093)
Interaction freq = High	-0.197**	-0.228*	0.412***	0.440***
	(0.084)	(0.125)	(0.066)	(0.079)
Bonus linked to agent performance	-0.082	-0.024	0.059	0.068
	(0.069)	(0.102)	(0.054)	(0.055)
Education = High school	-0.302***			
	(0.095)			
Education = Some college	-0.482	-0.241	-0.168	-0.170
	(0.287)	(0.247)	(0.120)	(0.109)
Education = Associate's deg.	-0.462***	-0.060	-0.042	-0.037
	(0.111)	(0.095)	(0.117)	(0.125)
Education = Bachelor's deg.	-0.362***	0.137	-0.139	-0.114
	(0.130)	(0.114)	(0.118)	(0.131)
Education = Master's deg.	-0.333*	0.283*	-0.253*	-0.209
	(0.169)	(0.152)	(0.144)	(0.170)
Married	0.162*	0.195**	-0.057	-0.060
	(0.087)	(0.091)	(0.057)	(0.063)
Female	-0.109	-0.141*	-0.017	-0.037
	(0.065)	(0.080)	(0.063)	(0.063)
Observations	2205	1270	1360	1270
Behavioral Traits	No	Yes	No	Yes
Market Volatility	No	Yes	No	Yes

Note: Observations are at the manager x contract level. Two-way cluster-robust standard errors at the manager-enumerator level are reported in parenthesis. 95% confidence intervals are reported in brackets. Manager types include Area Account Developers (AADs), Territory Sales Controllers (TSCs), Area Sales Managers (ASMs), commercial heads (c/heads), and senior managers and Executive Committee members (HQ/CEO).
$*$ p < 0.10, $**$ p < 0.05, $***$ p < 0.01

Online Appendix

Beliefs over Contracts

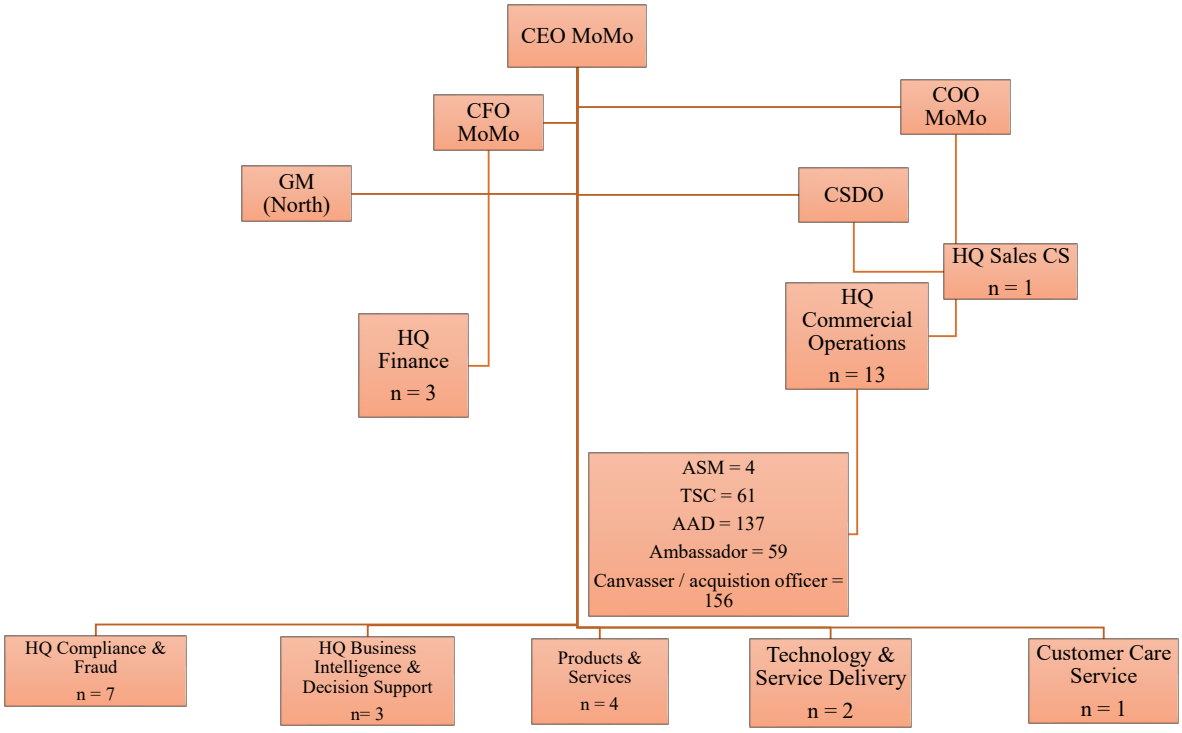
Francis Annan

Collin B. Raymond

A Setting, Randomization Balance, and Further Results

A.1 The Setting

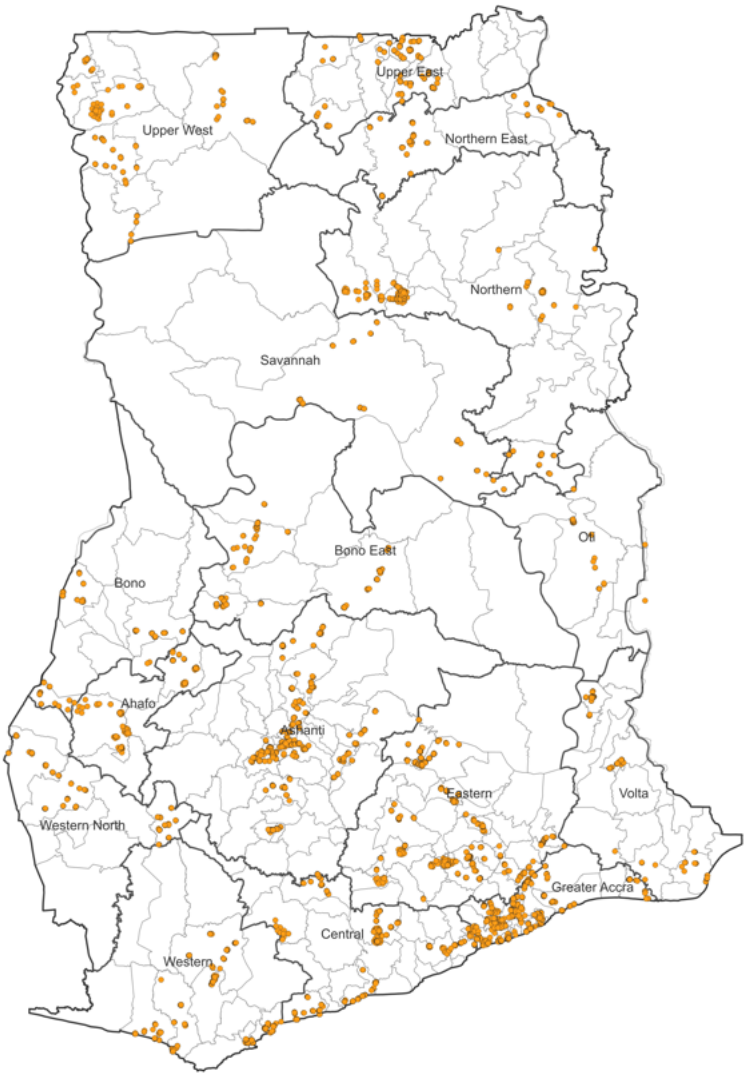
Figure A.1: Organizational structure



Source: Baseline Survey, 2024
Sample: 456 Managers

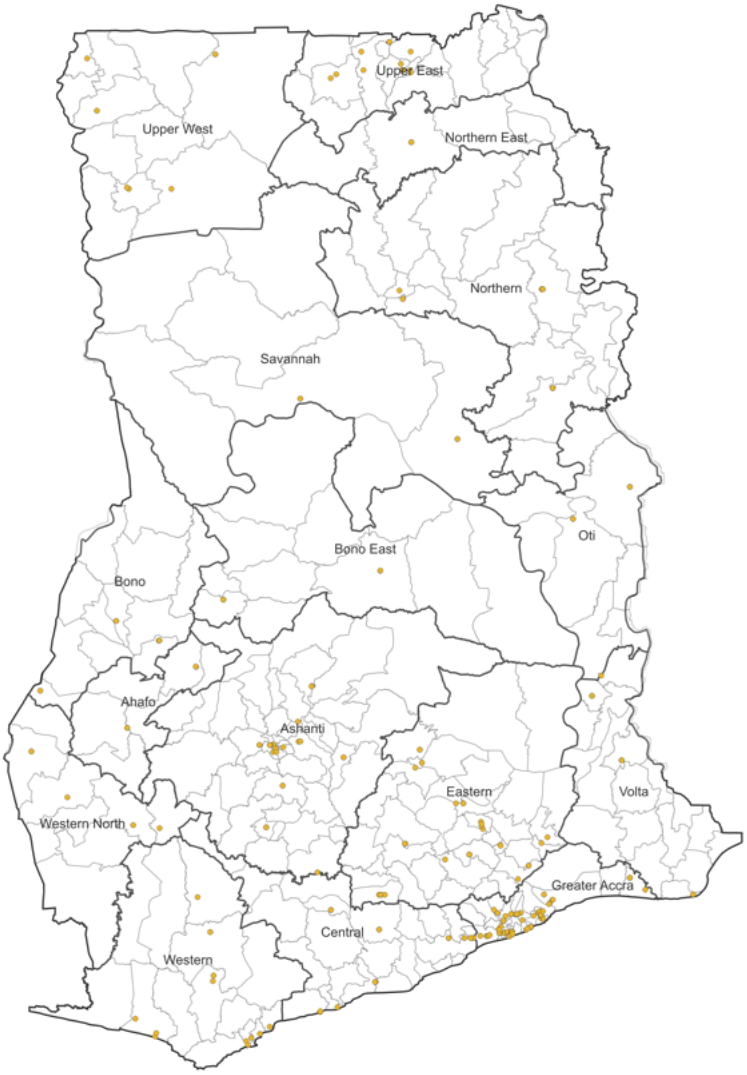
Note: The figure shows the organizational structure of MTN MobileMoney's managerial hierarchy.

Figure A.2: Agents - Spread of Agents Across Markets. With Ad Slogan: "MTN Everywhere You Go"



Note: The figure plots the geographic distribution of agents across the study area, spanning all 16 regions of Ghana. The sample of onboarded agents spans 9 administrative regions: Volta, Eastern, Greater Accra, Central, Western, Ashanti, Ahafo, Bono, and Bono East.

Figure A.3: Managers - Spread of Managers Across Markets. With Ad Slogan: "MTN Everywhere You Go"



Note: The figure plots the geographic distribution of managers across the study area, spanning all 16 regions of Ghana..

A.2 Randomization Balance and Descriptive Statistics

Table A.1: Baseline Balance 1: Job Characteristics and Incentive Preferences (Agents)

Variable	Control mean	Flat bonus	Franchising	Threshold	Tournament	N
Agent Demographics						
Age	29.45	-0.26	0.08	0.01	0.15	3,375
		(0.46)	(0.47)	(0.42)	(0.46)	
Female (0/1)	0.43	-0.00	-0.03	-0.01	-0.02	3,375
		(0.03)	(0.03)	(0.03)	(0.03)	
Work exp. (yrs)	7.55	-0.21	-0.14	0.03	0.09	3,375
		(0.44)	(0.37)	(0.34)	(0.37)	
HH size	3.65	0.02	-0.07	-0.12	0.04	3,375
		(0.15)	(0.14)	(0.13)	(0.14)	
HH income (yearly, GHS, wins.)	36,236.67	115.84	2,183.87	-1,375.85	298.80	3,375
		(2,022.82)	(1,794.10)	(1,455.32)	(1,650.86)	
HH expenses (yearly, GHS, wins.)	2,465.15	-37.46	194.54	-97.66	103.98	3,375
		(158.95)	(156.89)	(150.80)	(164.96)	
Life satisfaction (1-4)	2.79	0.08	-0.03	-0.04	0.01	3,375
		(0.06)	(0.06)	(0.06)	(0.06)	
Financial satisfaction (1-4)	2.41	-0.06	0.00	0.02	0.00	3,375
		(0.07)	(0.06)	(0.05)	(0.06)	
Joint significance (pairwise p-val):		(0.424)	(0.540)	(0.845)	(0.975)	
Joint significance (pooled p-val):				(0.996)		
Agent Incentives						
Work exp., retail (years)	5.58	-0.25	-0.24	-0.25	-0.44*	3,375
		(0.32)	(0.25)	(0.23)	(0.26)	
Owner is operator	0.70	-0.04	0.03	-0.02	0.03	3,375
		(0.04)	(0.03)	(0.03)	(0.03)	
Mgr. interaction frequency (1-4)	2.00	-0.01	-0.02	-0.09	-0.05	3,375
		(0.12)	(0.09)	(0.08)	(0.09)	
Mgr. interaction, rare (1-4)	2.27	0.11	0.07	-0.03	-0.02	2,248
		(0.15)	(0.11)	(0.10)	(0.12)	
Commissions paid (0/1)	0.92	0.02	0.01	-0.01	0.02	3,375
		(0.02)	(0.02)	(0.02)	(0.02)	
Good work conditions (0/1)	0.67	-0.06	-0.03	-0.06	0.00	3,375
		(0.04)	(0.04)	(0.04)	(0.04)	
Mgr. visits regularly (0/1)	0.51	-0.05	-0.03	-0.07*	-0.10***	3,375
		(0.04)	(0.04)	(0.04)	(0.04)	
Real time support (0/1)	0.68	-0.02	-0.06	-0.07**	-0.02	3,375
		(0.04)	(0.04)	(0.03)	(0.04)	
Gets non-fin. prizes (0/1)	0.61	-0.02	-0.07	-0.04	-0.02	3,375
		(0.06)	(0.05)	(0.04)	(0.05)	
Flexible operation (0/1)	0.20	0.04	0.05*	0.03	0.01	3,375
		(0.03)	(0.03)	(0.03)	(0.03)	
Retails non-MTN (0/1)	0.50	-0.06	-0.05	-0.01	-0.02	3,375
		(0.05)	(0.04)	(0.04)	(0.04)	
Provider count nearby	2.32	-0.26*	0.08	0.08	-0.18	3,375
		(0.14)	(0.14)	(0.12)	(0.14)	
Agent count nearby (wins.)	13.57	-0.33	-1.50*	-0.08	-0.90	3,375
		(0.92)	(0.80)	(0.89)	(0.87)	
Joint significance (pairwise p-val):		(0.483)	(0.003)	(0.034)	(0.011)	
Joint significance (pooled p-val):				(0.551)		

Note: This table presents row-wise balance tests. Observations are at the agent level. The specification for these

Table A.2: Baseline Balance 2: Firm Performance and Administrative Outcomes (Agents)

Variable	Control mean	Flat bonus	Franchising	Threshold	Tournament	N
Firm Performance Outcomes						
Core MTN income (last mon., GHS)	781.84	98.25*	-47.08	-26.63	-19.59	3,375
		(56.70)	(50.48)	(47.44)	(48.38)	
Core MTN revenue (mon., GHS)	175,166.36	-5,036.78	-3,032.28	-9,763.46	4,833.26	3,375
		(14,852.57)	(13,605.82)	(12,590.75)	(13,138.19)	
Non-core MTN revenue (mon., GHS)	3,151.96	206.02	88.30	128.05	15.25	3,375
		(284.55)	(284.92)	(266.07)	(275.65)	
Non-MTN revenue (mon., GHS)	5,246.60	-1,523.04	-318.08	-318.88	-1,091.09	3,375
		(947.29)	(1,026.08)	(899.93)	(916.66)	
Non-MOMO revenue (mon., GHS)	3,808.05	-365.66	-79.56	-766.31*	-657.97	1,778
		(556.93)	(542.84)	(458.67)	(530.12)	
Total income (last wk., GHS)	859.24	-80.70	-55.50	-124.50	-161.98*	1,778
		(108.84)	(96.84)	(89.85)	(89.77)	
No. paid workers (last mon.)	0.56	0.04	-0.10*	-0.06	-0.14***	3,375
		(0.09)	(0.06)	(0.06)	(0.05)	
Wage bill (last mon., GHS)	240.76	20.04	-33.01	-13.06	-35.97	3,375
		(33.78)	(23.45)	(24.84)	(24.77)	
Capital, MOMO (last mon., GHS)	21,441.59	-345.44	1,456.88	-1,735.29	193.45	3,375
		(1,616.97)	(1,476.12)	(1,302.31)	(1,724.86)	
Capital, total (last mon., GHS)	28,069.09	-891.71	155.77	-3,265.24**	-913.44	3,375
		(2,116.31)	(1,822.82)	(1,644.45)	(2,195.21)	
Borrowed (last yr., 0/1)	0.24	0.02	-0.01	0.01	0.05*	3,108
		(0.03)	(0.03)	(0.03)	(0.03)	
Hours worked (daily avg.)	12.43	-0.02	0.08	0.15	0.01	3,375
		(0.15)	(0.13)	(0.13)	(0.15)	
No. customers (last mon.)	905.39	-40.24	-17.25	-49.89	34.99	3,375
		(89.44)	(80.69)	(77.08)	(84.99)	
Joint significance (pairwise p-val):		(0.757)	(0.794)	(0.543)	(0.564)	
Joint significance (pooled p-val):				(0.909)		
Administrative Outcomes						
Cash in (volume)	158.18	4.97	-8.24	-7.00	-0.41	153,788
		(9.50)	(7.18)	(6.70)	(8.20)	
Cash in (GHS)	46,959.84	4,047.84	-1,178.28	-3,295.80	-1,377.01	153,788
		(4,320.08)	(3,570.30)	(3,040.11)	(3,603.96)	
Cash out (volume)	193.59	-1.92	-20.89**	-0.23	-12.55	153,788
		(11.75)	(10.79)	(9.72)	(10.13)	
Cash out (GHS)	59,927.70	-1,987.91	-7,019.14	-3,460.55	-3,694.61	153,788
		(4,660.55)	(4,360.86)	(4,044.50)	(4,148.31)	
Cash out commission (GHS?)	197.72	-3.32	-22.23*	-7.62	-9.59	145,873
		(12.45)	(12.04)	(11.09)	(11.41)	
Cash in commission, gross (GHS?)	99.55	6.64	-1.31	-4.15	-1.84	149,887
		(7.90)	(6.07)	(5.30)	(5.94)	
Cash in commission, net (GHS?)	89.60	5.98	-1.18	-3.74	-1.65	149,887
		(7.11)	(5.46)	(4.77)	(5.35)	
Hours worked (daily avg.)	10.95	0.16	0.05	0.14	0.21	153,788
		(0.16)	(0.14)	(0.13)	(0.16)	
Joint significance (pairwise p-val):		(0.445)	(0.213)	(0.056)	(0.217)	
Joint significance (pooled p-val):				(0.475)		

Note: This table presents row-wise balance tests. Observations are at the agent level. The specification for these tests includes controls for randomization strata. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.3: Baseline Balance 3: Demographics and Job Characteristics (Managers)

Variable	Control mean	Flat bonus	Franchising	Threshold	Tournament	N
Manager Demographics						
Age	31.79	-1.39	-2.22	2.10	-2.66*	261
		(1.82)	(1.51)	(1.41)	(1.58)	
Education (2-7)	4.75	0.28	-0.19	0.40	-0.26	262
		(0.32)	(0.28)	(0.30)	(0.30)	
Married (0/1)	0.40	-0.08	-0.00	0.12	-0.13	262
		(0.12)	(0.09)	(0.09)	(0.09)	
Female	0.12	-0.02	-0.01	-0.03	0.08	262
		(0.08)	(0.10)	(0.08)	(0.09)	
HH size	3.25	-0.28	0.34	-0.07	0.17	262
		(0.45)	(0.64)	(0.44)	(0.50)	
HH income (yearly)	38,618.76	12,967.81	62,496.01	35,339.31***	23,678.36	256
		(12,093.64)	(42,252.41)	(13,663.48)	(14,456.45)	
Job Characteristics and Incentives						
Real time support (0/1)	0.71	-0.09	0.06	-0.19	-0.02	262
		(0.12)	(0.10)	(0.12)	(0.10)	
Prize rewards (0/1)	0.75	-0.09	-0.03	0.01	0.01	262
		(0.10)	(0.08)	(0.09)	(0.07)	
Flexibility (0/1)	0.21	0.09	-0.09	-0.04	-0.03	262
		(0.11)	(0.09)	(0.09)	(0.09)	
Joint significance (pairwise p-val):		(0.024)	(0.001)	(0.403)	(0.011)	
Joint significance (pooled p-val):				(0.515)		

Note: This table presents row-wise balance tests. Observations are at the manager level. The specification for these tests includes controls for randomization strata. This sample includes n=378 managers across the 9 experimental regions in the southern and middle belts of Ghana, in which markets were randomly assigned to different contract programs. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.

$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.4: Summary Statistics 1: Agents

Variable	Mean	SD	N
Demographics			
Age	29.39	(7.022)	6025
Any Education (Secondary+, 0/1)	0.90	(0.303)	6025
Married (0/1)	0.37	(0.484)	6025
Female (0/1)	0.40	(0.490)	6025
HH size	4.07	(2.790)	6025
HH income (yearly, USD)	2,290.45	(1,634.287)	5982
HH expenses (yearly, USD)	149.87	(111.200)	6003
Preferences and Compensation Adequacy			
Commissions (monthly, USD)	73.54	(70.146)	6012
Believes current commission scheme is inadequate (0/1)	0.29	(0.453)	6025
Prefers: Simple Linear scheme	0.32	(0.465)	6025
Prefers: Flat bonus scheme	0.26	(0.437)	6025
Prefers: Threshold scheme	0.05	(0.215)	6025
Prefers: Franchise scheme	0.20	(0.401)	6025
Prefers: Tournament scheme	0.18	(0.381)	6025
Mean rank for Simple Linear scheme	3.12	(1.338)	6025
Mean rank for Flat bonus scheme	2.08	(1.228)	6025
Mean rank for Threshold scheme	3.77	(1.282)	6025
Mean rank for Franchise scheme	3.08	(1.328)	6025
Mean rank for Tournament scheme	2.94	(1.358)	6025
Understands chosen scheme confidently (0/1)	0.97	(0.163)	6025
Scheme chosen for its complexity	0.03	(0.183)	6025
Scheme chosen for its simplicity	0.25	(0.434)	6025
Scheme chosen for power of incentives	0.54	(0.499)	6025
Scheme chosen for understanding or lack thereof	0.17	(0.376)	6025
Scheme chosen for other reason	0.00	(0.068)	6025
Preference due to cash in/out service only	0.57	(0.495)	4473
Preference due to all services	0.43	(0.495)	4473

Note: This table lists summary statistics for agent outcomes.
Exchange rate: USD 1 = 15.51 GHS.

Table A.5: Summary Statistics 2: Agents

Variable	Mean	SD	N
Job Characteristics and Incentives			
Work experience (years)	7.28	(5.450)	6025
Work experience in sales and retail (years)	5.06	(4.153)	6025
Years at current outlet > 1 (0/1)	0.78	(0.412)	6025
Interaction w mgr. frequent (0/1)	0.21	(0.408)	6025
Last interaction this month (0/1)	0.31	(0.462)	3757
Owner is operator (0/1)	0.69	(0.463)	6025
Familiar with agent motivation (0/1)	0.40	(0.491)	6025
Drivers of agent motivation:			
Commissions/bonuses paid (0/1)	0.94	(0.246)	6025
Good working conditions (0/1)	0.65	(0.479)	6025
Regular visitation from MML supervisors (0/1)	0.48	(0.500)	6025
Getting real time support when needed (0/1)	0.68	(0.466)	6025
Non-financial prizes given to agents (0/1)	0.59	(0.492)	6025
Flexibility in how agents operate their businesses (0/1)	0.23	(0.419)	6025
Other factors (0/1)	0.05	(0.215)	6025
Retails non-MTN mobile money (0/1)	0.46	(0.498)	6025
Access to Credit			
Sought loan last month (0/1)	0.25	(0.433)	5532
Obtained loan last month (0/1)	0.95	(0.227)	1383
Borrowed from: Mobile money (0/1)	0.08	(0.274)	1383
Borrowed from: MFI (0/1)	0.09	(0.287)	1383
Borrowed from: Bank (0/1)	0.27	(0.445)	1383
Borrowed from: Informal group (0/1)	0.09	(0.290)	1383
Borrowed from: Friends and family (0/1)	0.40	(0.489)	1383
Borrowed from: Colleagues/other agents/Church (0/1)	0.04	(0.201)	1383
Borrowed from: Other (0/1)	0.03	(0.157)	1383
Number of times borrowed last month	2.82	(4.218)	1308
Amount borrowed last month (USD)	563.76	(484.284)	1308
Conducts MOMO transactions on credit (0/1)	0.42	(0.493)	6025
Value of MoMo and non-MoMo services (USD)	211.06	(254.718)	2794
Firm Performance			
Store operates non-MOMO services (0/1)	0.52	(0.500)	6025
Core MTN revenue (monthly, wins., USD)	10,985.00	(11,049.213)	6025
Core MTN income (last monthly, USD)	49.99	(45.301)	6025
Non-core MTN revenue (monthly, USD)	207.15	(217.454)	5492
Non-MTN revenue (monthly, USD)	766.10	(1,253.202)	2851
Non-MOMO revenue (monthly, USD)	465.11	(657.856)	2022
Total income (last week, USD)	49.11	(68.675)	3151
No. customers (last month)	1,300.74	(2,794.667)	6025
Float management service WTP	15.34	(25.617)	6025

Note: This table lists summary statistics for agent outcomes.
Exchange rate: USD 1 = 15.51 GHS.

Table A.6: Summary Statistics 3: Agents

Variable	Mean	SD	N
Local Economic Environment			
MTN and non-MTN compensation schemes different (0/1)	0.37	(0.482)	6025
Number of MOMO providers in region	2.11	(1.368)	6025
Number of MOMO agents in community	14.60	(23.267)	6025
Possible Effort Change			
Days worked (weekly average)	6.40	(0.704)	6025
Hours worked (daily average)	12.17	(2.246)	6025
Added another business line (0/1)	0.07	(0.263)	6025
Business relocated (0/1)	0.09	(0.284)	6025
Activated new customers last month (0/1)	0.76	(0.429)	6025
No. paid workers (last month)	4.35	(39.109)	2214
Wage bill (last month, USD)	54.50	(200.936)	2166
Expenses, total (last month, USD)	24.67	(28.370)	6025
Expenses, total (last month, USD)	24.67	(28.370)	6025
Capital, MOMO (last month, USD)	1,408.61	(1,403.770)	6025
Capital, total (last month, USD)	1,740.78	(1,709.817)	6025
Reduced prices last month (0/1)	0.11	(0.310)	6025
Ensured availability last month (0/1)	0.81	(0.394)	6025
Ensured work ethics last month (0/1)	0.98	(0.143)	6025
Discussed fees w customers last month (0/1)	0.66	(0.474)	6025
Official tariff sheet posted visibly (0/1)	0.18	(0.384)	6025
Implemented new business practice last month (0/1)	0.08	(0.272)	6025
Experienced fraud last month (0/1)	0.21	(0.405)	6025
Assesses business profitability (0/1)	0.91	(0.292)	6025
Assesses business profitability often	0.74	(0.437)	5459
Participated in MOMO training (0/1)	0.07	(0.263)	6025
Owns working smart phone (0/1)	0.80	(0.401)	6025
Life satisfaction (1-4)	2.77	(0.769)	6025
Financial satisfaction (1-4)	2.38	(0.841)	6025
Number of nearby stores competing	4.98	(4.678)	6025
Number of nearby stores not competing	8.03	(7.890)	6025
Intervention consent (0/1)	0.82	(0.387)	6025
Why not consent:			
I am not the owner and do not decide (0/1)	0.35	(0.478)	1107
Participation payment (100GHS/month) is too small (0/1)	0.06	(0.232)	1107
I do not care about MML agent bonus decisions (0/1)	0.03	(0.170)	1107
My choice will inform MML's agent bonus decisions (0/1)	0.10	(0.300)	1107
I will not (and do not) control contract choice (0/1)	0.02	(0.154)	1107
I might be assigned a contract that will make me worse off (0/1)	0.10	(0.296)	1107
I will need more time to think about this (0/1)	0.24	(0.427)	1107
Other reasons (0/1)	0.10	(0.298)	1107
Rate MML services (1-10)	6.61	(1.804)	5481

Note: This table lists summary statistics for agent outcomes.
Exchange rate: USD 1 = 15.51 GHS.

Table A.7: Summary Statistics 4: Managers

Variable	Mean	SD	N
Demographics			
Female (0/1)	0.17	(0.377)	456
Age	30.95	(7.344)	454
Education (2-7)	4.81	(1.562)	456
Married (0/1)	0.40	(0.490)	456
HH Size	3.77	(2.345)	455
HH Income (USD)	3,414.86	(5,300.072)	415
Job Characteristics and Incentives			
Work experience (years)	8.54	(5.704)	456
Work experience in sales and retail (years)	6.40	(4.930)	456
Tenure at company (years)	5.98	(4.564)	456
Manager bonus linked to performance (0/1)	0.51	(0.500)	456
Number of subordinates	807.05	(3,683.819)	443
Sales revenue (USD)	650,365.10	(1683024.800)	321
Current commission structure adequate (0/1)	0.46	(0.499)	456
Prefers: Simple Linear scheme (0/1)	0.24	(0.430)	456
Prefers: Flat bonus scheme (0/1)	0.22	(0.414)	456
Prefers: Threshold scheme (0/1)	0.08	(0.277)	456
Prefers: Franchise scheme (0/1)	0.20	(0.398)	456
Prefers: Tournament scheme (0/1)	0.26	(0.437)	456
Mean rank for Simple Linear scheme (1-5)	3.34	(1.320)	456
Mean rank for Flat bonus scheme (1-5)	2.02	(1.272)	456
Mean rank for Threshold scheme (1-5)	3.58	(1.293)	456
Mean rank for Franchise scheme (1-5)	2.97	(1.291)	456
Mean rank for Tournament scheme (1-5)	3.08	(1.380)	456
Understands chosen scheme confidently (0/1)	0.98	(0.139)	456
Scheme chosen for its complexity (0/1)	0.10	(0.299)	456
Scheme chosen for power of incentives (0/1)	0.68	(0.465)	456
Scheme chosen for understanding or lack thereof (0/1)	0.16	(0.365)	456
Scheme chosen for other reason (0/1)	0.02	(0.139)	456
Scheme chosen for its simplicity (0/1)	0.04	(0.195)	456
Preference due to cash in/out service only (0/1)	0.42	(0.494)	356
Preference due to all services (0/1)	0.58	(0.494)	356
Interaction w mgr. frequent (0/1)	0.79	(0.408)	456
Drivers of agent motivation:			
Commissions/bonuses paid (0/1)	0.87	(0.334)	456
Good working conditions (0/1)	0.55	(0.498)	456
Regular visitation from MML supervisors (0/1)	0.62	(0.486)	456
Getting real time support when needed (0/1)	0.71	(0.456)	456
Non-financial prizes given to agents (0/1)	0.70	(0.459)	456
Flexibility in how agents operate their businesses (0/1)	0.17	(0.377)	456
Other factors (0/1)	0.12	(0.323)	456
Familiar with agent motivation (0/1)	0.68	(0.467)	456
Involved in scheme setup (0/1)	0.13	(0.334)	456
Retail for other orgs. (0/1)	0.04	(0.195)	432
Number of providers in region	2.86	(1.163)	456
Number of agents in region	169.00	(521.879)	414
Busy market (0/1)	0.85	(0.359)	456
Rate MML service (1-10)	8.02	(1.475)	407

Note: This table lists summary statistics for manager outcomes.
Exchange rate: USD 1 = 15.51 GHS.

A.3 Heterogeneity

Table A.8: Results Heterogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Outcome: Total Revenue (weekly). Heterogeneity var:								
	Large firm	Owner-operator	Female	Rural	No. Agents in locality	Market Volatility	Interacts w/ mngr	Bundles w/ Non-MTN MOMO	Bundles w/Non-MOMO
Flat bonus	-54.627***	-49.994	-134.136***	-164.140***	-106.500**	-94.545**	-89.709**	-57.289	-160.882***
	(15.374)	(64.382)	(46.020)	(47.972)	(52.557)	(42.958)	(38.035)	(38.832)	(59.242)
Franchising	6.998	-41.949	-60.723*	-51.288	39.246	-39.796	-15.076	-18.028	-45.358
	(19.243)	(48.419)	(33.188)	(31.975)	(47.634)	(32.581)	(32.817)	(30.925)	(39.481)
Threshold	-29.848**	-41.976	-76.033**	-124.769***	-63.514	-61.612**	-83.094***	-49.029	-109.690***
	(13.842)	(51.203)	(34.835)	(29.547)	(40.817)	(27.806)	(27.816)	(29.798)	(36.129)
Tournament	17.418	124.360**	40.799	43.876	69.089	9.061	91.229***	92.212***	66.706
	(14.325)	(58.886)	(36.805)	(31.130)	(43.264)	(30.278)	(34.318)	(32.796)	(40.536)
Heterogeneity var.	56.386	25.216	14.115	-111.375***	0.775	-47.934	14.098	40.994	-37.170
	(47.984)	(31.612)	(33.395)	(42.594)	(2.252)	(36.943)	(44.431)	(31.187)	(35.668)
Flat bonus x het.	-149.602**	-126.854*	-3.642	93.319	-2.038	-94.095	-183.569**	-160.842***	44.214
	(65.086)	(67.706)	(49.160)	(71.160)	(3.203)	(70.031)	(74.639)	(54.198)	(58.284)
Franchising x het.	-82.333	11.082	45.261	68.830	-5.861*	9.381	-60.843	-26.592	19.583
	(54.321)	(53.207)	(53.135)	(64.496)	(3.187)	(57.928)	(61.512)	(49.359)	(51.073)
Threshold x het.	-108.637**	-60.827	-15.899	122.332**	-1.509	-45.958	-5.318	-70.544	44.145
	(50.649)	(52.039)	(47.612)	(54.280)	(2.583)	(50.858)	(60.003)	(45.903)	(47.917)
Tournament x het.	168.719***	-55.470	72.413	129.711*	1.313	145.080**	-25.483	-10.373	30.365
	(58.778)	(59.133)	(47.630)	(67.576)	(2.825)	(57.821)	(57.432)	(51.269)	(53.775)
Obs.	25582	25582	25582	25582	25582	25582	25582	25582	25582
Mean dep var (control)	446.570	446.570	446.570	446.570	446.570	446.570	446.570	446.570	446.570
SD dep var (control)	596.953	596.953	596.953	596.953	596.953	596.953	596.953	596.953	596.953
Data source	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline	Admin. + Baseline

Note: Observations are at the agent x market x week level. The specification includes controls for randomization strata and baseline productivity. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

A.4 Interpreting the Results

Table A.9: Selection Out of Contracts - Dropout Effects

	(1) Total Revenue (weekly) b/se	(2) CICO Value (weekly) b/se	(3) Airtime Value (weekly) b/se	(4) Output Index b/se
Flat Bonus	-67.994	-20452.241	-61.838	-0.161
	(57.886)	(22340.457)	(104.936)	(0.147)
Franchising	-46.825	-12024.518	13.955	-0.102
	(50.152)	(19997.346)	(112.951)	(0.136)
Threshold	-86.011*	-33541.681*	-74.269	-0.218*
	(45.822)	(17321.347)	(99.655)	(0.125)
Tournament	-53.316	-21479.449	162.556	0.018
	(51.588)	(19552.037)	(136.843)	(0.144)
Observations	7712	7712	7712	7712
Mean of dep. var. in control	525.938	171,998.601	579.336	0.377
SD of dep. var. in control	426.423	165,863.480	855.472	1.131
Data source	Admin	Admin	Admin	Admin
Sample	Dropouts	Dropouts	Dropouts	Dropouts

Note: Observations are at the agent x week level. The sample covers the trial period. The specification includes controls for randomization strata. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.

$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.10: Selection out of Contracts - Dropout Effects

	(1) Total Revenue (monthly) b/se	(2) CICO Value (monthly) b/se	(3) Other Business Income (monthly) b/se	(4) Other Business Sales (monthly) b/se
Flat Bonus	187.834	53822.680	-513.753	-3578.713
	(187.954)	(105240.625)	(561.762)	(4354.871)
Franchising	111.928	-45482.136	-621.393	-3769.501
	(166.142)	(81486.294)	(527.480)	(4981.981)
Threshold	63.286	-67829.718	110.105	3187.763
	(148.314)	(85491.422)	(538.992)	(4873.411)
Tournament	-103.666	2373.450	-202.082	-2666.161
	(161.636)	(100609.753)	(611.511)	(4451.122)
Observations	651	648	187	133
Mean of dep. var. in control	1,394.423	359,716.146	1,559.677	9,225.000
SD of dep. var. in control	1,091.215	619,004.046	2,471.969	15,706.325
Data source	Endline	Endline	Endline	Endline
Sample	Dropouts	Dropouts	Dropouts	Dropouts

Note: Observations are at the agent level. The specification includes controls for randomization strata and baseline outcomes. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.

$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.11: Selection Out of Contracts - Dropout Effects 2

	(1) Total Revenue (weekly) b/se	(2) Total Revenue (weekly) b/se	(3) CICO Value (weekly) b/se	(4) CICO Value (weekly) b/se	(5) Airtime Value (weekly) b/se	(6) Airtime Value (weekly) b/se	(7) Output Index b/se	(8) Output Index b/se
Stayed	-147.789***	-188.269***	-48095.371***	-62687.870***	-123.079***	-161.547*	-0.332***	-0.437***
	(17.734)	(41.179)	(6620.392)	(15980.509)	(37.101)	(96.137)	(0.047)	(0.121)
Flat Bonus=1		-82.759		-25613.633		-74.497		-0.187
		(56.915)		(22317.490)		(102.045)		(0.142)
Franchising=1		-69.786		-20384.054		-4.886		-0.138
		(49.424)		(19878.174)		(111.571)		(0.133)
Threshold=1		-93.992**		-36069.942**		-105.693		-0.237**
		(43.639)		(16646.218)		(96.874)		(0.120)
Tournament=1		-57.907		-23057.193		147.892		0.012
		(49.476)		(18916.202)		(138.956)		(0.140)
Flat Bonus=1 × Stayed		10.340		643.128		35.940		0.042
		(65.696)		(25074.157)		(120.041)		(0.165)
Franchising=1 × Stayed		36.891		9071.552		12.499		0.099
		(55.990)		(21774.768)		(132.970)		(0.164)
Threshold=1 × Stayed		68.828		27526.320		52.388		0.148
		(50.675)		(19268.426)		(109.906)		(0.139)
Tournament=1 × Stayed		32.190		14776.479		-28.866		0.050
		(59.964)		(22120.663)		(158.573)		(0.176)
Observations	23696	23696	23696	23696	23696	23696	23696	23696
Mean of dep. var. in control	374.070	374.070	121,525.906	121,525.906	452.430	452.430	0.027	0.027
SD of dep. var. in control	375.992	375.992	141,778.081	141,778.081	766.207	766.207	0.997	0.997
Data source	Admin	Admin	Admin	Admin	Admin	Admin	Admin	Admin

Note: Observations are at the agent-week level. The sample covers the trial period: weeks. The specification includes controls for randomization strata. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.12: Selection out of Contracts - Dropout Effects

	(1) Total Revenue (monthly)	(2) Total Revenue (monthly)	(3) CICO Value (monthly)	(4) CICO Value (monthly)	(5) Other Business Income (monthly)	(6) Other Business Income (monthly)	(7) Other Business Sales (monthly)	(8) Other Business Sales (monthly)
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Stayed	-64.178	-3.661	30144.932	20238.926	498.890**	221.687	2326.694	4086.132
	(61.481)	(167.806)	(30936.110)	(79712.315)	(207.058)	(530.396)	(2771.929)	(5187.130)
Flat Bonus=1		127.975		-1933.129		-800.818		-2834.129
		(195.965)		(100028.046)		(583.372)		(4236.372)
Franchising=1		93.641		-85862.740		-853.222		-2161.406
		(174.609)		(76810.789)		(520.838)		(4417.067)
Threshold=1		62.364		-88229.460		129.231		5403.815
		(165.527)		(84022.736)		(522.399)		(5454.227)
Tournament=1		-50.912		-5536.927		-485.815		-1944.875
		(172.307)		(93600.342)		(597.844)		(4274.351)
Flat Bonus=1 × Stayed		-224.807		12521.293		369.106		3120.188
		(216.259)		(109037.610)		(641.560)		(10527.660)
Franchising=1 × Stayed		-50.823		-42363.947		1494.497*		3025.486
		(217.366)		(85838.006)		(882.407)		(7304.760)
Threshold=1 × Stayed		-50.673		11179.424		-483.130		-10704.591
		(201.008)		(101833.468)		(577.367)		(6514.138)
Tournament=1 × Stayed		48.101		-8439.573		493.715		2886.187
		(222.240)		(114113.199)		(687.970)		(6854.719)
Observations	2048	2048	2034	2034	612	612	463	463
Mean of dep. var. in control	1,266.329	1,266.329	349,437.755	349,437.755	1,739.358	1,739.358	13,228.699	13,228.699
SD of dep. var. in control	1,227.819	1,227.819	683,547.113	683,547.113	2,307.218	2,307.218	27,098.459	27,098.459
Data source	Endline	Endline	Endline	Endline	Endline	Endline	Endline	Endline

Note: Observations are at the agent level. The specification includes controls for randomization strata and baseline outcomes. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.

$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.13: Selection Into Contracts - Administrative Data

	(1) Total Revenue/wk b/se	(2) MTN Revenue/wk b/se	(3) Agent Revenue/wk b/se
Assigned Preferred Contract	78.208	43.562*	34.633
	(49.256)	(26.084)	(23.353)
Flat Bonus=1	-147.490***	-77.260***	-70.323***
	(45.659)	(24.395)	(21.345)
Franchising=1	-63.923**	-33.938**	-30.049**
	(28.594)	(15.105)	(13.602)
Threshold=1	-89.696***	-46.119***	-43.617***
	(26.347)	(14.074)	(12.365)
Tournament=1	69.779**	34.885**	34.866**
	(30.725)	(16.317)	(14.484)
Flat Bonus=1 × Assigned Preferred Contract	-31.910	-24.781	-7.146
	(66.765)	(35.096)	(31.976)
Franchising=1 × Assigned Preferred Contract	45.848	22.318	23.374
	(69.716)	(36.272)	(33.724)
Threshold=1 × Assigned Preferred Contract	2.134	-0.865	3.122
	(82.507)	(43.397)	(39.311)
Tournament=1 × Assigned Preferred Contract	0.000	0.000	0.000
	(.)	(.)	(.)
Observations	25582	25582	25582
Mean of dep. var. in control	446.570	226.527	220.043
SD of dep. var. in control	596.953	316.670	282.809
Data source	Admin	Admin	Admin

Note: Observations are at the agent x market level. The specification includes controls for randomization strata and baseline outcomes. The number of agents randomly assigned to the tournament who also report it as their preferred compensation scheme is too small to permit a meaningful selection test for the tournament arm. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.14: Selection Into Contracts - Endline Surveys

	(1) CICO Value/mn b/se	(2) CICO Value/mn b/se	(3) Total Revenue/mn b/se	(4) Total Revenue/mn b/se
Assigned Preferred Contract	50617.242	73225.335	-5.595	56.494
	(32094.188)	(70941.943)	(59.163)	(114.064)
Flat Bonus=1		87537.106		85.393
		(75359.239)		(115.543)
Franchising=1		-99931.718**		7.073
		(43059.681)		(118.799)
Threshold=1		-59884.894		21.639
		(45429.724)		(99.824)
Tournament=1		4555.745		3.971
		(46251.981)		(117.546)
Flat Bonus=1 × Assigned Preferred Contract		-126393.531		-314.472*
		(92259.718)		(170.772)
Franchising=1 × Assigned Preferred Contract		-21078.606		82.212
		(79813.317)		(166.696)
Threshold=1 × Assigned Preferred Contract		-74043.763		-23.233
		(104509.298)		(204.648)
Tournament=1 × Assigned Preferred Contract		-3495.396		-65.263
		(130014.491)		(177.170)
Observations	2284	2284	2299	2299
Mean of dep. var. in control	343,749.115	343,749.115	1,303.705	1,303.705
SD of dep. var. in control	665,976.274	665,976.274	1,258.291	1,258.291
Data source	Endline	Endline	Endline	Endline

Note: Observations are at the agent x market level. The specification includes controls for randomization strata and baseline outcomes. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.15: Selection on Preference Parameters: 1

	(1) CICO Value/mn b/se	(2) CICO Value/mn b/se	(3) CICO Value/mn b/se	(4) CICO Value/mn b/se	(5) CICO Value/mn b/se	(6) CICO Value/mn b/se	(7) CICO Value/mn b/se	(8) CICO Value/mn b/se
Risk Averse	-29077.221	-62658.371						
	(38007.526)	(98569.361)						
Impatient			6227.202	8587.858				
			(54628.128)	(145218.478)				
Competition Averse					-41993.712	-92665.491		
					(26157.404)	(63156.233)		
Reciprocates							52395.219*	16810.439
							(30066.459)	(72221.090)
Flat Bonus=1		246080.750		128339.489		58302.540		-12198.148
		(166743.174)		(241413.476)		(107233.042)		(79957.695)
Franchising=1		-126993.358		-74329.804		-129068.743**		-143171.522**
		(120057.623)		(180745.242)		(63489.475)		(61822.886)
Threshold=1		-203188.068*		-120747.132		-147297.245**		-65673.351
		(109188.254)		(150210.822)		(62836.026)		(75177.468)
Tournament=1		-161868.030		-57797.790		-66626.148		-39459.760
		(108640.911)		(165514.638)		(64813.271)		(67151.275)
Observations	2284	2284	2284	2284	2284	2284	2284	2284
Mean of dep. var. in control	343,749.115	343,749.115	343,749.115	343,749.115	343,749.115	343,749.115	343,749.115	343,749.115
SD of dep. var. in control	665,976.274	665,976.274	665,976.274	665,976.274	665,976.274	665,976.274	665,976.274	665,976.274
Data source	Endline	Endline	Endline	Endline	Endline	Endline	Endline	Endline

Note: Observations are at the agent x market level. The specification includes controls for randomization strata and baseline outcomes. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.16: Selection on Preference Parameters: 2

	(1) Total Revenue/mn b/se	(2) Total Revenue/mn b/se	(3) Total Revenue/mn b/se	(4) Total Revenue/mn b/se	(5) Total Revenue/mn b/se	(6) Total Revenue/mn b/se	(7) Total Revenue/mn b/se	(8) Total Revenue/mn b/se
Risk Averse	-109.261	-57.235						
	(75.516)	(143.165)						
Impatient			60.955	302.451				
			(97.371)	(263.627)				
Competition Averse					-162.232***	-213.420*		
					(58.854)	(120.618)		
Reciprocates							80.884	54.726
							(65.500)	(145.055)
Flat Bonus=1		482.120**		147.897		-22.747		23.254
		(242.616)		(306.630)		(150.140)		(187.103)
Franchising=1		-56.997		450.497		-19.528		-52.491
		(186.378)		(354.616)		(139.229)		(158.965)
Threshold=1		55.984		443.320		-30.369		16.463
		(182.362)		(299.609)		(146.843)		(164.119)
Tournament=1		-161.997		-51.624		-51.190		-58.909
		(166.454)		(309.404)		(158.571)		(150.017)
Observations	2299	2299	2299	2299	2299	2299	2299	2299
Mean of dep. var. in control	1,303.705	1,303.705	1,303.705	1,303.705	1,303.705	1,303.705	1,303.705	1,303.705
SD of dep. var. in control	1,258.291	1,258.291	1,258.291	1,258.291	1,258.291	1,258.291	1,258.291	1,258.291
Data source	Endline	Endline	Endline	Endline	Endline	Endline	Endline	Endline

Note: Observations are at the agent x market level. The specification includes controls for randomization strata and baseline outcomes. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.17: Market Changes: Relationships

	(1) Agent-Mgr. Rel. Imprvd. b/se	(2) Agent-Cust. Rel. Imprvd. b/se	(3) Agent-Agent Rel. Imprvd. b/se
Flat Bonus	0.021	-0.004	0.013
	(0.017)	(0.044)	(0.031)
Franchising	-0.017	-0.055	-0.048**
	(0.014)	(0.037)	(0.024)
Threshold	-0.004	-0.007	-0.027
	(0.015)	(0.041)	(0.025)
Tournament	0.008	0.007	-0.006
	(0.019)	(0.037)	(0.024)
Observations	2295	2295	2295
Mean of dep. var. in control	0.044	0.262	0.127
SD of dep. var. in control	0.205	0.440	0.333
Data source	Endline	Endline	Endline

Note: Observations are at the agent x market level. The specification includes controls for randomization strata and baseline revenues. Cluster-robust standard errors at the locality level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

Table A.18: Market Changes: Prices

	(1) Overcharged Indicator b/se	(2) Overcharged Amount (GHS) b/se	(3) Agent Present b/se	(4) Transaction Successful b/se	(5) Agent Discussed Fees b/se
Flat Bonus	-0.003	-1.821	-0.004	0.003	-0.013
	(0.025)	(1.211)	(0.006)	(0.017)	(0.028)
Franchising	-0.002	-0.780	-0.003	-0.005	-0.015
	(0.021)	(1.218)	(0.006)	(0.019)	(0.024)
Threshold	-0.002	-1.971**	0.001	-0.008	-0.002
	(0.020)	(1.000)	(0.006)	(0.016)	(0.022)
Tournament	-0.034	-2.238**	0.003	-0.012	-0.049**
	(0.022)	(1.057)	(0.005)	(0.018)	(0.024)
Observations	3139	2730	12036	4892	2415
Mean of dep. var. in control	0.320	3.523	0.770	0.637	0.401
SD of dep. var. in control	0.467	18.457	0.421	0.481	0.491
Data source	Audit	Audit	Audit	Audit	Audit

Note: Observations are at the agent x market x transaction level. The specification includes controls for date, transaction type, and enumerator fixed effects. Cluster-robust standard errors at the community level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

A.5 Managerial Predictability

Table A.19: Prediction Accuracy

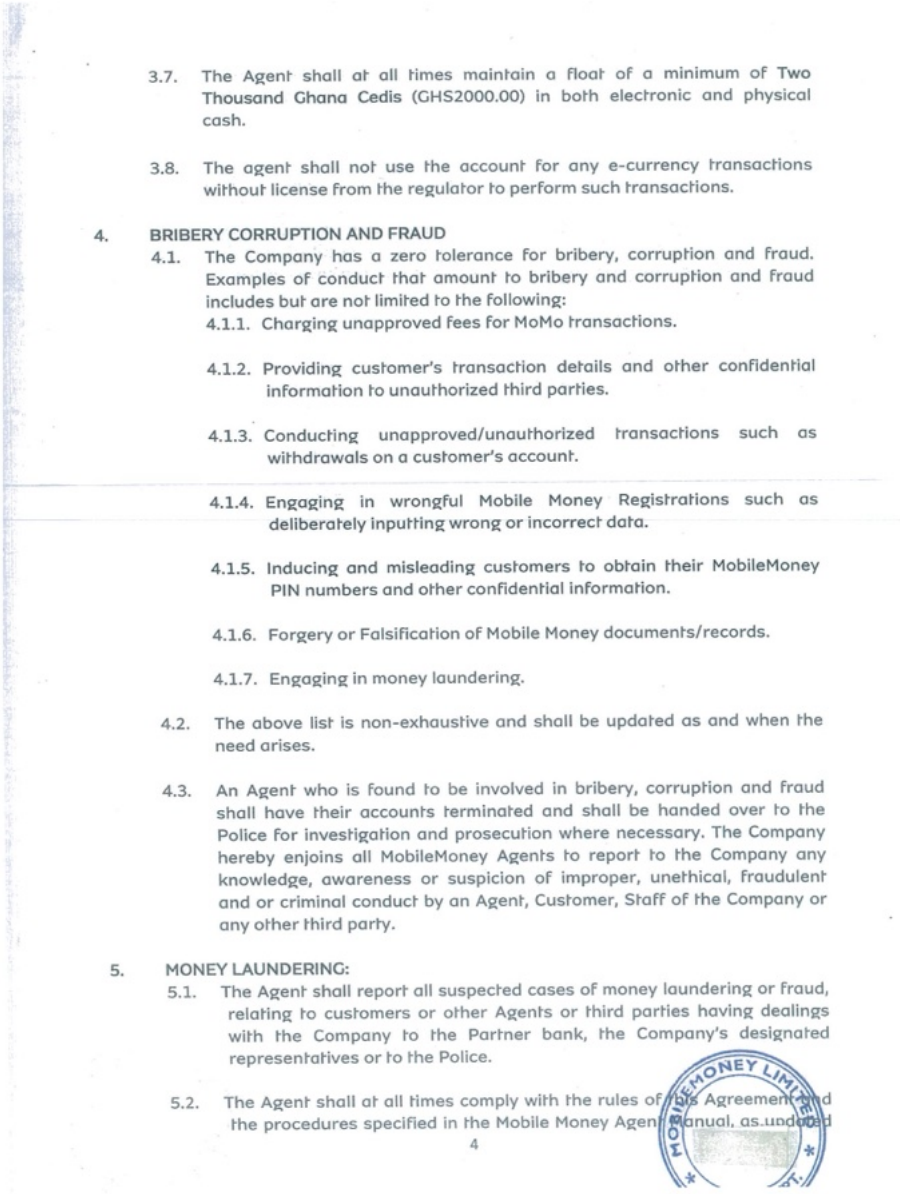
	(1) Revenue Rank (Actual)	(2) Revenue Rank (Actual)	(3) Revenue Rank (Actual)	(4) Dropout Rank (Actual)	(5) Dropout Rank (Actual)	(6) Dropout Rank (Actual)
Revenue Rank (Predicted)	0.188***	-0.000***	0.000			
	(0.042)	(0.000)	(0.000)			
Dropout Rank (Predicted)				0.280***	0.000	0.000*
				(0.042)	(0.000)	(0.000)
Observations	2275	2275	1270	1395	1395	1270
R-squared	0.035	1.000	1.000	0.116	1.000	1.000
Controls	None	Contract type	All drivers	None	Contract type	All drivers

Note: Observations are at the manager x contract level. Two-way cluster-robust standard errors at the manager-enumerator level are reported in parenthesis. 95% confidence intervals are reported in brackets.
$*$ p $<$ 0.10, $**$ p $<$ 0.05, $***$ p $<$ 0.01

B Exhibits and Data Collection

B.1 Randomized Contracts

Figure B.1: MTN Agent Agreement Forms



3.7. The Agent shall at all times maintain a float of a minimum of Two Thousand Ghana Cedis (GHS2000.00) in both electronic and physical cash.

3.8. The agent shall not use the account for any e-currency transactions without license from the regulator to perform such transactions.

4. BRIBERY CORRUPTION AND FRAUD

4.1. The Company has a zero tolerance for bribery, corruption and fraud. Examples of conduct that amount to bribery and corruption and fraud includes but are not limited to the following:

4.1.1. Charging unapproved fees for MoMo transactions.

4.1.2. Providing customer's transaction details and other confidential information to unauthorized third parties.

4.1.3. Conducting unapproved/unauthorized transactions such as withdrawals on a customer's account.

4.1.4. Engaging in wrongful Mobile Money Registrations such as deliberately inputting wrong or incorrect data.

4.1.5. Inducing and misleading customers to obtain their MobileMoney PIN numbers and other confidential information.

4.1.6. Forgery or Falsification of Mobile Money documents/records.

4.1.7. Engaging in money laundering.

4.2. The above list is non-exhaustive and shall be updated as and when the need arises.

4.3. An Agent who is found to be involved in bribery, corruption and fraud shall have their accounts terminated and shall be handed over to the Police for investigation and prosecution where necessary. The Company hereby enjoins all MobileMoney Agents to report to the Company any knowledge, awareness or suspicion of improper, unethical, fraudulent and or criminal conduct by an Agent, Customer, Staff of the Company or any other third party.

5. MONEY LAUNDERING:

5.1. The Agent shall report all suspected cases of money laundering or fraud, relating to customers or other Agents or third parties having dealings with the Company to the Partner bank, the Company's designated representatives or to the Police.

5.2. The Agent shall at all times comply with the rules of this Agreement and the procedures specified in the Mobile Money Agent Manual, as updated

4

Note: Contracts differ only in their commission structures. All other terms—including compliance requirements such as anti–money laundering, anti-bribery, and related governance provisions—are identical across contracts and signed by both MTN and the agent.

B.2 Agent Outlets — Exhibits of Financial Intermediaries

Figure B.2: Agent outlets



Note: Mobile money agent locations providing retail financial services on behalf of multiple services platform providers, including MTN Mobile Money Ltd., AirtelTigo Money, Telecel, and GCB Ltd.'s G-Money (a bank-led mobile money provider). VodaCash—previously one of the three minor service providers—was recently rebranded as Telecel. Approximately 60% of agents also sell non-financial goods and services (e.g., groceries, building materials, clothing, and pharmaceuticals). These complementary activities account for less than 7% of agents' total revenues and represent a minor line of business.

B.3 Manager Surveys and Beliefs Elicitation - Select Questions

A. Beliefs Elicitation

PLEASE RANK ALTERNATIVE COMPENSATION SCHEMES

Consider the following commissions or bonus structures based on agent's sales revenue/week. We will ask you to rank the different commission structures under the assumption that each commission structure will have the same total expenditure by MTN across all agents. In other words, on average, the total expenditure by MTN (that is, the total commissions/week MTN will pay to agents) will be equal across that contracts no matter what commission structure you choose. (This restriction allows us to focus purely on incentives for agents to work hard).

Because the total expenditure or the cost to MTN or the total commissions paid out is the same regardless of the scheme, on average, the benefits to an agent are always the same across contracts, although individual agents may earn more or less, and work more or less, depending on the scheme. Similarly, to a manager, on average, the costs to corporate MTN are always the same, but because agents may work more or less, the revenues may be higher or lower under different incentive schemes.

Given that these schemes will cost MTN the exact same expenditures, could you (i) *tell me which is your most preferred scheme among all the schemes presented?*, (ii) *rank the schemes in order of expected profits or net revenue to MTN?* and also (iii) *rank the schemes in the order of dropout rates* – if 100 agents are assigned to a scheme, please order schemes from highest to lowest in terms of the number of agents who request to be taken off the scheme and returned to the status quo incentive scheme? That is, conditional on the expected expenses incurred by MTN which is the same across all the possible schemes, which scheme will (i) make you better off, (ii) generate the most profit/net revenue on average to MTN, and (iii) have more agents who are assigned to the scheme request to be removed from it?

Sales revenue refer to total value of all cash-in and cash-out transactions realized at retail agent points/week. Profit refers to earned income or net benefit to MTN. Let's consider an example for your choices/rankings: If Contract #1 will give GHS100 in net benefits to MTN and Contract #2 will give GHS50 in net benefits to MTN, then you want to rank Contract #1 as first (largest net revenues!). Next, let's consider an example for your choices/rankings for dropout rates: If 10% of agents assigned will request to be removed from Contract #1 and 5% of agents assigned will request to be removed from Contract #2, then you want to rank Contract #1 as first (highest dropouts!)..

We want you to answer as honestly as possible.

For Q1: Simply choose the scheme (only one!) that will make "you" better off.

For Q2: In fact, MTN is going to be trying different bonus structures in different local areas in the future. Your choice will help determine what bonus structure MTN will be trying in the future in your local area. The higher your rank a bonus structure in Q2, the more likely it is to be implemented in your local area. Thus, you should try to ensure that the rankings to Q2 reflect your true beliefs as much as possible.

For Q2A: Simply rank the schemes based on what most agents will not find profitable and so will drop out of it if assigned.

For Q2/Q2A: We are going to compare your rankings in Q2/Q2A to the outcome of MTN's trial of different compensation schemes study. Please note that if your rankings in Q2/Q2A come out correctly after the entire survey is done, you stand the chance of winning GHS500 for your accuracy in your rankings and responses, so pay particular attention to your rankings because you stand the chance of winning something of value. We are going to compare your rankings in Q2/Q2A to the eventual outcome of the study at the conclusion of the study.

Elicitation steps:

- 1—Trained enumerators present the various contract schemes (pictures, words, illustrative examples) separately to each manager.[RANDOMIZE PRESENTATION ORDER OF THE STATUS QUO SCHEME ONLY ON ENUMERATORS' TABLETS].
- 2—Managers ask questions and engage with enumerators.
- 3—Managers then asked to explain schemes in turn to confirm understanding.
- 4—Managers then answer two questions: *which scheme would make them personally better off* (Q1), and *how to rank all schemes by expected profit to MTN* (Q2) *and by expected agent dropout* (Q2A).
- 5—Managers asked to report confidence in their rankings, describe what they consider the profit-maximizing scheme for MTN in general, including several follow-up questions.

Additional details:

Contract	Contract scheme pictures	Q1. Preference: Your most preferred...	Q2. Rank: Rank schemes in...	Q2A. Rank: Rank schemes in...

1. Simple Linear (Status Quo): The first scheme we want you to consider is the scheme that is currently used. Each worker receives a bonus from MTN each week that depends only on their own sales that week. For each GHS of sales/week, the agent makes, they receive X GHS of bonus/week.

At the moment, X= 40% of 1% fee consumers pays total transactions/week.

Example:

Suppose there are four agents in a village and they all make a weekly sale of GHS100,000. Assuming one agent makes a quarter of this total sales = GHS25,000, then 1% commission/agent = GHS 250. The agent makes 40% of the 1% commission = GHS 100 and MTN makes 60% of the 1% commission = GHS150

NOTE [Enumerator]: Always remind respondent that average total costs to MTN or commissions paid out across all contracts is same. **(picture).**

2. Flat bonus/week: Flat wage/week: The second scheme we want you to consider is a scheme where MTN gives agents a flat weekly payment, for offering their products, as long as MTN wants to maintain a relationship with the agent. This payment does not depend on the weekly sales.

Example:

Suppose there are four agents in a village and they all make a weekly sale of GHS100,000. Assuming one agent makes a quarter of this total sales = GHS25,000, then 1% commission/agent = GHS 250. The agent makes 40% of the 1% commission = GHS 100 and MTN makes 60% of the 1% commission = GHS150 [StatusQuo in linear model]

In the flat bonus/week contract, MTN pays the agents GHS 100/week as a flat weekly bonus no matter the sales they make. However, the agent has to show up to work every day for the normal hours. Agents can be absent for typical reasons people may not show up to work.

NOTE [Enumerator]: Always remind respondent that average total costs or commissions paid out to MTN across all contracts is same – so the total weekly payments would equal the current bonus payments across all agents. **(picture).**

3. Threshold: The third scheme we want you to consider is a scheme where the worker's weekly bonus depends only on their sales that week. If the agent makes at least W GHS in sales/week, they get a bonus payment of U GHS/week. If they have sales less than W GHS sales/week, they receive no bonus in that week. In other words, workers get a fixed bonus payment in a week of U GHS if they exceed W GHS in sales that week.

Example:

Suppose there are four agents in a village and they all make a weekly sale of GHS100,000. Assuming one agent makes a quarter of this total sales = GHS25,000, then 1% commission/agent = GHS 250. The agent makes 40% of the 1% commission = GHS 100 and MTN makes 60% of the 1% commission = GHS150 [StatusQuo].

In the threshold contract, an agent has to make a total sale of at least GHS25,000/week to get GHS 100 commission. Any sales below the GHS25,000/week attract no bonus.

NOTE [Enumerator]: Always remind respondent that average total costs or commissions paid out to MTN across all contracts is same – so the total weekly payments would equal the current bonus payments across all agents. **(picture).**

4. Pure Franchising: The fourth scheme we want you to consider is where worker receives a bonus from MTN each week that depends only on their own sales that week. In this one, workers pay a flat fee of R per week to MTN in order to be able to offer MTN products. For each GHS of sales/week, the agent makes, they receive S GHS of bonus/week,

where S is equal to the current commissions received by both the agent and MTN. In other words, after making the flat fee payment, the agent receives all of the commission from each product.

Here, "the agent pays a platform user fee/week and then pocket all the remaining commissions/week". If the agent is unable to pay all the platform fees in one particular week, the agent will be debited in the following week, etc.

Example: Instead of the StatusQuo, the agent pays an initial 150GHS/week platform user fees to MTN (which will be equivalent to 15,000GHS sales of work/week to MTN). The agent then pockets all the remaining commissions/week (which is equivalent to 10,000GHS sales of work/week) but note that the agent can work more and earn more commissions if s/he wants. This change in structure will make the guy to work harder.

NOTE [Enumerator]: Always remind respondent that average total costs or commissions paid out to MTN across all contracts is same – so the total weekly payments would equal the current bonus payments across all agents. **(picture).**

5. Tournament: The fifth scheme we want you to consider is where worker receives a bonus from MTN each week that depends on both their own sales that week, but also the sales of 3 other agents in their local area that week. All four workers are compared to one another at the end of each week. The worker who has lowest sales that week gets a bonus of R GHS that week. The worker with second lowest sales that week gets a bonus of 2R GHS that week. The worker with the second highest sales that week gets a bonus of 3R GHS that week, and the worker with the highest sales that week gets a bonus of 4R GHS that week. Thus, moving up in the ranking by one in a week increases the bonus of R GHS that week.

We implement a linear tournament, which means the same difference in bonus across successive rank levels. That is, whenever your rank goes up (or down) by 1 your bonus goes up (or down) by XGHS (which is the same amount)

Suppose the current aggregate total bonus = 400GHS for 4 agents in a locality (i.e., from the Status Quo), then the linear tournament scheme will be:

40ghs (R) (bottom agent),

80ghs (2R),

120ghs (3R),

160ghs (4R) (top agent)

SOLVE: 10R=400GHS, so R=40GHS

NOTE [Enumerator]: Always remind respondent that average total costs or commissions paid out to MTN across all contracts is same --- so R will be set so that total payments will be the same under the tournament as under the current scheme. **(picture).**

B. General Questions

Qx. How confident are you in understanding the schemes and of your choices of schemes? 1=No confident at all; 2=Somewhat unconfident; 3=Somewhat confident; 4=Very confident (certain).

Qx. Why your choices? 1=Complexity of scheme; 2=Simplicity of scheme; 3=Power of incentives from the scheme; 4=Understanding of the scheme; 5=Lack of understanding of the scheme; 6=Others-describe briefly...

Qx. Please describe if there exist another contract that will bring in more profits/utility and make you better off instead (with/without expected expense being same across contracts) Describe...

Qx. Can describe what you will consider profit maximizing contract for MTN in words (this may include the 5 options we presented or may also include other schemes)? Describe...

Qx. As agent/manger, what should a good bonus contract be targeting or care about? Please describe it briefly...

Qx. In your view, what monetary AND non-monetary incentives induce agents' effort. That is, what incentives in general motivate agents to work hard and bring in more sales revenue? [Select all applicable]: 1=Commissions/bonuses paid; 2=Good working conditions; 3=Regular visitations from MTN supervisors [AADs & TSC]; 4=Getting real time support when needed [e.g. liquidity exchange, tariff posters, etc]; 5=Nonfinancial prizes given to agents for performance time to time; 6. Flexibility in how agents operate their businesses without any restrictions from MTN; 7=Others-describe briefly...

Qx. Manager type? 1= Canvasser/acquisition officer; 2= Ambassador; 3=AAD; 4=TSC; 5=ASM; 6=Commercial Head; 7=GM (south v north); 8=CEO MOMO; 9=CSDO; 10=Overall CEO.

Qx. Which region/territory/district/etc do you reside and/or work in?

Qx. How familiar are you with issues related to motivating agents to work hard and bring in more sales revenues? For clarity, sales revenues refer to total value of cash-in and cash-out transactions. 1= Not at all familiar; 2= Slightly familiar (Haven't heard of or been involved in any specific issues about motivating agents); 3= Familiar (Have heard of or been involved in some issues about motivating agents); 4= Very familiar (Know the details of issues about motivating agents).

Qx. How often do you interact with the agents that you manage? 1=never; 2=infrequent; 3=frequent; 4=always.

Qx. If Qx !=1, when was the last time you interacted with the agents (any one of them) you manage within this year? 1= this month; 2=last 2-3 months ago; 3=last 4-5 months ago; 4=more than 5 months ago.

Qx. How familiar are you with issues related to motivating agents to work hard and bring in more sales revenues? For clarity, sales revenues refer to total value of cash-in and cash-out transactions. 1= Not at all familiar; 2= Slightly familiar (Haven't heard of or been involved in any specific issues about motivating agents); 3= Familiar (Have heard of or been involved in some issues about motivating agents); 4= Very familiar (Know the details of issues about motivating agents).

Qx. Years of work experience (any) ..... (Years)

Qx. Years of work experience in sales and retailing ..... (Years)

Qx. Tenure at the company ..... (Years)

Qx. What is the current compensation or bonus scheme for retail agents? [Hint- Cash in bonus/ Cash out bonus / allied services/ timing of bonus received] Describe...

Qx. Are any of your managerial bonuses linked to the performance (sales revenues) of the agents your control? 1= Yes; 2= No

Qx. How many people (including all agents under you) do you directly manage? . . . . . (number)

Qx. Would you classify your community(ies) as a "busy market" for Mobile Money retail business? 1= Yes; 2= No

Qx. Level of education? 1= No education; 2= Less than high school; 3= High school; 4= Some college (uncompleted); 5= Associate's degree; 6= Bachelor's degree; 7= Graduate (Master's degree and above).

Qx. Marital status? 1= Married; 2= Widowed; 3= Divorced; 4= Separated; 5= Never married.

Qx. Gender? 1= Male; 2= Female; 3= Other (specify)...; 4= I prefer not to disclose.

Qx. Household size? 1=1; 2=2; 3=3; 4=4; 5=5; 6=6; 7=More than 6.

B.4 Agent Surveys - Select Questions

A. Preferences

Qx. (1) Preferences: Present the various contract schemes (pictures, words, illustrative examples) and ask agent, Q1: *Simply choose the scheme (only one!) that will make "you" better off*—following similar elicitation process described for managers.

Qx. (2) Risk Preferences

NR1 Imagine that you have a choice between the following two options: Option 1 - Receive GHS100 for sure. OR Option 2 - Flip a coin and receive 0 if it's tails or GHS300 if it's heads.

-Which option would you take? Option 1 (TAKE THIS SURE MONEY) =1; Option 2 (FLIP THE COIN) =2 >>QNR3

NR2 Now imagine that you have a choice between the following two options: Option 1 - Receive GHS100 for sure. OR Option 2 - Flip a coin and receive 0 if it's tails or GHS400 if it's heads.

-Which option would you take? Option 1 (TAKE THIS SURE MONEY) =1 >>QNR3a; Option 2 (FLIP THE COIN) =2 >>QNR3a

NR3 Now imagine that you have a chance between the following two options: Option 1 - Receive GHS100 for sure. OR Option 2 - Flip a coin and receive 0 if it's tails or GHS200 if it's heads.

-Which option would you take? Option 1 (TAKE THIS SURE MONEY) =1

Option 2 (FLIP THE COIN) =2

NR3a Now imagine that you have a chance between the following two options: Option 1 - Flip a coin and receive 0 if it's tails or GHS200 if it's heads. OR Option 2 - Alternatively, you could choose a guaranteed payment of GHS X.

-What guaranteed payment would make you feel equally satisfied with participating in the lottery? [ ]

NR4 "How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?'

-Choose a number from 1 (avoid taking risks) to 10 (fully prepared to take risks) 1 to 10.

Qx. (3) Time Preferences

NT1 Now I am going to propose to you two different options. Imagine that you have a choice between the following two options: Option 1 - Receive GHS1000 today. OR Option 2 - Receive GHS1500 for sure one year from now.

-Which option would you take? Option 1 (TAKE THE MONEY TODAY) =1; Option 2 (MONEY IN 1 YEAR) =2 >>Qx6

NT2 Now imagine that you have a choice between the following two options: Option 1 - Receive GHS1000 today. OR Option 2 - Receive GHS2000 for sure one year from now.

-Which option would you take? Option 1 (TAKE THE MONEY TODAY) =1; Option 2 (MONEY IN 1 YEAR) =2

NT3 Now I am going to propose to you two different options. Imagine that you have a choice between the following two options: Option 1 - Receive GHS1000 today. OR Option 2 - Receive GHS1200 for sure one year from now.

-Which option would you take? Option 1 (TAKE THE MONEY TODAY) =1; Option 2 (MONEY IN 1 YEAR) =2

NT3a Now I am going to propose to you two different options. Imagine that you have a choice between the following two options: Option 1 - Receive GHS1000 today. OR Option 2 – Alternatively, receive GHS X for sure one year from now.

-What guaranteed payment would make you feel equally satisfied with this option? [ ]

NT4 "In comparison to others, are you a person who is generally willing to give up something today in order to benefit from that in the future?" Choose a number from 1 (much less willing to give up something today in order to benefit from that in the future) to 10 (much more willing to give up something today in order to benefit from it in the future) 1-10.

Qx. (4) Market Risk or Volatility

NMR1 Overall, which of the following best describes how your business sales revenue changes each month? (Select one): 1=Roughly the same amount each month; 2=roughly the same most months, but some unusually high or low month during the year; 3=often varies quite a bit from one month to the next; 4=varies from season to season; 888= refuse to answer; 999=don't know.

NMR2 Overall, how easily can you predict the amount of sales revenue your business will get in the next revenue cycle? (Select one): 1=very difficult; 2=somewhat difficult; 3=somewhat easily; 4=very easily; 888= refuse to answer; 999=don't know.

Qx. (5) Competition Aversion

CA1 "How competitive do you consider yourself to be?" Choose a number from 1 (not at all competitive) to 10 (extremely competitive) 1-10

Qx. (6) Reciprocity/ Gift Exchange Motive

RE1 "When someone does me a favor, I am willing to return it." Choose the number saying how well this describes you from 1 (Does not describe me at all) to 10 (describes me

perfectly) 1-10.

RE2 "How willing are you to punish someone who treats you unfairly, even if there may be costs for you?" Choose a number from 1 (very unwilling) to 10 (very willing) 1-10.

Qx. (7) Cognition

Qx. COG1 COG1. I will now read a set of 10 words. When I have finished, I would like you to say as many as you can recall. We have purposely made the list long so it will be hard to recall all of the words. Most people recall just a few words. Please listen carefully. [Words: Grass, Soya, Cat, Silence, Sun, Grandparent, Chair, Fire, Night, Nurse]. [Interviewer: Read all 10 words below. DO NOT SHOW THE SURVEY SHEET TO THE RESPONDENT. Mark the boxes below as the respondent repeats them.]

-Next, we'd like to ask you some general preference questions —e.g. Which of the following best describes your favorite way to spend a weekend? 1=Spending time outdoors; 2=Relaxing at home with books or TV; 3=Visiting family and friends; 4=Catching up on errands or chores; 5=Farming; 6=Working; 7=Other (please specify)

Qx. COG2 COG2. A little while ago, you were read a list of words and you repeated the ones that you could recall. I would like you to say as many as you can recall again. [Interviewer: DO NOT READ THE WORDS. Mark the boxes below as the respondent repeats them.]

B. Satisfaction With MTN Services & Relations With Managers and Customers

Qx. NS1a How would you rate MTN's services on a scale of 1 to 10, with 1 being the least satisfactory and 10 being excellent?

Qx. NS1b Could you please share the reasons for your ratings? Describe it! ...(don't leave blank).

Qx. NS2a Consider the past 3 months (i.e., during the trial): would you say your overall relationships with your MTN Managers (TSCs, AADS, etc.) has changed and if so how? 1=Worsened; 2=Unchanged; 3=Improved.

Qx. NS2b If NS2a!=2: Could you please share the reasons for changes to your manager-agents relations? Describe it! ...(don't leave blank, I need details of the specific changes).

Qx. NS2c If NS2a!=2: Which of the following would you say have changed [=improved] in connection to your overall relationships with your MTN Managers (TSCs, AADS, etc.)? (Select multiple): 1=Frequent manager visits; 2=Improved communication (better, easy, and more helpful); 3=Timely assistance with any questions about agent commissions; 4=Timely assistance with any questions about non-commissions: fraud & scams/ tariff posters/ stickers/ branding/ PIN locks/ etc.; 5=Liquidity and rebalancing support; 6=Others, specify (don't leave blank)...

Qx. NS3a Consider the past 3 months (i.e., during the trial): How would you rate your market-based relationships with your customers on a scale of 1 to 10, with 1 being very poor and 10 being excellent?

Qx. NS3b Consider the past 3 months (i.e., during the trial): would you say your overall relationships with your customers has changed and if so how? 1=Worsened; 2=Unchanged; 3=Improved.

Qx. NS3c Could you please share the reasons for changes to your agent-to-customer

relations? Describe it! . . . (don't leave blank).

Qx. NS4a Consider the past 3 months (i.e., during the trial): would you say your overall relationships with other agents in your locality has changed and if so how? 1=Worsened; 2=Unchanged; 3=Improved.

Qx. NS4b Could you please share the reasons for changes to your agent-to-agent relations? Describe it! . . . (don't leave blank)

C. General Questions

Possible Effort Change Dimensions — Inputs

Qx. 1x0 Consider the past 3 months (i.e., during the trial May - July): for each day of week (Monday, Tuesday. . . , etc.) what time do you "typically" arrive to work and what time do you leave? . . . Arrival time (AM) vs. . . Closing time (PM)

Qx. 1x Consider the past 3 month (i.e., during the trial): How many hours per day do you "typically" open your store? (Maximum=16) . . . Hours per day (estimate)

Qx. 1xx Consider the past 3 month (i.e., during the trial): How many days per week do you "typically" open your shop? (Maximum=7) . . . Days per week (estimate)

Qx. 1xxz1 Consider the past 3 months (i.e., during the trial): Which of the following steps have you taken to attract customers or increase your sales revenue? (Select multiple): 1=open shop early or close shop late; 2=work longer hours/day or work many days/week; 3=invested more liquidity to ensure I don't decline transactions; 4=offered customer discounts; 5=increased advertisements; 6=became more transparent by posting tariffs or disclosing fees to consumers in advance of transaction; 7=increased customer service, being nice and polite; 8=other changes, please describe (don't leave blank). . .

Performance — Output

Qx. 1x. Does this store operate non-MOMO services? This includes selling other goods/services (e.g., provisions, accessories shoeshine, etc.) 1=Yes; 2=No

Qx. 2 What is your estimate of the monthly total sales revenues for your core MTN Mobile Money retail services (from cash-in, cash-out) from last month (JULY 2025)? . . . ghs (estimate)

Qx. 3 What was the total MOMO business income earned during the last month [JULY 2025] after paying all expenses that related to the mobile money business including wages of employees, but not including any income you [owner] paid yourself? [NOTE: think about Total commissions -Wage expenses to MOMO worker(s) + any extra money that the Providers pay you] (MOMO profits)

Qx. 4 What is your estimate of the monthly total sales revenues for your noncore MTN Mobile Money retail services (from airtime, account opening, etc) from last month (JULY 2025)? . . . ghs (estimate)

Qx. 5 What is your estimate of the monthly total sales revenues for your non-MTN Mobile Money retail services (from AT Money, Telecel cash, G-Money, etc) from last month (JULY 2025)? . . . ghs (estimate)

Qx. 6 What is your estimate of the monthly total sales revenues for your non-MoMo business (e.g., groceries, appliances, medicine, etc.) from last month (JULY 2025)? [Skip if 1x=No] . . . ghs (estimate)

Qx. 8 What was the total non-Mobile Money business income earned during the last Month [JULY 2025] after paying all expenses relating to the non-MoMo including wages of employees, but not including any income you [owner] paid yourself? [NOTE: think about Total Profits/Revenues-Wage expenses to worker(s)] (nonMOMO profits) [Skip if 1x=No]

Regret and Willigness-to-Accept to Rejoin Schemes

Qx. N3 If MTN gives you the opportunity to rejoin the contract or compensation scheme you were originally assigned in the trial, would you? [Note: ask to ALL agents enrolled in trial regardless of dropout status] 1=Yes; 2=No; 3=I need more time to think about this.

Qx. N4 Considering all your experiences (good vs bad) during the trial, what will be the "smallest amount of money" we or MTN would have to pay you today for you to agree to be re-enrolled back into your assigned contract? [Note: ask to ALL agents enrolled in trial regardless of dropout status] . . . ghs

B.5 Audit Study

A. Auditors' Training - Measuring Agent Misconduct

- Attempt the following transactions:
  - (i) t1: cash-out (240ghs) + (ii) t2: SIM purchase + (iii) t3: open account (deposit 5ghs and verify);
  - (iv) t4: cash-in (240ghs);
  - (v) t5: otc / third-party transfer (240ghs) + (vi) t6: airtime purchase (10ghs), where the modal transaction across these local markets is roughly 240ghs

- **Transaction approach:** We all use the following very simple language and approach, no deviations allowed: `(1) Good morning/afternoon/evening. I want to make a MOMO transaction [use code: A. t1-t3, B. t4, C. t5-t6]. (2) Present the necessary details: phone number and sender or recipient's details. Follow the instructions given to you by the agent and don't ask about fees and alternatives upfront. Keep the conversation friendly, natural, and focused on the transaction. (3) Thank you for your service. (4) Right after the visit, immediately complete the short questionnaire (see the Questions below) using your assigned tablets.`

B. Select Measurement Questions

Qx. What is your mobile money balance before transacting? [CHECK YOUR BALANCE IN YOUR ACCOUNT USING THE MOBILE APPLICATION AFTER THE AUDIT VISIT] ...ghs

Qx. Take a screenshot of your balance before your audit visit and upload it here.

Qx. Please select the group of transaction types you will be completing with this agent today based on your tracking sheet. A: 1=cash-out (140ghs), 2= SIM purchase, 3= open account (deposit 5ghs and verify), B: 4= cash-in(140ghs), C: 5= over-the-counter/ transfer (140ghs), 6= airtime purchase (10ghs) ...A= 1,2,3; B= 4; C= 5,6

Qx. Which provider will you use for this mystery shopping visit? 1=MTN M-Money, 2=Tigo-AirtelCash, 3=VodaCash, 4=G-Money

Qx. [This is the X attempt to this agent for this group of transaction(s)]...X=1 if first attempt, X=2 if second attempt, X=3 if third and last attempt

Qx. Was the agent present when you visited? 1=yes, 2=no, 3=lucky entrant not operational yet

Qx. Was the price list posted, visible, clear, or clarified? 1=yes, 2=no

Qx. For which providers, does the agent have a price list displayed? SELECT ALL APPLICABLE (MULTIPLE): 1=MTN M-Money, 2=Tigo-AirtelCash, 3=VodaCash, 4=G-Money

Qx. Was the transaction successful (able to complete assigned transaction)? 1=yes, 2=no

Qx. If unsuccessful, did agent explain why failed before you asked? 1=yes, 2=no

Qx. If unsuccessful -- what reason did the agent give for the transaction not succeeding? 1=network down, 2=lack of float/ insufficient liquidity, 3=agent says this type of transaction is not possible with this provider, 4=agent doesn't know how to do the transaction, 5=agent offer the service (e.g., SIM, open account) but is out of stock now, 6=location does not offer the service at all, 7= Other (specify)...

Qx. Wait or queue time: How many minutes did you wait before you were served? if you did not have to wait enter 0 (mins) minutes

Qx. Transaction time: How many minutes did you spend conducting the transaction with agent? (min) minutes

Qx. Did the agent discuss and/or well-inform you of the price before conducting the transaction? 1=yes, 2=no

Qx. How much in total did you pay to complete the transaction? This includes all fees charged to your account by the provider, all extra funds transferred to the agent's account, and all extra cash given to the agent. Do not count in the transaction value. Remember to include taxes. (ghs) ghs

Qx. Did the agent tell you how much the fee was, and if so when? 1=agent did not ever state the fee, 2=agent told me the fee before completing the transaction, 3=agent told me the fee after completing the transaction.

Qx. Did the agent tell you whether you would pay cash or from your account (or both) before completing the transaction? 1=yes, with cash, 2=yes, from the account, 3=yes, with cash and from the account, 4=no

Qx. How did you pay the fee? SELECT ALL APPLICABLE (MULTIPLE) 1=fee was automatically deducted from my account by the provider, 2=fee was sent from my account

to the agent, 3=fee was paid in cash

Qx. How much did you pay in fees that was automatically deducted from your account by the provider? ghs

Qx. How much did you pay in fees to the agent from your account? ghs

Qx. How much of the fee did you pay in cash? ghs

Qx. The allocation of fees between provider, account, and cash does not equal to total fees you said you were charged. Please check your inputs again: [sum 19, 20, 21] = 15...ghs

Qx. Enumerator verification: check your sms receipt. Did the receipt show a total charge of more than 141.4ghs for the 140 cash out you just did? If yes, enter the total charge from the receipt. Enter ghs if yes (overcharged), Enter 999 if no (not overcharged) [ONLY show this question for Q3=A and transaction type = T1]

Qx. Enumerator verification: call your colleague recipient to verify if a total of 140ghs was received or less. If no, enter the total amount the recipient received. Enter ghs if no (overcharged) Enter 999 if yes (not overcharged) [ONLY show this question for Q3=C and transaction type = T5]

Qx. Enumerator verification: enter the amount of cash you handed over to the agent for 10ghs airtime: Enter the amount of airtime you received CAPI: two fill numbers in the blank; Enter cash handed over (. . . ghs); Enter airtime received (. . . ghs); Enter AGENT NUMBER from your airtime SMS receipt (. . . 10 digits) [ONLY show this question for Q3=C and transaction type = T6]

Qx. What is the official fee or rate for this transaction? ghs

Qx. [Misconduct incidence] Was the transaction overcharged? (Hint from CAPI: "The correct official fee or rate for this transaction T is X") X = 2.4ghs and automatically deducted if T1, X = 10ghs cash to the agent if T2, X = minimum 5ghs cash to the agent to be deposited in your account (so verify) if T3, X = 0ghs if T4, X = 2.4ghs cash to the agent if T5, X = 0ghs, you should receive exactly the amount of cash you gave to the agent if T6 ...1=yes 2=no

Qx. [Misconduct severity] If overcharged, then by how much? ghs

Qx. Did you receive any confirmation (receipt, etc) after transaction? 1=yes, 2=no

Qx. Please upload photo of confirmation [Use screenshot function on your phone, not different phone]

Qx. What is your mobile money balance after transacting? [CHECK YOUR BALANCE IN YOUR ACCOUNT USING MOBILE APPLICATION AFTER AUDIT VISIT] ghs

Qx. Take a screenshot of your balance after your mystery shopping visit and upload it here.

Qx. Was the transaction simulated or actual? 1= simulated, 2= actual [ONLY show this question for Q3=A and transaction type = T2 or T3]