

Virtual Windows Through Glass Walls?

Digitization for Mobility-Constrained Female Entrepreneurs

Layne Alhorr
Harvard University

LIFT - IFC
15 minutes

[Updated Slides](#)

December 7, 2023

Glass Walls and Virtual Windows

Glass Walls and Virtual Windows

Glass walls: gender norms, childcare, & transportation costs limit millions of women's mobility & work

- 14% of gender wage gap in France is due to commuting time preferences ([Le Barbanchon et al. 2021](#))
- Women in Pakistan needed half their household expenditure to leave their village ([Cheema et al. 2019](#))
- Strong norms against working outside the home (e.g. in Saudi Arabia, [Bursztyn et al. 2020](#))

Glass Walls and Virtual Windows

Glass walls: gender norms, childcare, & transportation costs limit millions of women's mobility & work

- 14% of gender wage gap in France is due to commuting time preferences ([Le Barbanchon et al. 2021](#))
- Women in Pakistan needed half their household expenditure to leave their village ([Cheema et al. 2019](#))
- Strong norms against working outside the home (e.g. in Saudi Arabia, [Bursztyn et al. 2020](#))

In the absence of flexible employment, home-based entrepreneurship has become an economic lifeline.

Glass Walls and Virtual Windows

Glass walls: gender norms, childcare, & transportation costs limit millions of women's mobility & work

- 14% of gender wage gap in France is due to commuting time preferences (Le Barbanchon et al. 2021)
- Women in Pakistan needed half their household expenditure to leave their village (Cheema et al. 2019)
- Strong norms against working outside the home (e.g. in Saudi Arabia, Bursztyn et al. 2020)

In the absence of flexible employment, home-based entrepreneurship has become an economic lifeline.
Yet it can leave women locked in local markets (Goel 2022).

Glass Walls and Virtual Windows

Glass walls: gender norms, childcare, & transportation costs limit millions of women's mobility & work

- 14% of gender wage gap in France is due to commuting time preferences (Le Barbanchon et al. 2021)
- Women in Pakistan needed half their household expenditure to leave their village (Cheema et al. 2019)
- Strong norms against working outside the home (e.g. in Saudi Arabia, Bursztyn et al. 2020)

In the absence of flexible employment, home-based entrepreneurship has become an economic lifeline.
Yet it can leave women locked in local markets (Goel 2022).

Virtual Windows: digital technologies might allow women to access broader markets from home

Glass Walls and Virtual Windows

Glass walls: gender norms, childcare, & transportation costs limit millions of women's mobility & work

- 14% of gender wage gap in France is due to commuting time preferences (Le Barbanchon et al. 2021)
- Women in Pakistan needed half their household expenditure to leave their village (Cheema et al. 2019)
- Strong norms against working outside the home (e.g. in Saudi Arabia, Bursztyn et al. 2020)

In the absence of flexible employment, home-based entrepreneurship has become an economic lifeline.
Yet it can leave women locked in local markets (Goel 2022).

Virtual Windows: digital technologies might allow women to access broader markets from home

- With 2.93 billion monthly users on Facebook alone, access to social media widespread
- Usage rates are particularly escalating in developing countries (Pew Research Center, 2018)

Questions of Interest

Can digitization unlock market access and growth for female microentrepreneurs in conservative settings?

Questions of Interest

Can digitization unlock market access and growth for female microentrepreneurs in conservative settings?

Virtual Windows:

- Alleviate mobility constraints ('death of distance' ([Lendle et al. 2016](#)))
- Growth *within* constraints: online platforms might offer safe spaces + flexibility

Glass Walls:

- Constraints on women's visibility and exposure might be mirrored online
- Low mobility might be correlated with limited capital, skills, or aspirations ('subsistence entrepreneurship')

Questions of Interest

Can digitization unlock market access and growth for female microentrepreneurs in conservative settings?

Virtual Windows:

- Alleviate mobility constraints ('death of distance' ([Lendle et al. 2016](#)))
- Growth *within* constraints: online platforms might offer safe spaces + flexibility

Glass Walls:

- Constraints on women's visibility and exposure might be mirrored online
- Low mobility might be correlated with limited capital, skills, or aspirations ('subsistence entrepreneurship')

This paper: I shed light on these opposing forces in the context of Jordan
& experimentally investigate the promise of online market access on female microentrepreneurs

Overview

Overview

1. Background: what can virtual spaces offer?

Overview

1. Background: what can virtual spaces offer?
 - Descriptive online ethnography

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

Overview

1. Background: what can virtual spaces offer?
 - Descriptive online ethnography
 - Gender-segregated online spaces; control over visibility by hiding names and pictures
 - Norms are mirrored online, but women create 'safe spaces' to operate within these
2. Experiment I: What are the returns to online market access?

Overview

1. Background: what can virtual spaces offer?
 - Descriptive online ethnography
 - Gender-segregated online spaces; control over visibility by hiding names and pictures
 - Norms are mirrored online, but women create 'safe spaces' to operate within these
2. Experiment I: What are the returns to online market access?
 - Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

2. Experiment I: What are the returns to online market access?

- Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
- Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

2. Experiment I: What are the returns to online market access?

- Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
- Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
- Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

2. Experiment I: What are the returns to online market access?

- Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
- Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
- Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home
- Effects are highest for low-mobility women, & particularly those with high product quality

Overview

1. Background: what can virtual spaces offer?
 - Descriptive online ethnography
 - Gender-segregated online spaces; control over visibility by hiding names and pictures
 - Norms are mirrored online, but women create 'safe spaces' to operate within these
2. Experiment I: What are the returns to online market access?
 - Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
 - Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
 - Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home
 - Effects are highest for low-mobility women, & particularly those with high product quality
3. Experiment II: Why don't more women adopt this technology given available online resources?

Overview

1. Background: what can virtual spaces offer?
 - Descriptive online ethnography
 - Gender-segregated online spaces; control over visibility by hiding names and pictures
 - Norms are mirrored online, but women create 'safe spaces' to operate within these
2. Experiment I: What are the returns to online market access?
 - Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
 - Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
 - Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home
 - Effects are highest for low-mobility women, & particularly those with high product quality
3. Experiment II: Why don't more women adopt this technology given available online resources?
 - Experimentally offer women a training on home-based digital entrepreneurship (N=1,922)

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

2. Experiment I: What are the returns to online market access?

- Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
- Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
- Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home
- Effects are highest for low-mobility women, & particularly those with high product quality

3. Experiment II: Why don't more women adopt this technology given available online resources?

- Experimentally offer women a training on home-based digital entrepreneurship (N=1,922)
- Document high selection: low-mobility women are less likely to apply

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

2. Experiment I: What are the returns to online market access?

- Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
- Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
- Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home
- Effects are highest for low-mobility women, & particularly those with high product quality

3. Experiment II: Why don't more women adopt this technology given available online resources?

- Experimentally offer women a training on home-based digital entrepreneurship (N=1,922)
- Document high selection: low-mobility women are less likely to apply
- Training alone has little impact on business outcomes & could reinforce conservative norms (N=787)

Overview

1. Background: what can virtual spaces offer?

- Descriptive online ethnography
- Gender-segregated online spaces; control over visibility by hiding names and pictures
- Norms are mirrored online, but women create 'safe spaces' to operate within these

2. Experiment I: What are the returns to online market access?

- Objectives: separate businesses' exposure from owners' visibility + facilitate technology adoption
- Experimentally offer online storefronts + training to Jordanian female entrepreneurs (N=1,122)
- Results: business outcomes \uparrow ; conservative norms ; \downarrow ; no effect on work outside the home
- Effects are highest for low-mobility women, & particularly those with high product quality

3. Experiment II: Why don't more women adopt this technology given available online resources?

- Experimentally offer women a training on home-based digital entrepreneurship (N=1,922)
- Document high selection: low-mobility women are less likely to apply
- Training alone has little impact on business outcomes & could reinforce conservative norms (N=787)

Digital technologies can be transformative for women, but without the necessary support, they might fail to attract and benefit the most constrained among them

Related Literature and Contributions

Related Literature and Contributions

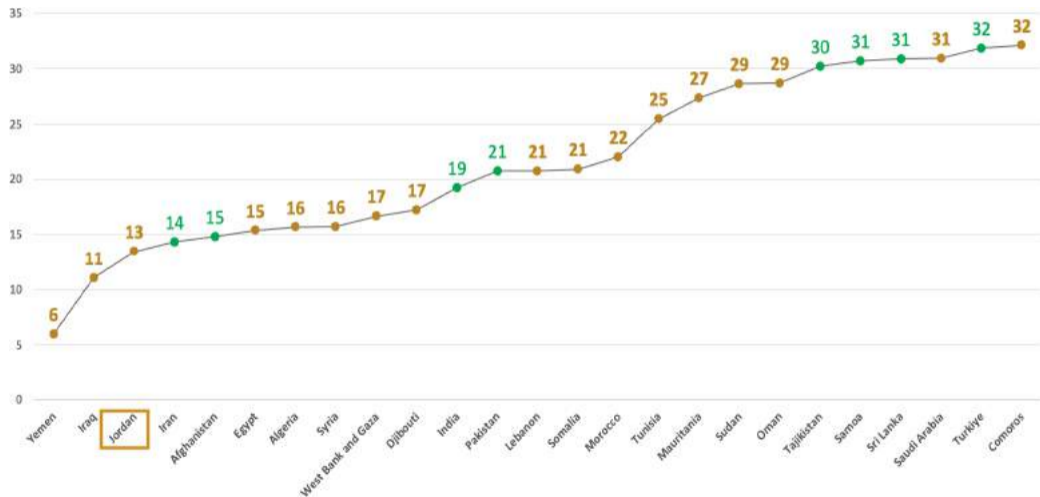
1. Women's mobility and work (Jayachandran 2021, Cheema, Khwaja, Naseer, and Shapiro 2019, Bursztyn, González, and Yanagizawa-Drott 2020, Borker 2021, Dean and Jayachandran 2019, Bernhardt, Pande, Rigol, Schaner, and Troyer-Moore 2018, Becker 2022)
 - This study focuses on what women can do *within* the constraints they face
2. Firm targeting and growth (Banerjee, Breza, Duflo, and Kinnan 2019, Hussam, Rigol, and Roth 2022, Meager 2022); training and outsourcing (De Mel, McKenzie, and Woodruff 2014, McKenzie, Woodruff, Bjorvatn, Bruhn, Cai, Gonzalez-Uribe, Quinn, Sonobe, and Valdivia 2020); and market access interventions (Anderson, Chandy, and Zia 2018, Anderson, Chintagunta, Germann, and Vilcassim 2021)
 - This paper provides evidence on outsourcing and online training, and highlights markets access constraints' importance when targeting
3. Social media, digitization (Allcott, Braghieri, Eichmeyer, and Gentzkow 2020, Levy 2021, Zhuravskaya, Petrova, and Enikolopov 2020) and mobile Internet (Chiplunkar and Goldberg 2022)
 - This study provides evidence on social media's economic impact, especially on women

Context

Context: Country

Context: Country

At 13%, Jordan has the world's third lowest female labor force participation rate (FLFP)



Source: 25 countries with the lowest FLFP, constructed from the [World Bank Gender Data Portal, 2022](#)

Context: Population

Context: Population



Context: Population



Context: Population



Context: Population



Online Market Access Experiment:

Online Market Access Experiment:

Separate Business Exposure from Owner Visibility

Intervention Part I: Logistical Marketing Support

Intervention Part I: Logistical Marketing Support



Intervention Part I: Logistical Marketing Support



Intervention Part I: Logistical Marketing Support

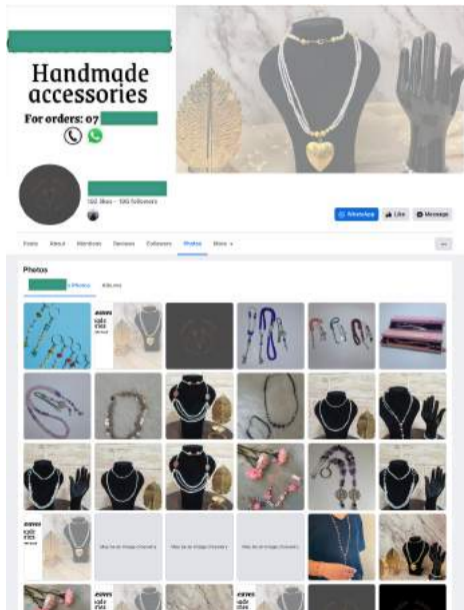


Intervention Part I: Examples

Intervention Part I: Examples

The image shows a Facebook page for a business named "STUFFED GRAPE LEAVES". At the top, there is a banner with the text "For orders: 07 [redacted] Amman - Al Madina Al Riyadiah Yes, we deliver!". Below the banner is the Facebook profile header, including the name "STUFFED GRAPE LEAVES", a phone number, and a "WhatsApp" button. The main content area features a post with a large photo of a plate of stuffed grape leaves. The post includes a "Create post" section with options for "Photos/videos", "Check in", and "Tag friends". The "About" section on the left contains a map, a description in Arabic, and a "Suggest Edits" section. The "Photos" section at the bottom left shows a grid of images related to the business.

Intervention Part I: Examples



Intervention Part II: Asynchronous Digital Training

Intervention Part II: Asynchronous Digital Training



Intervention Part II: Asynchronous Digital Training



- 30 short videos of 10 minutes each
- Designed & shot in collaboration with local influencers
- Topics: marketing strategies on FB, IG, & WhatsApp
- Focus on growing business beyond friends & family
- Highlights local practices & privacy considerations

Experimental Design

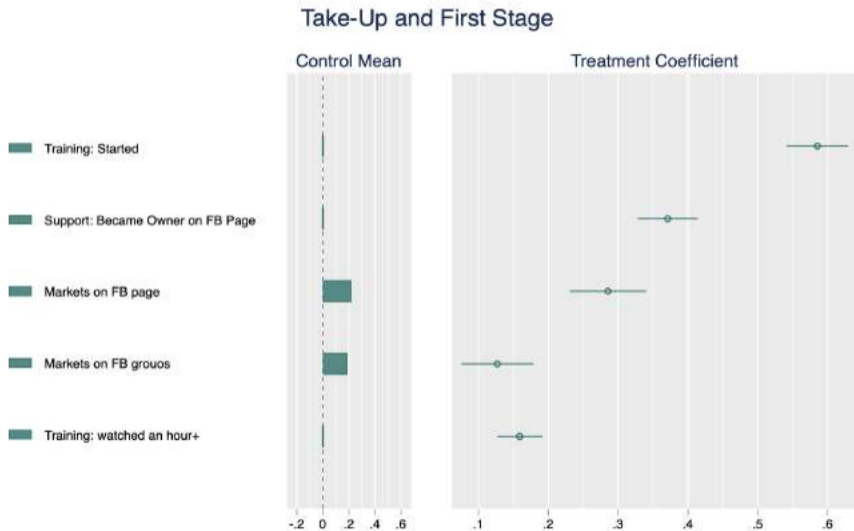
Experimental Design

- Intervention:
 - Business logo
 - Logistical support to create and market a public business page on Facebook
 - Online training on digital marketing
- Control:
 - Business logo
- Randomization: individual-level, stratified on whether participants market on FB
- Data:
 - Baseline survey (March-May 2022) followed by the intervention
 - Follow-up survey (6 months later)
 - Data from FB pages and online training

Results

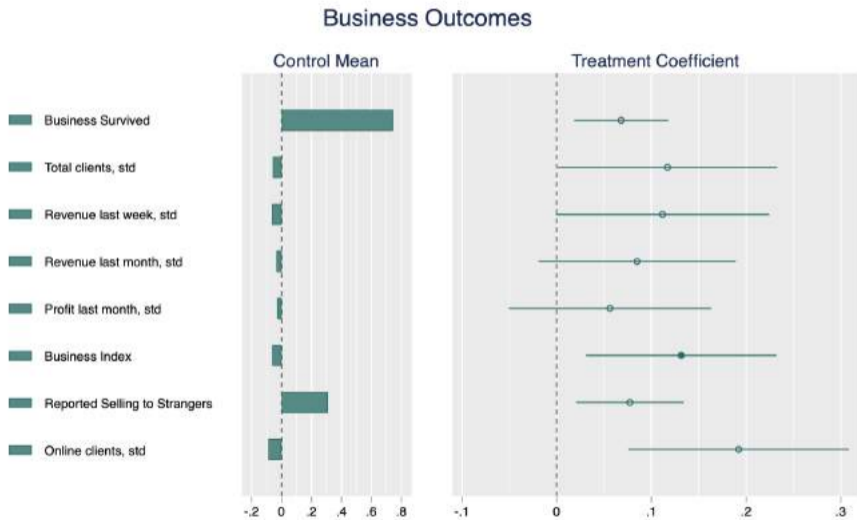
Take-Up and First Stage

Take-Up and First Stage



Notes: N=983. Each point reflects the coefficient from a regression of the outcome on the treatment variable. Bars reflect confidence intervals at the 95 percent confidence. Regressions control for strata fixed effects

Business Outcomes



Notes: N=983. Each point reflects the coefficient from a regression of the outcome on the treatment variable. Bars reflect confidence intervals at the 95 percent confidence. Regressions control for strata fixed effects and baseline level of the outcome when available. Outcomes 2-5 are coded as zero if a business closed. Business index takes the average of standardized variables 1-6.

Heterogeneity

Heterogeneity

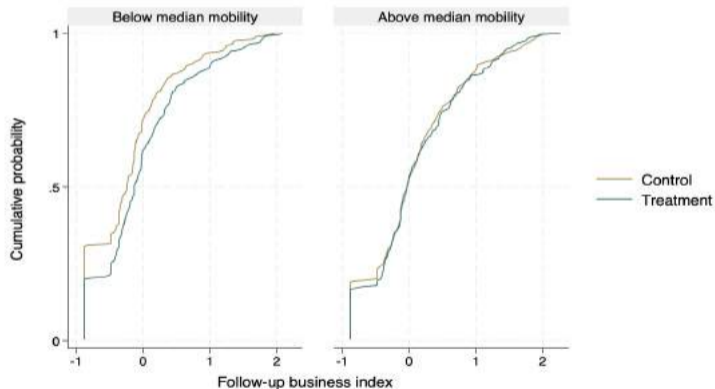
- I construct a mobility index based on baseline variables on participants' physical mobility
- I split the sample into women with above vs. below median mobility index

Heterogeneity

- I construct a mobility index based on baseline variables on participants' physical mobility
- I split the sample into women with above vs. below median mobility index
- I find that most effects are concentrated among low-mobility women

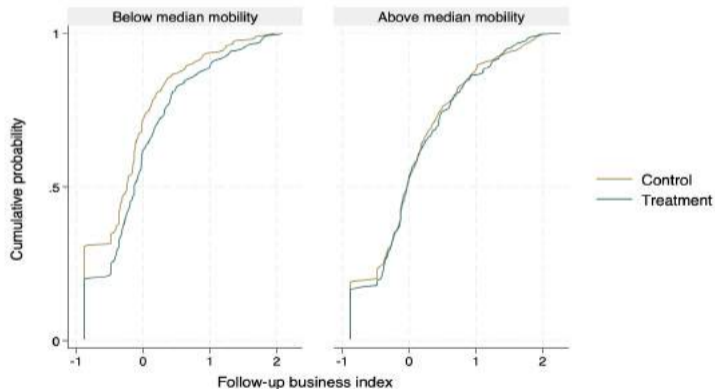
Heterogeneity

- I construct a mobility index based on baseline variables on participants' physical mobility
- I split the sample into women with above vs. below median mobility index
- I find that most effects are concentrated among low-mobility women



Heterogeneity

- I construct a mobility index based on baseline variables on participants' physical mobility
- I split the sample into women with above vs. below median mobility index
- I find that most effects are concentrated among low-mobility women

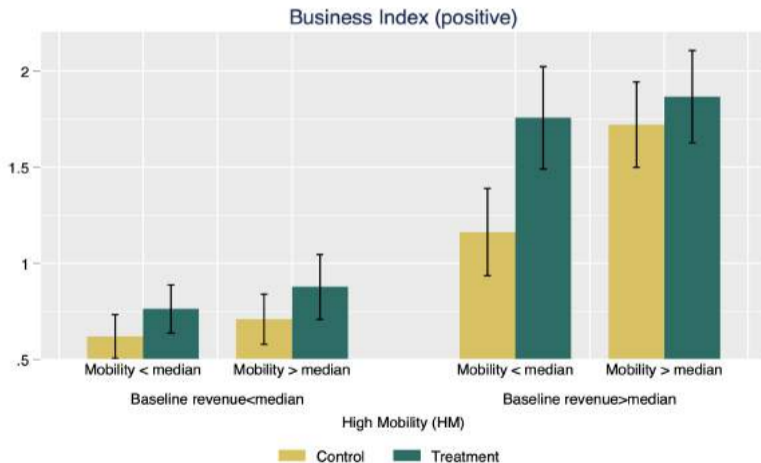


Machine learning heterogeneity analysis following [Chernozhukov et al. 2018](#) confirms that mobility predicts effects

Heterogeneity by Baseline Mobility and Business Quality

Heterogeneity by Baseline Mobility and Business Quality

Quality as Baseline Revenue



N=985. Vertical bars represent confidence intervals at the 95 percent confidence level

Business Quality

- I use a non-financial measure of business potential by rating pictures from businesses
- I define a business as high potential if its baseline pictures ratings are above median

Business Quality

- I use a non-financial measure of business potential by rating pictures from businesses
- I define a business as high potential if its baseline pictures ratings are above median



Business Quality

- I use a non-financial measure of business potential by rating pictures from businesses
- I define a business as high potential if its baseline pictures ratings are above median



Results are consistent with financial measures of business potential such as baseline revenue

Summary

Summary

- Experiment guarantees adoption by lifting informational, logistical, and financial barriers
- Results show better business outcomes, particularly among mobility-constrained women
- Consistent with a model where talented women are locked in restricted markets

Summary

- Experiment guarantees adoption by lifting informational, logistical, and financial barriers
- Results show better business outcomes, particularly among mobility-constrained women
- Consistent with a model where talented women are locked in restricted markets

Given positive returns, why aren't more women using digital entrepreneurship?

Summary

- Experiment guarantees adoption by lifting informational, logistical, and financial barriers
- Results show better business outcomes, particularly among mobility-constrained women
- Consistent with a model where talented women are locked in restricted markets

Given positive returns, why aren't more women using digital entrepreneurship?

Especially puzzling given the abundance of locally-produced educational content on Youtube

Experiment II: Access to Online Training Only

Experiment II: Online Training on Digital Entrepreneurship

Experiment II: Online Training on Digital Entrepreneurship

Randomized access to asynchronous training for smartphones covering:

Experiment II: Online Training on Digital Entrepreneurship

Randomized access to asynchronous training for smartphones covering:

- Module 1: ideation strategies, examples of successful (home-based) female entrepreneurs
- Module 2: bookkeeping & finances
- Module 3: (digital) marketing practices



بداية المشوار
Beginning the Journey



طريقي الى النجاح
My Road to Success

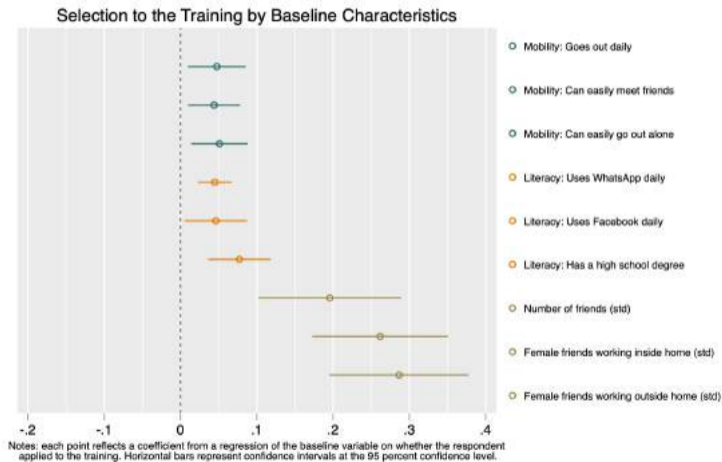


حلمي بيكبر
My Dream is Growing

Selection

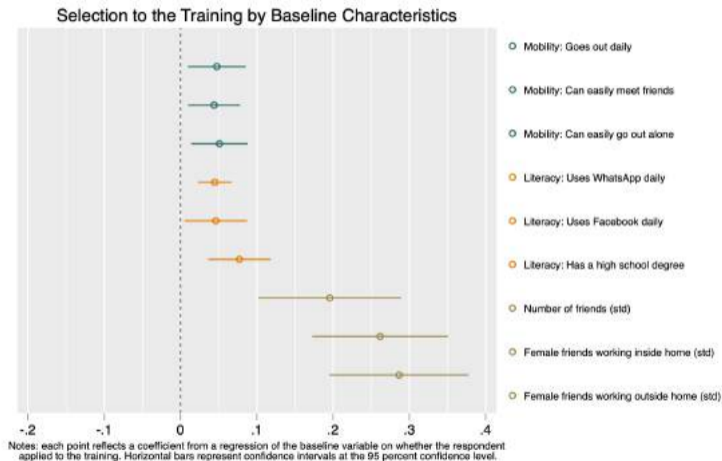
Selection

Women with higher mobility, (digital) literacy, and networks are more likely to apply



Selection

Women with higher mobility, (digital) literacy, and networks are more likely to apply



Conditional on applying: random access leads to business creation but no effects on profits/revenues

Conclusion

Conclusion

Conclusion

- This project provides evidence on the transformative role that technology can play for talented low-mobility women, but only when logistical constraints to adoption are lifted
- **Policy implications:**
 - While training had limited impacts, the results speak to the promise of outsourcing, which tech companies implement & can expand (e.g., FB's 'pages you may like')
 - As digital literacy increases in developing countries across generations, technology adoption issues will become less binding
- **Open questions:**
 - Can Facebook business pages be used to verify the potential and credit-worthiness of business owners?
 - Can a digital footprint lead to more formal business practices? (e.g., registration, broader digitization, etc.)

Thank you!
Layane_Alhorr@g.harvard.edu

Thank you!
Layane_Alhorr@g.harvard.edu



References

- H. Allcott, L. Braghieri, S. Eichmeyer, and M. Gentzkow. The welfare effects of social media. *American Economic Review*, 110(3):629–676, 2020.
- S. J. Anderson, R. Chandy, and B. Zia. Pathways to profits: The impact of marketing vs. finance skills on business performance. *Management Science*, 64(12):5559–5583, 2018.
- S. J. Anderson, P. Chintagunta, F. Germann, and N. Vilcassim. Do marketers matter for entrepreneurs? evidence from a field experiment in uganda. *Journal of Marketing*, 85(3):78–96, 2021.
- A. Banerjee, E. Breza, E. Duflo, and C. Kinnan. Can microfinance unlock a poverty trap for some entrepreneurs? Technical report, National Bureau of Economic Research, 2019.
- A. Becker. On the origins of restricting women’s promiscuity. *Review of Economic Studies*, 2022.
- F. E. Bernhardt, Arielle, R. Pande, N. Rigol, S. Schaner, and C. Troyer-Moore. Male social status and women’s work. In *American Economic Association Papers and Proceedings*, volume 108, pages 363–367, 2018.
- G. Borker. *Safety first: Perceived risk of street harassment and educational choices of women*. World Bank, 2021.
- L. Bursztyn, A. L. González, and D. Yanagizawa-Drott. Misperceived social norms: Women working outside the home in saudi arabia. *American economic review*, 110(10):2997–3029, 2020.
- A. Cheema, A. I. Khwaja, F. Naseer, and J. N. Shapiro. Glass walls: Experimental evidence on access constraints faced by women. 2019.