NEW PERSPECTIVES ON WOMEN IN WASH

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Integrating Women's Empowerment Programming into a Market-Based Sanitation Intervention in Rural Cambodia

WaterSHED

2019

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Abstract

Background In 2016, WaterSHED introduced the WEwork Collective, a multi-dimensional women's economic empowerment program that provided technical support and mentorship to help women succeed in private water, sanitation, and hygiene (WASH) markets in rural Cambodia. Program monitoring data showed that the approach generated interest among women in WASH income-generating activities (IGAs), including latrine supply business ownership/operation, latrine sales, and WASH product retail However, it proved challenging to convert that interest into entrance, retention, and satisfaction in the WASH market. The purpose of this study was to identify characteristics predictive of WASH IGA entrance, retention, and satisfaction in order to more effectively recruit women into the market.

Methodology This study followed a mixed methods, cross-sectional design. The three study groups of interest for both quantitative and qualitative components of the study included 1) women who participated in the WEwork Collective program, and women who did not participate, but were working 2) in the construction sector, and 3) as community healthcare workers at the time of the study. Enumerators administered a survey (n=218) to assess respondents' demographic, socioeconomic, and attitudinal characteristics as well as characteristics of the IGA itself. Predictive modelling was used to identify a set of characteristics and attitudinal predispositions associated with high probability of involvement, retention, and satisfaction in WASH IGAs. Interviewers conducted Repertory Grid Interviews (n=35) to elucidate the constructs or criteria by which women evaluate IGAs and make decisions about which jobs to pursue. The researchers utilized content analysis to categorize and tabulate constructs by dominance (frequency with which the construct was mentioned) and importance (relative weight the construct reportedly held in the woman's decision).

Results Researchers were unable to create a predictive model for satisfaction because all women in the study sample who were involved in rural WASH IGAs were either "somewhat satisfied" or "satisfied to the greatest extent" with their work. Significant predictors of current involvement in a WASH IGA included knowing someone who had been a latrine sales agent from whom one could ask advice; perception that one had sufficient sales agent technical knowledge; ability to imagine oneself selling latrines; making one's own work-related decisions; and lack of fear of harassment at work, as a woman. Significant predictors of retention in a WASH IGA included perception that one had sufficient sales agent technical knowledge and reportedly spending the majority of one's time each week on IGAs. The most dominant and important construct in evaluating IGAs was related to women's ability to work from home and simultaneously complete housework or supervise children. Indeed, women who worked in WASH tended, more so than women in non-WASH jobs, to work close to or within their homes. Women in WASH were also more likely to feel like they needed to provide "adequate reasons to their family" in order to be away from home.

Discussion WASH IGAs offer a solution for women in rural areas of Cambodia to engage in an income-generating activity while maintaining their traditional roles in the household. Women expressed mixed degrees of personal agency, which may have implications for their ability to effectively negotiate a more egalitarian distribution of IGA tasks and domestic duties among household members. For these reasons, family buy-in and personal leadership training may be important components for future programs to consider. The research points to a number of resources associated with involvement and retention in IGAs including technical knowledge, professional networks, time, and capital.

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1. Introduction

1.1. The WEwork Collective

In 2013, WaterSHED conducted formative research to assess women's economic empowerment in WASH markets across eight provinces in which WaterSHED was operating. The research observed that while WaterSHED's market interventions provided scope for women's economic engagement, there were gender-specific challenges hindering women's ability to start and grow a latrine hardware business or profitably promote the sale of WASH products and services in their community. In response, WaterSHED created the WEwork Collective, a women's economic empowerment program that provided technical support and mentorship to help women succeed in private WASH markets in rural Cambodia.

Figure 1 : Provinces covered by the WEwork program, Cambodia

The program was rolled out in Cambodia in 2016 in six provincial cohorts: 1) Kampong Cham and Tboung Khmum, 2) Takeo, 3) Kampong Speu, 4) Kampong Chhnang, 5) Pursat, and 6) Battambang and Pailin (Figure 1) and involved 274 rural women. The program consisted of four, two-day workshops every two to three months. The workshops offered training on the personal and professional skills that WaterSHED's research had identified as necessary for economic and personal empowerment. These included general topics such as financial literacy (i.e. separate personal and business finance, tracking income and expenses, savings, accessing credit), business management (i.e. how to start a business, sales skills, team management), gender (i.e. gender roles, power relations, role models), and personal leadership (i.e. motivation, inspiration, self-confidence, goal setting, action planning, problem solving, decision making)

as well as WASH-specific topics such as WASH knowledge (i.e. open defecation, safe drinking water, personal hygiene, WASH products) and opportunities for women in WASH markets (i.e. latrine supply business owner, latrine sales agent, WASH product retailer). Additionally a group of 69 of the participating women were selected to serve as talk group leaders and tasked with organizing and facilitating monthly 'talk groups' or peer mentorship groups in their respective communes.

1.2. WASH Market Interest vs. WASH Market Participation

Of the 274 women who participated in the WEwork Collective program, 23 entered the program as latrine supply business owners or operators. From the program baseline, which was conducted between February and April of 2016, to the program endline, which was conducted between May and June of 2017, an additional three women became latrine supply business owners or operators. Of these women, two had entered the program as latrine sales agents and one was a construction worker who decided to enter the WASH market as a latrine supply business owner. Additionally, during this time, one of the 23 women who had entered the program as latrine supply business owners or operators exited the market after losing co-ownership of her latrine supply business in her divorce.

At the end of the fourth and final workshop, the participants were asked to set goals for their desired IGA. Of the 200 women who participated in the fourth and final workshop, 145 women set goals and action plans for IGAs in the WASH market. Women who had entered the program as latrine supply business owners, those who entered the market during the course of the program, and those who set goals for entering the WASH market were invited to participate in a follow-up series of two, two-day coaching events designed to provide additional WASH-specific job training. However, only 65 of 153 invited women attended both trainings.

The approach clearly generated interest in WASH IGAs (73% or 145 out of 200 workshop four participants set WASH-related IGA goals); however, it proved challenging to convert that interest into entrance and retention in the WASH market (9% or 24 out of all 274 participants had WASH IGAs at any point during the program). Applying a positive deviance lens allows us to investigate what was different about the women who were able to enter and find satisfaction in the WASH market. The 2017 evaluation of the WEwork program, which focused solely on demographic and socioeconomic factors, failed to identify any predictors of WASH job status. The potential role of women's attitudinal predispositions and characteristics of the IGAs themselves were not investigated.

"There appears to be no socio-economic factors that alone or in combination can predict women's business ownership. On the one hand, this means that anyone can be a business owner, but also it speaks little to nothing about the motivators, barriers and success factors for women setting up businesses in rural Cambodia. Thus, more in-depth research is needed to explore why some women set up businesses while others do not," (WaterSHED, 2017).

1.3. Research Objectives and Rationale

This research seeks to identify a set of characteristics to help predict current WASH job status, retention in WASH IGAs, and satisfaction in WASH IGAs. The findings of this work will help improve targeting strategies for recruiting better-fit participants of future programming for women in WASH markets.

The research also investigates two additional groups of women that we hypothesized to be appropriate target populations for programs attempting to involve women in WASH markets as latrine supply business owners and latrine sales agents. These populations include:

01 women working in the construction sector

02 women working as community healthcare workers

Women in the construction sector were hypothesised to be appropriate targets due to the similar technical skill sets and physical demands required for construction work and for the production of toilets; indeed, construction wholesalers in Cambodia tend to also supply WASH-related services (Murta & Willets, 2017). WaterSHED's own formative research, which was conducted in 2013-14 and informed the design of the WEwork Collective program, identified that women latrine supply business owners/co-owners tended to have backgrounds involving construction-related work, had close family in construction, or both, and so were familiar and had some level of comfort with the nature of the work prior to starting their latrine supply businesses (WaterSHED, 2013). The research that WaterSHED conducted in 2017 concerning barriers for female latrine sales agents indicated that female community healthcare workers face many of the same challenges to entrance and retention in their work, which, by nature, requires traveling within and between communities and promoting public health related products and behaviors (WaterSHED, 2018c). Therefore, this study also assesses the extent to which these two groups' demographic, socioeconomic, and attitudinal characteristics are aligned with the set of characteristics associated with high probability of current involvement, retention, and satisfaction in WASH IGAs.

Finally, we acknowledge that WASH jobs may not be the best fit for women in rural Cambodia. WaterSHED's past qualitative research has identified a number of structural and socially embedded barriers that women who are already operating in the WASH market face. These include, but are not limited to: women's roles as homemakers and caregivers for children and the elderly, which limits women's time and mobility; and perceptions among women and men concerning women's technical knowledge, physical strength, and whether or not women should engage in income-generating activities in the public sphere (WaterSHED, 2018b; WaterSHED 2018c).

In light of these realities, this research also aims to understand other IGAs that rural women perceive as feasible options for them to earn income. We are interested in elucidating the constructs (i.e. attributes of IGAs) by which women evaluate IGAs, form preferences, and make decisions about which jobs to spend their time doing. Findings from this component of the research will contribute to the evidence base for women's economic empowerment program design and help inform the WASH sector's understanding of how women evaluate opportunities in the WASH market against other IGAs.

2. Methodology

This study followed a mixed methods, cross-sectional research design. There were three study groups of interest for both the quantitative and qualitative components of the study:

01	**02**	**03**
Women who participated in the WEwork Collective program (WEwork women)	Women who did not participate in the WEwork Collective program, but were working in the construction sector at the time of the study (non-WEwork construction workers)	Women who did not participate in the WEwork Collective program, but were working as community healthcare workers (CHCWs) at the time of the study (non-WEwork CHCWs).

2.1. Quantitative Phase

2.1.1. Sampling Strategy for Quantitative Survey

Of the 274 women who participated in the WEwork Collective program, 236 completed both baseline and endline surveys. These 236 women constituted the sampling frame for this study's sample of WEwork women from which 180 women were randomly selected for recruitment. The number of randomly selected women from each of the seven target provinces of the WEwork Collective program (Kampong Cham, Tboung Khmum, Takeo, Kampong Speu, Kampong Chhnang, Pursat, Battambang, and Pailin) was proportionate to the number of WEwork participants in each province.

We aimed to recruit 20 non-WEwork construction workers in Phnom Penh and two to three non-WEwork construction workers in each of the seven WEwork Collective target provinces for a total of 40 non-WEwork construction workers. The researchers utilized convenience sampling to recruit this study group.

We aimed to recruit five to six non-WEwork CHCWs in each of the seven WEwork Collective target provinces, for a total of 40 non-WEwork CHCWs. The researchers utilized convenience sampling to recruit this study group and often utilized village chiefs as gatekeepers to locate or obtain contact information for the CHCWs operating in their village.

2.1.2. Quantitative Data Collection

The survey administered to 152 WEwork women between January and February, 2019 contained seven sections:

01 Respondent and household demographics

02 Respondent and household socioeconomic profile (household income and expenditure)

03 Information about the respondent's current IGA(s) including job satisfaction

04 Information about the respondent's experience with the three WASH jobs of interest (i.e. latrine business owner/operator, latrine sales agent, WASH product retailer) including job satisfaction

05 Personal attitudes

06 Professional networks (people who ask for advice from you or who you ask for advice from on issues related to business and employment in the last 3 months)

07 WEwork program benefits

An abridged version of the survey that omitted the sections on professional networks and WEwork program benefits was administered to 37 non-WEwork construction workers and 29 non-WEwork CHCWs during the same time period. The demographic, socioeconomic, and professional networks sections were modified from the WEwork Collective endline and baseline surveys (WaterSHED, 2017; Grabowska, Bartell, Van Boekhout, & Chin, 2018).

The personal attitudes section consists of group-referent statements about 'women,' 'men,' and 'my family' as well as self-referent statements about the respondent's own perceptions, experiences, beliefs, and attitudes. The section contains 45 statements each with a 5-point Likert-type response scale: 'disagree to the greatest extent,' 'somewhat disagree,' 'neither agree nor disagree,' 'somewhat agree,' 'agree to the greatest extent.' The researchers created these statements using transcripts, field notes, and findings from an exploratory qualitative study that WaterSHED conducted in 2013, prior to the inception of the WEwork Collective program, and from two qualitative studies conducted in 2017-2018 concerning barriers and enablers for women working as latrine business owners or latrine sales agents (WaterSHED, 2013; WaterSHED, 2018b; WaterSHED, 2018c). Wherever possible, statements were taken verbatim from transcripts to ensure that the attitudinal statements would resonate with the interviewees.

Adaptations and modifications were made where original transcripts were unavailable and/or to fit the dialogue into a concise statement to which an agree/disagree response would be appropriate.

Trained Cambodian enumerators administered the surveys in Khmer. The survey questions and skip logic were piloted with non-sampled women in Phnom Penh and revised accordingly prior to the start of data collection. Consent was obtained from all participants prior to survey administration.

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2.1.3. Quantitative Data Analysis

Binary logistic regression was used to create predictive models of current involvement, retention, and satisfaction in a WASH IGA (De Veaux, Velleman, & Bock, 2016). Women who indicated that they currently spend time working in one of the three WASH jobs of interest, regardless of whether the job was their 'primary' IGA or not (i.e. whether it was their main source of income or not), were considered to be currently involved in a WASH IGA. These women were compared to all other women in the sample who were not currently involved in a WASH IGA. Variables with Likert-type response scales were treated as ordinal variables (where 1 = 'disagree to the greatest extent' and 5 = 'agree to the greatest extent') in the logistic regression models.

In order to model retention, women who indicated that they previously spent time working in one of the three WASH jobs of interest, but were no longer doing so, were compared to women who were currently involved in a WASH IGA. Finally, in order to model satisfaction, women who were 'somewhat satisfied' or 'satisfied to the greatest extent' while they were doing their WASH IGA were compared to women who were 'somewhat dissatisfied', 'neither satisfied nor dissatisfied' nor 'dissatisfied to the greatest extent', regardless of whether or not they were still involved in the IGA.

Chi-squared analysis was used to explore the relationships between each of the three, binary outcomes of interest and hypothesized predictors (De Veaux, Velleman, & Bock, 2016). Forward selection with Likelihood Ratio was utilized to enter predictors into each model. This is a stepwise selection method by which predictors are tested for entrance into the model based on significance and tested for removal from the model based on Likelihood Ratio, which is considered least prone to error (De Veaux, Velleman, & Bock, 2016).

Statistical inference testing was conducted to determine whether there were statistically significant differences in attitudinal predispositions between WEwork women who were involved in WASH IGAs and those not involved in WASH IGAs. Additionally, in order to test our hypothesis around targeting non-WEwork construction workers and non-WEwork CHCWs, we tested for significant differences between the attitudinal predispositions of these groups and WEwork women in WASH. Two-sample t-tests were used for attitude statements with mean agreement that was normally distributed in the overall sample; Welch's t-tests were used for attitude statements with mean agreement that was non-normally distributed in the overall sample (i.e. skewness values outside the range of -1 to 1) (De Veaux, Velleman, & Bock, 2016).

We used one-way analysis of variance (ANOVA) to test for statistically significant differences in socioeconomic indicators (e.g. household income, household expenditure) between women who were currently involved in a WASH IGA, women who were previously involved in a WASH IGA, and women who were never involved in a WASH IGA (De Veaux, Velleman, & Bock, 2016).

To assess the composition of respondents' professional networks, we calculated the proportion of each respondents' professional contacts who had certain characteristics of interest (e.g. female, WEwork collective participants, live outside the respondents' village). Professional contacts were people who ask for advice from the respondent or who the respondent asked for advice on issues related to business and employment in the last 3 months. We then calculated an average proportion across all of the respondents for each characteristic of interest. All information about contacts was reported by the survey respondents.

Descriptive statistics were generated prior to statistical inferencing and modelling in order to characterize the sample of women according to their personal and household demographics and to characterize the sample of primary IGAs, in which these women were currently engaged, by job characteristics (e.g. distance from home, days and hours worked, and seasonality of work). The researchers utilized IBM SPSS Statistics 25 software (IBM Corp., Armonk, NY, USA) for all statistical modelling and inferencing outlined above.

2.2. Qualitative Phase

Interviewers conducted 35 Repertory Grid Interviews (RGIs) in January and February, 2019 to understand how women evaluate different IGAs and make decisions about which IGAs they will engage in. The researchers selected this technique for its ability to elucidate the interviewee's "implicit theoretical framework" or "personal construct system" by which they "anticipate events, determine [their] behavior, and ask [their] questions," (Fransella, Bell, & Bannister, 2004). The goal was to elicit women's mental maps of income generating opportunities which influence preference and choice, and develop a deeper understanding of how WASH IGAs are viewed in the context of women's available universe of options.

2.2.1. Selection Strategy for RGIs

Fifteen WEwork women were purposively selected for variation in socioeconomic profiles and experience with the three main WASH jobs of interest. Three of the 15 women recruited for the RGIs were exclusive to the qualitative section of the study, while the remaining 12 women also took part in the quantitative survey. Ten non-WEwork construction workers (in Phnom Penh and WEwork target provinces) and ten non-WEwork CHCWs (in WEwork target provinces) were recruited using convenience sampling techniques; none of the non-WEwork women recruited for the RGIs took part in the quantitative survey.

2.2.2. Data Collection for RGIs

In each RGI, the interviewer first elicited elements (i.e. the objects or events that are being evaluated; in this case, IGAs) (Curtis, Wells, Lowry, & Higbee, 2008) by asking the interviewee the following 3 questions one by one, to elicit all the IGAs she has tried or knows.

01 'do[es] these days/at present to make money for [her]self and [her] household'

02 'used to do, but do[es] not do these days/at present, to make money for [her]self and [her] household'

03 'know[s] of that other people do to make money for themselves or their households, but that [she has] never tried'

If the three WASH jobs of interest did not emerge organically during this process, the interviewer introduced each of these as additional elements and defined each using the operational definitions included in Appendix 1.

The interviewer then elicited constructs by asking the interviewee to compare and contrast a number of randomly selected dyads of the elicited and introduced IGAs. Fransella, Bell, & Bannister (2004) define constructs as "bipolar dimensions which each person has created and formed into a system through which they interpret their experiences of the world." The researchers used dyadic elicitation (i.e. comparing/contrasting only two IGAs at a time) because of its advantage over triadic elicitation (i.e. comparing/contrasting two grouped IGAs to a third IGA) in yielding more explicit contrast poles of the resulting construct (Epting, Schuman, & Nickeson, 1971). This process of dyadic elicitation prompted the interviewee to provide an emergent pole (e.g. one of the jobs is 'safe'); the interviewer then clarified to find the contrasting, implicit pole (e.g. 'safe—less safe' or 'safe—dangerous') (Fransella, Bell, & Bannister, 2004).

Interviews were conducted by two teams comprised of one interviewer and one note-taker each. The interviewer and note-takers were all trained Cambodian women and the interviews were conducted in Khmer. The RGI question guide was piloted with non-sampled women in Phnom Penh and revised accordingly prior to the start of data collection. Consent was obtained from all participants at the start of the interview and interviews were audio recorded. Interviews typically lasted 60 to 80 minutes and were conducted in the interviewee's home or workplace.

2.2.3. Analysis of Data from RGIs

The researchers utilized content analysis to categorize, compare, and tabulate constructs (Krippendorf, 2004; Hennink, Hutter, & Bailey, 2010). This approach was selected for its utility in making cross-case comparisons and identifying patterns between participants without the need for the researcher to provide pre-identified constructs during the interview and thus introduce researcher bias (Adams-Webber, 1998; Curtis, Wells, Lowry, & Higbee, 2008).

Three analysts conducted open coding using a variable sample of RGIs. Codes were organized, compared, and formalized; the resulting codebook was applied across all RGIs in a process of focused coding (Charmaz, 2006). Codes were then grouped into categories and these categories were used to make cross-case and group comparisons (Krippendorf, 2004). RGIs were grouped according to intervention status (WEwork vs. non-WEwork women). Comparisons were made between groups to identify differences between the construct systems expressed by WEwork women and non-WEwork women (Hennink, Hutter, & Bailey, 2010).

Researchers then tabulated occurrence of construct categories in each group to determine dominance of constructs by intervention status (Tomico et al., 2009). We measured dominance of particular construct categories by taking the proportion of individuals in the group who employed the construct at least once during their RGI. However, because individuals each provide multiple constructs, we also calculated the proportion of constructs expressed by the group that apply to the given construct category.

In order to determine importance of construct categories by group, we again utilized two metrics: 1). the proportion of individuals in a the group who reported that the construct was (one of the) 'most important' to consider when deciding which IGA to do. 2). the proportion of 'most important' constructs that tap to a given construct category.

3. Quantitative Survey Results

3.1. Respondent Demographics

A total of 218 surveys were completed. Of the 218 respondents,

152 (70%) were WEwork women

29 (13%) were non-WEwork CHCWS

37 (17%) were non-WEwork construction workers

Most respondents (70%) were married. The average age of respondents was 46 and the median household size (inclusive of the respondent herself) was five individuals. The majority of respondents listed primary school as their highest level of education (43%); however, WEwork women tended to be somewhat more highly educated than community healthcare workers and construction workers (Table 1).

The median household income per month for all respondents was USD $208, but ranged from USD $21 to USD $15,167 and was highest among WEwork women. Median monthly household expenditure was USD $140 among all respondents, and ranged from USD $10 to USD $5,600. The majority of respondents had savings (60%) and were not ID Poor (84%); these trends held true across study groups.

Table 1 : Respondent demographics, by study group

	Aggregate		WEwork women		Community Healthcare Workers		Construction Workers	
Number of respondents	218	100%	152	70%	29	13%	37	17%
Age of participant								
Mean (range)	46	(18-77)	48	(23-77)	47	(27-77)	38	(18-57)
Highest level of schooling completed (n, %)								
No formal schooling	11	5%	5	3%	0	0%	6	16%
Primary	93	43%	62	41%	12	43%	19	51%
Secondary	80	37%	53	35%	15	54%	12	32%
High School	28	13%	27	18%	1	4%	0	0%
Higher than high school	5	2%	5	3%	0	0%	0	0%
Marital status (n, %)								
Never married	19	9%	10	7%	3	10%	6	16%
Engaged	1	1%	1	1%	0	0%	0	0%
Married	153	70%	103	68%	22	76%	28	76%
Divorced/ Separated	7	3%	6	4%	0	0%	1	3%
Widowed	38	17%	32	21%	4	14%	2	5%
Household size								
Median	5	(1-17)	5	(1-17)	5	(1-8)	5	(1-9)
Monthly household income								
Median (range), in USD	208.33	(20.83 – 15,166.67)	250.00	(20.83 – 15,166.67)	166.67	(41.67 – 833.33)	83.33	(20.83 – 4,791.67)
Monthly household expenditure								
Median (range), in USD	140.00	(10.00 – 5,600.00)	140.00	(10.00 – 5,600.0)	100.00	(50.00 – 1,000.0)	130.00	(30.00 – 400.00)

Presence of household savings (n, %)

	n	%	n	%	n	%	n	%
No savings	86	39%	60	39%	15	52%	11	30%
Savings	130	60%	92	61%	13	45%	25	68%
Uncertain	2	1%	0	0%	1	3%	1	3%

Wealth Indicator* (n, %)

	n	%	n	%	n	%	n	%
Not ID Poor	183	84%	136	89%	26	90%	21	57%
ID Poor 1 (very poor)	15	7%	4	3%	3	10%	8	22%
ID Poor 2 (poor)	20	9%	12	8%	0	0%	8	22%

Province (n, %)

	n	%	n	%	n	%	n	%
Battambang	21	10%	18	12%	0	0%	3	8%
Kampong Cham	40	18%	30	20%	7	24%	3	8%
Kampong Chhnang	18	8%	14	9%	1	3%	3	8%
Kampong Speu	20	9%	12	8%	5	17%	3	8%
Pursat	38	17%	30	20%	8	28%	0	0%
Takeo	15	7%	12	8%	2	7%	1	3%
Tboung Khmum	45	21%	36	24%	6	21%	3	8%
Phnom Penh	21	10%	0	0%	0	0%	21	57%

Notes: All data are self-reported. Monthly household expenditure: 19 respondents with missing data. Monthly household income: 36 respondents with missing data. Presence of household savings: 2 respondents with missing data. *Classification according to the Identification of Poor Households Program of the Royal Government of Cambodia's Ministry of Planning (ID Poor 1 considered "very poor," ID Poor 2 considered "poor").

3.2. IGA Characteristics

The most commonly identified primary IGA – the activity that respondents provided when asked which IGA generates the greatest amount of income for her and her family - was crop farming (26%), followed by construction work (16%), and commune council work (14%) (Table 2). Of the respondents who reported that one of the three WASH IGAs of interest was their primary IGA, the majority owned or operated latrine supply businesses. In total, respondents identified 35 unique primary IGAs, which were grouped into 17 categories of primary IGAs. Three respondents (1%) were not currently engaged in an income-generating activity in any capacity. See Appendix 2 for a list and frequencies of the primary IGAs in which the sample of women were engaged at the time of the survey.

Of the respondents engaged in the three WASH IGAs of interest as their primary IGA, the majority worked at home. Respondents owning or operating latrine supply businesses were more likely to report seasonal variation in the amount of time they spent on their IGA than respondents in other WASH and non-WASH IGAs. Latrine supply business owners/operators and WASH retailers worked the greatest number of days per week (7.0) among people working in WASH as their primary IGA, and both had similar daily hours (7.5 and 8.0, respectively). Women working in construction, however, worked the greatest average number of hours per day (8.1). Latrine supply owners/operators and community healthcare workers had, on average, the fewest supplementary IGAs.

Table 2 : IGA characteristics, by primary income-generating activity

	Aggregate	Latrine supply business owner/operator	Latrine sales agent	WASH product retailer	Construction worker	Community health worker	Crop farmer	Commune councilor
Characteristics	218 (100%)	8 (4%)	5 (4%)	2 (1%)	36 (16%)	28 (13%)	58 (26%)	30 (14%)
Location of workplace (n, % of column total)								
At home	48 (22%)	8 (100%)	4 (80%)	1 (50%)	0 (0%)	8 (29%)	4 (7%)	1 (3%)
In my family's agricultural fields	8 (4%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	8 (14%)	0 (0%)
Away from home, but in this village	75 (35%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	16 (57%)	36 (62%)	3 (10%)
Outside my village, but in this commune	43 (20%)	0 (0%)	0 (0%)	0 (0%)	2 (6%)	2 (7%)	9 (16%)	26 (87%)
Outside my commune, but in this district	27 (13%)	0 (0%)	0 (0%)	0 (0%)	22 (61%)	1 (4%)	0 (0%)	0 (0%)
Outside this district	14 (7%)	0 (0%)	1 (20%)	0 (0%)	12 (33%)	1 (4%)	1 (2%)	0 (0%)

Characteristics	Aggregate	Latrine supply business owner/ operator	Latrine sales agent	WASH product retailer	Construction worker	Community health worker	Crop farmer	Commune councilor
	218 (100%)	8 (4%)	5 (4%)	2 (1%)	36 (16%)	28 (13%)	58 (26%)	30 (14%)

Distance to workplace in kilometers*

Mean (SD)	3.7 (11.8)	0 (0)	16.0 (35.9)	0.5 (0.7)	8.0 (20.5)	3.4 (8.9)	2.7 (4.3)	2.3 (1.8)

Days per week doing this work

Mean (SD)	5.5 (1.7)	7.0 (0)	4.8 (2.3)	7.0 (0)	6.3 (0.5)	5.6 (1.8)	5.3 (2.1)	5.8 (1.8)

Hours per working day doing this work

Mean (SD)	6.4 (2.9)	7.5 (2.7)	6.6 (3.4)	8.0 (0)	8.1 (0.7)	5.8 (3.0)	5.9 (2.8)	7.0 (1.6)

Seasonality: amount of time spent doing activity in other times in the year (n, % of column)

More in other times of the year	69 (32%)	4 (50%)	2 (40%)	1 (50%)	3 (8%)	9 (32%)	12 (21%)	12 (40%)
Less in other times of the year	22 (10%)	2 (25%)	0 (0%)	0 (0%)	3 (8%)	4 (14%)	10 (17%)	1 (3%)
About the same	124 (58%)	2 (25%)	3 (60%)	1 (50%)	30 (83%)	15 (54%)	36 (62%)	17 (57%)

Supplementary income-generating activities

Mean (range)	1 (0-4)	1 (1-2)	2 (1-3)	2 (2)	0 (0-2)	1 (0-2)	2 (0-4)	2 (1-3)

Notes: All data are self-reported. Location of workplace: 3 respondents with missing data. Distance from work in kilometres: 23 respondents with missing data. Days per week doing this work: 3 respondents with missing data. Hours per working day doing this work: 3 respondents with missing data. Seasonality: 3 respondents with missing data. *Home-based workers (n=48) did not report distance and were not counted in averages,

3.3. WASH IGAs and Socioeconomic Outcomes

Socioeconomic outcomes were compared between women who were involved in WASH IGAs during the study period (i.e. women undertaking WASH activities as primary or secondary work), women who had been involved in a WASH IGA, but had since changed careers, and women who had never been involved in a WASH IGA (Table 3).

Women currently in WASH had the highest average monthly household expenditure (USD $267), while women previously in WASH had the highest average monthly household income (USD $772). While the majority of women overall were from households that were not ID Poor, this majority was slightly more pronounced among women currently in WASH (87%) compared to those previously in WASH (84%) and those never in WASH (81%). A greater proportion (76%) of women currently in WASH contributed equally or more than other members of their household to household income than did those previously involved in WASH and those never in WASH (61% and 55% respectively).

Table 3 : Socioeconomic outcomes, by WASH job status

Characteristics	Aggregate		Currently in WASH		Previously in WASH		Never in WASH	
	218 (100%)		76 (35%)		45 (21%)		96 (44%)	
Monthly household expenditure in USD								
Mean (range)	$196	($10 - $5,600)	$267	($20 - $5,600)	$147	($20 - $600)	$163	($10 - $1,000)
Monthly household income in USD								
Mean (range)	$504	($21 – $15,167)	$581	($21 - $6,230)	$772	($25 - $15,167)	$277	($21 - $4,771)
Share of money contributed to household income, compared to 'other hh members'								
A lot less	32	15%	8	11%	5	12%	19	20%
A little less	47	22%	11	15%	12	28%	24	25%
About the same	72	34%	30	40%	11	26%	31	32%
A little more	28	13%	9	12%	10	23%	9	9%
A lot more	36	17%	18	24%	5	12%	13	14%

Wealth indicator*

ID Poor 1	15	7%	3	4%	1	2%	11	12%
ID Poor 2	20	9%	7	9%	6	13%	7	7%
Not ID Poor	183	84%	66	87%	38	84%	78	81%

Notes: All data are self-reported. Monthly household expenditure: 13 respondents with missing data. Monthly household income: 21 respondents with missing data. Share of money contributed to household income: 3 respondents with data missing. *Classification according to the Identification of Poor Households Program of the Royal Government of Cambodia's Ministry of Planning (ID Poor 1 considered "very poor," ID Poor 2 considered "poor").

3.4. Job satisfaction

Respondents were asked a variety of questions to ascertain satisfaction with different aspects of their primary IGA; the question items had 5-point, Likert-type response scales, where 1 was "dissatisfied to the greatest extent" and 5 was "satisfied to the greatest extent". Only WEwork women were currently engaged in WASH jobs as a primary IGA; therefore, primary IGA job satisfaction was calculated among WEwork women only. Overall, respondents tended to be satisfied (either "somewhat satisfied" or "satisfied to the greatest extent") with all domains of their work. Among WEwork women, those who were currently in WASH rated their work satisfaction higher than those not currently in WASH on the following aspects: location, physical effort, income earned, family support, schedule, and safety. The difference was statistically significant for family support (t(28)=-2.798, p=0.009). However, when asked to rate their overall satisfaction with their work, women in WASH had a slightly lower overall job satisfaction rating (4.67) than women not in WASH (4.70). WEwork women not in WASH had higher satisfaction scores in terms of their treatment by their manager (management) than those in WASH, though this difference was not statistically significant (Table 4).

Table 4 : Average job satisfaction among WEwork women (n = 152), by current WASH job status

Satisfaction Domain†		Non-WASH (n=137)	WASH (n=15)
Location	How satisfied are you with the location of this work (i.e. the distance from your home, time required for travel, etc.)?	4.41	4.53
Physical effort	How satisfied are you with the physical effort required to do this work?	4.21	4.47
Income earned	Considering the time and effort you spend doing the work, how satisfied are you with the amount of money you earn?	4.35	4.47
Family support	How satisfied are you with the support you get from other members of your family to do this work?	4.56	4.87*
Schedule	How satisfied are you with the schedule for when you do this work?	4.36	4.53
Safety	How satisfied are you with the personal safety you [have/feel] while doing this work?	4.30	4.47
Interpersonal	How satisfied are you with the way people talk to you or treat you while you are doing this work?	3.83	3.60
Management	How satisfied are you with the way the supervisor, boss or manager of your work talks to you or treats you while you are working?	4.24	3.60
Overall satisfaction	Overall, how satisfied are you with this work as a way for you to earn money?	4.70	4.67

Notes: All domains were non-parametrically distributed. * Welch's t-test of WASH vs. non-WASH yields p-value ≤ 0.05 † There were data missing WEwork women for "Location" (2 non-WASH), "Physical effort" (3 non-WASH), "Income earned" (2 non-WASH), "Family support" (4 non-WASH), "Schedule" (3 non-WASH), "Safety" "Interpersonal" (11 non-WASH), "Management" (51 non-WASH and 10 WASH), and "Overall Satisfaction" (2 non-WASH)

3.5. Personal Attitudes

Personal attitudes items had 5-point, Likert-type response scales, where 1 was "Disagree to the greatest extent" and 5 was "Agree to the greatest extent". The results presented here focus on two main comparisons: 1) attitudes of WEwork women working in WASH (whether as a primary or secondary income-generating activity) vs. attitudes of WEwork women not working in WASH, and 2) attitudes of WEwork women in WASH (whether as a primary or secondary IGA) vs. attitudes of women in the hypothesized target groups (construction workers and community healthcare workers) (Table 6). A breakdown of women working in WASH can be found below in Table 5. One of the sampled construction workers had a secondary position in WASH and was, therefore, excluded from the analytical sample for this section of the analysis.

Table 5 : Breakdown of women working in WASH

	WASH (n= 76)		
	Latrine supply business owner/operato r (SP)	**Latrine sales agent (SA)**	**WASH product retailer (PR)**
Primary IGA	8	5	2
Secondary IGA	11	56	15
Total	**19**	**61**	**17**

Note: Some respondents were in multiple WASH jobs, whether primary or secondary.

3.5.1. Past experience/Background

3.5.1.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women not in WASH were less likely to agree than WEwork women in WASH on all past experience/background items. WEwork women in each of the three WASH IGAs of interest were significantly more likely to know people who owned latrine supply businesses (item 1.1) and significantly more likely to know people who were latrine sales agents (item 1.2) who they could ask for advice than WEwork women not involved in WASH. Among WEwork women, those in WASH were significantly more likely than those not in WASH to feel that observing others' success in certain jobs would give them the confidence to try new IGAs, even without having their own past experience (item 1.4).

3.5.1.2. WEwork women in WASH vs. Hypothesized target groups

The hypothesized groups had lower agreement than WEwork women in WASH on all past experience/background items. WEwork women in each of the three WASH IGAs of interest were significantly more likely to know people who owned latrine supply businesses (item 1.1) and who were latrine sales agents (item 1.2) than were women in the hypothesized target groups.

3.5.2. Family Support

3.5.2.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women not in WASH were less likely to agree than WEwork women in WASH on all family support items. WEwork women latrine supply business owners/operators were significantly more likely to have their family work together to increase productivity and share income from communal work (item 2.1) than WEwork women not in WASH. WEwork women in any WASH job, in general, were more likely to have support from their family in terms of assisting with chores (item 2.3).

3.5.2.2. WEwork women in WASH vs. Hypothesized target groups

In general, women involved in construction and community health work had lower agreement scores on items in the 'family support' factor than WEwork women in WASH. There were prominent exceptions, with construction workers having no significant differences in mean agreement scores for family collaboration (item 2.1) and assistance with chores (item 2.3) compared to WEwork women in WASH; community healthcare workers also had similar scores for financial assistance from family members (item 2.2) and family approval (item 2.4) compared to WEwork women in WASH.

3.5.3. Time Constraints

3.5.3.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women not in WASH had lower agreement scores than WEwork women in WASH on all time constraint items. WEwork women in WASH were, overall, significantly more likely than those not in WASH to feel they spent the majority of their time on employment or work related activities (item 3.3).

3.5.3.2. WEwork women in WASH vs. Hypothesized target groups

In general, women involved in construction and community health work had lower agreement scores for items in the 'time constriants' factor than WEwork women in WASH. Community healthcare workers were similar to WEwork women in WASH in terms of the time they had to attend training (item 3.1) and time constraints imposed by domestic duties (item 3.2); on average, women felt they did have enough time to attend training and were relatively neutral with respect to the effects their domestic duties had on their time available for work. Construction workers were similar to WEwork women in WASH in terms of the majority of their time being occupied with work-related activities (item 3.3), which is supported by the hours of work reported in Table 2. Construction workers had significantly stronger agreement than WEwork women in WASH with the idea that domestic duties limited time they can put into their IGAs (item 3.2).

3.5.4. Personal agency

Across all groups of women, the vast majority indicated that their husbands' input was critical in making work decisions.

3.5.4.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women latrine supply business owners/operators were more likely to feel confident in communicating with men and women and speaking up in public (item 4.1) than WEwork women not in WASH. WEwork women in latrine supply and WASH product retail had a significantly higher degree of agreement with the idea that they need to consult their husbands before making work decisions (item 4.4) than WEwork women not in WASH.

3.5.4.2. WEwork women in WASH vs. Hypothesized target groups

Community healthcare workers were not significantly different from WEwork women in WASH in terms of their perception of ability to speak in public (item 4.1), independence from family opinion regarding their work (item 4.2), or their need to consult their husbands with regards to decisions around employment (item 4.4). Construction workers were significantly less likely to have confidence in communicating in public (item 4.1) and significantly less likely to need to consult their husband around work-related activities (item 4.4) than WEwork women in WASH.

3.5.5. Skills and Knowledge

Across all groups, women tended to agree, albeit weakly, that their lack of formal education had limited their ability to do certain jobs (item 5.6).

3.5.5.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women in any WASH IGA had significantly higher scores than WEwork women not in WASH in terms of their perceptions of having enough technical knowledge to be a latrines sales agent (item 5.3) and a WASH retailer (item 5.4). However, only latrine supply business owners/operators and latrine sales agents had significantly higher scores in terms of perceptions of having enough technical knowledge to be a latrine supply business owner/operator (item 5.2) and to manage a business (item 5.1). Interestingly, WEwork women sales agents, as well as WEwork women in WASH on aggregate had significantly higher agreement than women not engaged in WASH that they had limited skills other than domestic skills to be significant income earners (item 5.5).

3.5.5.2. WEwork women in WASH vs. Hypothesized target groups

In general, community healthcare workers had significantly lower scores in terms of latrine supply and sales knowledge (items 5.2 and 5.3), financial management knowledge (item 5.1), and WASH product retail knowledge (item 5.4), than WEwork women in WASH. Construction workers also had significantly lower scores in terms of latrine and WASH product sales (items 5.3 and 5.4) than women working in WASH. There were no significant differences in average scores between construction workers and WASH workers in terms of latrine business knowledge (item 5.2) and financial literacy knowledge (item 5.1).

3.5.6. Safety and Security

Women in all sub-groups were similarly neutral on statements concerning fear of drunk men (item 6.2), fear of traveling outside their village (item 6.3), and vulnerability to harassment in the workplace (item 6.4).

3.5.6.1. WEwork women in WASH vs. WEwork women not in WASH

Overall, WEwork women in WASH had similar scores regarding safety to non-WASH WEwork women.

3.5.6.2. WEwork women in WASH vs. Hypothesized target groups

Construction workers and community healthcare workers were significantly less fearful of robbery (item 6.1) than WEwork women in WASH.

3.5.7. Participant mobility

All study groups tended to weakly agree that domestic duties limited their ability to travel (item 7.1) and remained relatively neutral regarding whether they considered it improper for a woman to be away from home for multiple nights in a row (item 7.3).

3.5.7.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women WASH product retailers had significantly stronger agreement around the need for family approval to be away from home (item 7.2) and their neighbours' ability to recognize them (item 7.4) than WEwork women not in WASH.

3.5.7.2. WEwork women in WASH vs. Hypothesized target groups

Construction workers had significantly lower agreement scores in terms of needing to explain reasons for being away from home to their family (item 7.2) and community recognition (item 7.4), compared to WEwork women in WASH. Interestingly, community healthcare workers had significantly lower average agreement on their neighbours' ability to recognize them (item 7.4) and on better knowledge of the area outside of their village than their husband/male family members (item 7.5) than WEwork women working in WASH, even though their roles rely heavily on both community recognition and knowledge of the local environment.

3.5.8. Physical demands

Across all groups of women, there were no significant differences in perceptions with regards to women's physical ability to do latrine casting work (item 8.1), physical ability to handle adverse travel conditions (item 8.3), or concerns regarding injuries that could be obtained through undertaking physically demanding work (item 8.4).

Interestingly, WEwork women latrine supply business owners/operators had higher agreement scores than WEwork women not in WASH in terms of perceiving women to have the same physical capacity to do any job that a man could (item 8.2).

In contrast, community healthcare workers had significantly lower agreement scores then WEwork women in WASH for the same item.

3.5.9. Gender norms

3.5.9.1. WEwork women in WASH vs. WEwork women not in WASH

There were no significant differences on gender norm items between WEwork women in WASH and not in WASH with the exception of WASH product retailers who had significantly more agreement on preference for working with other women (item 9.1).

3.5.9.2. WEwork women in WASH vs. Hypothesized target groups

Women in the hypothesized target groups had significantly less agreement on preference for working with other women (item 9.1) compared to WEwork women in WASH.

Women in the hypothesized groups, particularly construction workers, were more likely to consider it more difficult for women than for men to advertise a business or sell products in their community (item 9.6), compared to WEwork WASH women. This finding is supported by construction workers having the lowest average scores in terms of community visibility (item 7.4). Community healthcare workers perceived women to be less suitable for doing heavy work (item 9.5), which is supported by their lower perceptions of the physical capabilities of women (item 8.2).

3.5.10. WASH jobs

3.5.10.1. WEwork women in WASH vs. WEwork women not in WASH

WEwork women in WASH were significantly more able to imagine themselves owning or managing a business (item 10.3) and to imagine themselves traveling outside of their village to conduct latrine sale work, compared to WEwork women not in WASH (item 10.4).

3.5.10.2. WEwork women in WASH vs. Hypothesized target groups

Women in the hypothesized groups, in particular construction workers, were significantly more likely to be ambivalent to imagine themselves owning or managing a business (item 10.3), compared to WEwork women in WASH.

Compared to WEwork women in WASH, construction workers and community healthcare workers were both significantly more ambivalent to imagine themselves doing the work of latrine sales agents (item 10.4).

Table 6 : Average agreement with personal attitude statements, by study group

Item number	Factors and associated Items	Non-WASH (n=77)	WEwork women				Hypothesized Target Groups (construction workers and community health workers)		
			WASH						
			Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)
Factor 1: Past Experience/Background									
1.1	I know people who have owned latrine businesses and could ask them for advice about this activity if I wanted.*	3.32	4.08[†]	4.18[‡]	4.10[‡]	3.94[‡]	2.57[§]	2.25[‖]	2.97[‖]
1.2	I know people who have been latrine sales agents and could ask them for advice about this activity if I wanted.*	3.66	4.19[†]	4.24[‡]	4.20[‡]	4.06[‡]	2.54[§]	2.31[‖]	2.83[‖]
1.3	I know people who have sold water, sanitation, and hygiene products like water filters or child potties, and I could ask them for advice about this activity if I wanted.*	3.95	4.03	3.89	4.03	3.76	2.74[§]	2.58[‖]	2.93[‖]
1.4	Seeing and learning how others have succeeded at a job gives me confidence to try it, even if I don't have past experience doing the work myself.	4.04	4.35[†]	4.50[‡]	4.33[‡]	4.29[‡]	3.68[§]	3.44[‖]	3.97
Factor 2: Family Support									
2.1	My family members work together to increase productivity and share the income from the work we do together. *	4.18	4.39	4.72[‡]	4.43	4.35	4.09[§]	4.17	4.00[‖]
2.2	My family contributes financially, by giving me money, equipment, or paying for transportation so that I can do my work. *	4.12	4.32	4.44	4.33	4.53[‡]	3.89[§]	3.83[‖]	3.97
2.3	My family helps me by doing some of my household chores or taking care of my children so that I can spend time working to make money. *	4.12	4.42[†]	4.61[‡]	4.42	4.71[‡]	4.06[§]	4.11	4.00[‖]
2.4	My family approves of the work I do to make money for myself and my household. *	4.47	4.66	4.67	4.65	4.82[‡]	4.20[§]	3.97[‖]	4.48

	Factors and associated Items	WEwork women					Hypothesized Target Groups (construction workers and community health workers)		
		Non-WASH		WASH					
		(n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)

Factor 3: Time Constraints

	Factors and associated Items	(n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)
3.1	I do not have time to attend trainings, workshops, or meetings to build work skills/knowledge because I am too busy to attend.	2.64	2.48	3.17	2.38	2.24	3.03[§]	3.28[‖]	2.97[‖]
3.2	I have many duties at home, like cooking and cleaning, which limit how much time and effort I can put into my work.	3.03	3.05	3.17	3.00	3.00	3.49[§]	3.72[‖]	2.83[‖]
3.3	In an average week, I spend the majority of my time on employment or work related activities to make money for myself or my household.	3.78	4.32[†]	4.72[‡]	4.28[‡]	4.24[‡]	3.97[§]	4.17	2.93[‖]

Factor 4: Personal Agency

	Factors and associated Items	(n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)
4.1	I have no problem communicating will both men and women and speaking up in public.*	4.04	4.25	4.56[‡]	4.21	4.24	3.89[§]	3.83[‖]	3.97
4.2	If my family did not agree with the job I wanted to do, then I could not do it.	3.40	3.70	3.28	3.82	4.24[‡]	3.37	3.36	3.38
4.3	Important decisions in my business or job are regularly made without my input or approval.	2.82	3.16	2.89	3.20	3.06	3.00	3.17	2.79
4.4	Even if I am capable of doing my job on my own, I must still consult with my husband about work and employment decisions to maintain harmony and avoid future conflicts in the home.*	4.51	4.65	4.94[‡]	4.60	4.71[‡]	4.22[§]	4.11[‖]	4.34
4.5	I do not make business or employment decisions on my own because I do not want to be responsible if it is the wrong decision.	3.68	3.47	3.72	3.41	4.00	3.54	3.36	3.76

Factors and associated Items		Non-WASH (n=77)	WEwork women — WASH Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Hypothesized Target Groups (construction workers and community health workers) Ag. (n=65)	CW (n=36)	CHCW (n=29)
Factor 5: Skills and Knowledge									
5.1	I have knowledge about managing money that could be useful in certain jobs, like running a businesses or being a reseller.*	4.03	4.33†	4.61‡	4.34‡	4.18	3.89§	4.03	3.72‖
5.2	I have enough technical knowledge about latrine production, installation, operation and maintenance to own a latrine business.	2.19	3.28†	4.44‡	3.11‡	2.88	2.82§	3.28	2.24‖
5.3	I have enough technical knowledge about types of latrines and health benefits to be a latrine sales agent. *	2.84	4.05†	4.11‡	4.08‡	3.76‡	3.06§	3.22‖	2.86‖
5.4	I have enough technical knowledge about water, sanitation, hygiene, and its health benefits to be a retailer of WASH products, like water filters or child potties. *	3.34	4.09†	4.06‡	4.10‡	4.35‡	3.09§	3.31‖	2.83‖
5.5	I have few skills apart from things like housework, farming and cooking, that I can use to earn income or contribute to increase my husband's work or business. *	3.73	4.13†	4.11	4.23‡	3.94	3.92	4.03	3.79
5.6	I feel that my lack of formal education has limited my ability to do certain jobs.	3.38	3.55	3.67	3.48	3.76	3.52	3.39	3.69

		WEwork women					Hypothesized Target Groups (construction workers and community health workers)		
		Non-WASH		WASH					
	Factors and associated Items	(n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)
Factor 6: Safety and Security									
6.1	I always take precautions in how I dress and money I carry, to avoid robbery when I go outside my village. *	4.30	4.49	4.33	4.44	4.53	4.09[§]	4.11[‖]	4.07[‖]
6.2	I would fear drunk men if my work required door-to-door visits	3.58	3.32	3.17	3.23	3.94	3.20	3.28	3.11
6.3	I do not want to travel outside or far from my village because I worry about my safety.	3.47	3.41	3.28	3.38	3.35	3.51	3.50	3.52
6.4	As a woman, I am vulnerable to harassment at my workplace.	3.06	2.77	2.78	2.75	2.12[‡]	3.23	3.33	3.10
Factor 7: Restricted Mobility									
7.1	I am limited in how far I can travel from home because my daily responsibilities like cooking and cleaning, require me to stay close to home.	3.56	3.56	3.50	3.52	3.88	3.60	3.86	3.28
7.2	If I am away from home, I have to have a good reason that is acceptable to my family. *	4.34	4.48	4.72	4.46	4.65[‡]	4.09[§]	3.97[‖]	4.24
7.3	It is not proper for a women, whether unmarried or married, to spend several nights far away from home, without a male relative, even if it is for a good cause like training or self-development.	2.73	2.87	3.33	2.84	2.71	3.09	3.19	2.97
7.4	Everyone in my community recognizes me. *	4.57	4.67	4.61	4.67	4.71[‡]	4.08[§]	3.92[‖]	4.28[‖]
7.5	I know the area outside my village better than my husband does or my male family members do.	3.87	3.81	3.33	3.97	3.47	3.29[§]	3.50	3.03[‖]

	WEwork women					Hypothesized Target Groups (construction workers and community health workers)		
Factors and associated Items	Non-WASH	WASH				Ag. (n=65)	CW (n=36)	CHCW (n=29)
	(n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)			

Factor 8: Physical Demands

		Non-WASH (n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)
8.1	Women are too weak and lack the stamina to do the physical work required for latrine casting.	3.13	3.33	3.39	3.25	3.35	3.26	3.00	3.59
8.2	As a woman, I am physically able to do any job that a man can do. *	3.77	3.91	4.22[‡]	3.92	3.88	3.68	3.86	3.45[‖]
8.3	I would be concerned about the physical strain of accessing muddy roads on a motorbike if this were required for my work.	3.22	3.15	3.22	3.10	3.59	3.08	2.75	3.48
8.4	I would be concerned about health problems and pain as a result of carrying heavy materials if this were required of my work.	3.44	3.41	3.67	3.35	3.82	3.55	3.33	3.83

Factor 9: Gender Norms

		Non-WASH (n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)
9.1	I feel more comfortable with jobs and tasks where I can work with other women. *	4.04	4.19	3.89	4.11	4.47[‡]	3.82[§]	3.81	3.83
9.2	I would prefer to do work that is indoors to maintain my skin and nice looks, because these are important to me as a woman.	3.58	3.48	3.83	3.39	3.18	3.29	3.22	3.38
9.3	Being the family's main breadwinner is unwomanly, as this is a man's role.	2.29	2.57	2.06	2.61	2.29	2.72	3.00	2.38
9.4	Men are more likely to persevere than women when faced with a challenge in work or business.	3.38	3.59	3.50	3.59	3.35	3.48	3.44	3.52
9.5	Women should not do heavy work, for example construction work; jobs that require heavy work are better suited for men.	3.44	3.31	3.78	3.23	3.59	3.57	3.28	3.93[‖]
9.6	It would be difficult for me to advertise a business or sell products in my community, because people will not believe or have confidence in a business or products sold by a woman.	2.82	2.88	2.72	2.80	3.06	3.28[§]	3.39[‖]	3.14

	Factors and associated Items	WEwork women					Hypothesized Target Groups (construction workers and community health workers)		
		Non-WASH	WASH						
		(n=77)	Ag. (n=75)	SP (n=18)	SA (n=61)	PR (n=17)	Ag. (n=65)	CW (n=36)	CHCW (n=29)

Factor 10: Overall attitude toward WASH jobs

		Non-WASH	Ag.	SP	SA	PR	Ag.	CW	CHCW
10.1	I could never imagine myself selling WASH products, like water filters or child potties.	3.21	3.49	2.94	3.54	3.71	3.34	3.31	3.38
10.2	I could never imagine myself doing cement-casting work.	3.35	3.54	3.78	3.48	3.06	3.22	3.22	3.21
10.3	I could imagine myself owning or managing a business. *	3.58	3.99[†]	4.33[‡]	3.93	3.63	3.58[§]	3.36[‖]	3.86
10.4	I could imagine myself going traveling to other communities, going door-to-door, or holding public events to sell latrines. *	3.25	3.92[†]	4.06[‡]	3.95[‡]	3.88[‡]	3.02[§]	3.14[‖]	2.86[‖]

* Non-parametric data variables analyzed using Welch's t-test
[†] Two-sample/Welch's t-test of WASH (aggregate) vs. non-WASH (aggregate) yields p-value ≤ 0.05
[‡] Two-sample/Welch's t-test of SP/SA/PR vs. non-WASH (aggregate) yields p-value ≤ 0.05
[§] Two-sample/Welch's t-test of hypothesized groups (aggregate) vs. WASH (aggregate) yields p-value ≤ 0.05
[‖] Two-sample/Welch's t-test of CW/CHCW vs. WASH (aggregate) yields p-value ≤ 0.05

3.6. Modelling WASH involvement, retention, and satisfaction

There were no women out of the 76 in the survey who were currently involved in WASH IGAs who were not satisfied (either "somewhat satisfied" or "satisfied to the greatest extent") with their work; therefore, we were unable to create a model that predicts WASH satisfaction among this sub-group.

Hosmer-Lemeshow Goodness of Fit test of the predictive models for involvement and for retention in WASH IGAs had p-values (0.100 and 0.540, respectively) indicating no evidence of poor fit (Hosmer & Lemeshow, 1980). This was further supported by C-statistic tests, which suggested that both models - the model of involvement and the model of retention – had relatively strong predictive value (83.7% and 71.4% respectively). C-statistics of 50% indicate models are not better at predicting outcomes than random chance, while C-statistics of 100% indicate perfect predictive capacity (Hosmer, Lemeshow, & Sturdivant, 2013).

Model 1, which predicted current involvement in a WASH IGA (75 currently involved vs 139 not involved), had moderately strong associations between the dependent variable (involvement in WASH) and the independent variables (knew latrine sales agents they could ask for advice, felt they had latrine sales agent technical knowledge, could imagine being a latrine sales agent, made work-related decisions on their own, and not feeling vulnerable to harassment at work) as measured by Somers' *D* and Goodman & Kruskal's Gamma (0.674 and 0.676 respectively). Model 2, which predicted retention in WASH (76 currently involved vs 45 previously involved), was a somewhat weaker predictive model than Model 1, according to the Somers' *D* and Goodman & Kruskal's Gamma values (0.427 and 0.469 respectively). Larger values of these tests, approaching either -1 or +1, indicate good predictive capability (Somers, 1962; Goodman & Kruskal, 1954).

In Model 1, the odds of being currently involved in a WASH IGA were 2.1 times higher for women who knew someone who was a latrine sales agent they could ask for advice than women who did not (OR = 2.1, (1.42-2.99); p < 0.001), controlling for perceptions of latrine sales agent technical knowledge, whether the respondent "could imagine […] going traveling to other communities, going door-to-door, or holding public events to sell latrines", made work-related decisions on her own, and felt vulnerable to harassment at work.

Model 1 predicted that if women disagreed to the greatest extent with "know people who have been a sales agent and could ask them for advice", "feel I have sufficient sales agent technical knowledge," "could imagine being a sales agent", and agreed to the greatest extent with "do not make work-related decisions" and "fears harassment at work due to their gender", then they had a 0.16% chance of currently being in WASH. Women who agreed to the greatest extent with "know people who have been a sales agent and could ask them for advice", "feel I have sufficient sales agent technical knowledge", "could imagine being a sales agent", and disagreed to the greatest extent with "do not make work-related decisions" and "fears harassment at work due to their gender" had a 96% chance of currently being in WASH.

The resulting model for current involvement in a WASH IGA is presented in Table 7 and is shown below:

> *Probability of current WASH IGA = -5.02 + 0.72(knew sales agent) + 0.58(had sufficient technical knowledge) + 0.49(could imagine selling latrines) – 0.29(did not make work-related decisions) – 0.35(felt vulnerable to harassment)*

In Model 2, among women who had ever tried a WASH IGA, the odds of remaining in WASH were 1.5 times higher for women who felt they had sufficient latrine sales agent knowledge (OR = 1.48, (1.06 to 2.06); p = 0.023) than those did not, controlling for perceptions about time spent on IGAs weekly.

Among women who had ever tried a WASH IGA, those who disagreed to the greatest extent with "feel I have sufficient sales agent technical knowledge" and "majority of time each week is spent on IGAs" had an 8% chance of remaining in WASH IGAs. Among women who had ever tried a WASH IGA, those who agreed to the greateast extent with "sales agent knowledge" and "majority of time each week is spent on IGAs" had an 84% chance of remaining in WASH IGAs.

The resulting model for retention in WASH IGA is presented in Table 7 and is shown below:

> *Probability of WASH IGA retention = -3.47 + 0.389(had sufficient technical knowledge) + 0.637(majority of time each week is spent on IGAs)*

Table 7: Logistic regression models for traits of women currently and likely to remain in WASH

Model 1: Predictive logistic regression model of current WASH job status
Women involved in a WASH IGA at time of the study (n=75)* vs. all other women (n=139)[†]

Predictor	β	SE β	Wald's χ2	df	p	OR	95% C.I. for OR Lower	95% C.I. for OR Upper
Constant	-5.016	1.027	23.843	1	<0.001	0.007		
Knew someone who was a latrine sales agent and could ask them for advice	0.723	0.189	14.593	1	<0.001	2.061	1.422	2.988
Felt she had sufficient latrine sales agent technical knowledge	0.575	0.173	11.058	1	0.001	1.778	1.266	2.495
Could imagine being a latrine sales agent	0.485	0.176	7.594	1	0.006	1.624	1.150	2.294
Did not make work-related decisions on her own because she did not want to be responsible for the wrong decision	-0.293	0.151	3.769	1	0.052	0.746	0.555	1.003
Felt vulnerable to harassment at work, as a woman	-0.345	0.129	7.103	1	0.008	0.709	0.550	0.913

Model evaluation

Goodness-of-fit test			χ2	df	p			
Hosmer–Lemeshow			13.367	8	0.100			

Somer's D = 0.674. Goodman & Kruskal's Gamma = 0.676. Kendall's Tau-a = 0.308. C-statistic = 83.7%. Selection method: Forward selection with likelihood ratio. *1 missing value in 'Know people who have been a latrine sales agent and could ask them for advice." [†]2 women were unemployed. 1 woman refused to answer

Model 2: Predictive logistic regression model of WASH job retention
Women involved in a WASH IGA at the time of the study (n=76) vs. Women previously involved in a WASH IGA (n=45)

Predictor	β	SE β	Wald's χ2	df	p	OR	95% C.I. for OR Lower	95% C.I. for OR Upper
Constant	-3.472	1.058	10.779	1	0.001	0.031		
Felt she had sufficient latrine sales agent technical knowledge	0.389	0.171	5.186	1	0.023	1.476	1.056	2.063
Perceived that the majority of their time each week was spent on IGAs	0.637	0.234	7.410	1	0.006	1.891	1.195	2.991

Model evaluation

Goodness-of-fit test			χ2	df	p			
Hosmer–Lemeshow			5.032	6	0.540			

Somer's D = 0.427. Goodman & Kruskal's Gamma = 0.469. Kendall's Tau-a = 0.201. C-statistic = 71.4%. Selection method: Forward selection with likelihood ratio. Excludes women who were unemployed (n=2) and women who were never involved in a WASH IGA (n=96).

3.7. Professional Networks

WEwork women were asked about their professional network in terms of how many different individuals they asked for business advice (contacts), where those contacts were located, their gender, and how often they both received business advice from contacts and gave business advice to contacts.

Respondents had, on average, 4 contacts (SD=2.5) in their professional networks. On average, about half (48%) of the contacts in a respondents' network were female, about one third (32%) were other WEwork Collective participants, and most (71%) lived within the respondents' village. Respondents, on average, received business advice from 83% of the contacts in their network at least monthly and gave business advice to 79% of the contacts in their network at least monthly (Table 8).

Table 8: Professional networks of WEwork participants (n=152)

Geographic location of contacts	
Same house	33%
Same village	38%
Same commune	20%
Same district	5%
Same province	1%
Gender of contacts	
Male	52%
Female	48%
WEwork status of contacts	
WEwork	32%
Non-WEwork	68%
Frequency of receiving business advice	
Daily	18%
Weekly	26%
Monthly	39%
Quarterly	9%
Never	8%
Frequency of giving business advice	
Daily	17%
Weekly	25%
Monthly	37%
Quarterly	8%
Never	12%

Notes: Geographic location of advisor, Gender of advisor, Frequency of receiving business advice, and Frequency of giving business advice: 7 respondents with missing data.

4. RGI Qualitative Results

Of the 35 women who were interviewed, 15 (43%) were WEwork women and 20 (57%) were non-WEwork women. The interviewees were each involved in between 1 and 7 IGAs at the time of the interview. In addition to the 5 IGAs for which interviewees were selected (i.e., latrine supply business owners/operators, latrine sales agents, WASH retailers, construction workers, and CHCWs), some interviewees were also rice, vegetable, or livestock farmers; commune councilors; village chiefs and committee members; a few women were also food vendors, tailors, and laborers; one woman each was a factory worker or grocery seller. Of the 15 WEwork women, nine were engaged in one or more of the three WASH IGAs of interest. Of the 20 non-WEwork women, only one was engaged in one or more of the three WASH IGAs of interest (Table 9).

The 35 women provided a total of 194 unique constructs (i.e., pairs of contrasting emergent and implicit poles) for evaluating possible IGAs. Interviewees provided 5.5 unique constructs on average (range=3 to 9); WEwork women provided 6.3 unique constructs on average (range= 4 to 9), while non-WEwork women provided 5 unique constructs on average (range=3 to 7).Using an inductive data analysis process, 21 construct categories were identified from the 194 constructs provided. Some interviewees mentioned multiple constructs related to the same construct category; the nuanced differences both between and within construct categories will be illustrated in the sub-sections that follow. The 21 construct categories were grouped into 5 thematic domains. In total, the 194 constructs were employed 251 times by all interviewees, meaning some constructs were used more than once.

4.1. Dominance of constructs

Dominance was first calculated by taking the proportion of total construct mentions (n=251) that fell in each construct category. Of the construct categories elicited, "home-based job," "travel," "energy/physical strength," and "stability of income," were the most dominant (Table 9). The construct "home-based job" was provided 36 (14%) times across the 35 interviewees; "travel" 25 times (10%), "energy/physical strength" 24 times (10%), and "stability of income" 23 times (9%). This suggests that when evaluating IGAs, the study women took into consideration these four constructs (i.e., whether the IGA is at or far from home, whether or not it requires travelling far or away from home, whether or not it demands a lot energy/physical strength, and whether or not it provides stable income) more often than they did the other construct categories.

This aggregate pattern held true for both WEwork and non-WEwork women. However, for WEwork women, "time" (i.e. amount of time required to do the job and amount of time that the job leaves for other activities, such as housework, other IGAs, and rest) and "WASH promotion" were also dominant constructs. The construct "time" was provided 9 times (8%) by WEwork women, and "WASH promotion" 11 times (9%).

Second, dominance was calculated using the proportion of individuals who employed the construct at least once during their RGI. The four most dominant constructs by this measure remained "home-based job," "travel," "energy/physical strength," and "stability of income," for both WEwork and non-WEwork women (Table 9).

Figure 2: Definitions of constructs categories

Domain	Construct category	Emergent Pole	Implicit Pole	Definition
Job characteristics	Home-based job	Work/job is at home	Work/job is outside the home	Whether women can work at home (to do multiple income-generating activities, do housework, stay with family)
	Travel	Requires little travel; Close to home	Requires a lot of travel; Far from home	Degree to which women had to travel for their work (both village to village travel and distance from home to work)
	Seasonality	Work every day	Work seasonally	Job provides daily or seasonal work
	Stability of job	Stable or everyday work	Unstable, on-call work	Degree to which women have dependable employment or work only when "they" ask
	Job-risk	Prone to risk in terms of health, legality, and being "cheated"	Not prone to risk in terms of health, legality, being "cheated"	Degree to which work exposes women to health hazards, requires illegal activity, or might involve supervisors "cheating" you out of a wage
	Work relationships	Others scold you if you make mistakes	No one scolds you if you make mistakes	Whether women are scolded or reprimanded when they make mistakes or cannot achieve as planned
Personal characteristics	Age	Age counts/matters	Age doesn't matter	Whether women could do the job even when they are old and/or whether older women would not be hired due to age
	Personal preference	Likes to do the job/work	Does not like to do the job/work	Whether the work is something the women like and/or want to do
Job yields	Produce a consumable	Can provide food for the family	Need money to buy food from others	Rice farming has the advantage of providing rice to consume (and to sell)
	Amount of income	Earn a lot of money	Earn little money	Amount of money earned from doing the activity or selling the product
	Frequency of income	Get money daily or monthly	Get money monthly, once per year	Frequency with which women are able to get money from the activity
	Stability of income	Stable, regular income; can support family with income	Irregular or no income; cannot support family	Degree to which women can earn predictable income and support their families

Figure 2 (Continued): Definitions of construct categories

Domain	Construct category	Emergent Pole	Implicit Pole	Definition
Resources needed to do the work	Capital investment	Need (a lot of) capital; Do not already own capital needed	Do not need (as much) capital; Already own capital needed	Degree to which the job would require the woman to invest in capital to earn money
	Hired help	Can or have to hire others to do	Can or have to do yourself	Whether the work requires the woman to hire employees or to work alone
	Family help	Family members can help do the work	Family members cannot help	Whether the woman's spouse or family members are able to help her do the work associated with the IGA
	Knowledge/ skills	No skills required; Already have required knowledge/skills	Skills required; Do not have knowledge/skills to do the work	Degree to which the work would require the woman to learn a new skill or draws on skills she already has
	Time	Job leaves time for housework, other jobs, rest; Have enough time to do the job	Job leaves no time for housework, other jobs, rest; Don't have enough time to do the job	Amount of time required to do the job and amount of time that the job leaves for other activities (housework, other IGAs, rest)
Type of work	Energy/ physical strength	Exhausting, heavy work; Uses a lot of physical strength	Not so exhausting, light work; Uses little physical strength	Amount of physical strength required to do the job; some women perceived that heavier jobs could not be done by women
	Brain work	Brain work; don't need to use physical strength	Labor; can earn income using only physical strength	Whether brain work/familiarity with define procedures or labor/physical strength is needed to do the work
	Outdoor work	Work in sunlight	Work in shade	Whether job requires work in sunlight
	WASH promotion	Can make villagers understand about and have good health	Cannot make villagers have good health	Whether the work that women do is able to contribute to their community's understanding of sanitation & hygiene and improve their health

Table 9: Dominance of construct categories (proportion of constructs) by study group

Domain	Construct category	Aggregate (n = 35)		WEwork (n = 15)		Non-WEwork (n = 20)	
		Total number of times mentioned	Total number of respondents mentioning construct	Total number of times mentioned	Total number of respondents mentioning construct	Total number of times mentioned	Total number of respondents mentioning construct
Job characteristics	Home-based job	36 (14%)	21 (60%)	13 (11%)	8 (53%)	23 (17%)	13 (65%)
	Travel	25 (10%)	18 (51%)	10 (8%)	8 (53%)	15 (11%)	10 (50%)
	Seasonality	5 (2%)	5 (14%)	4 (3%)	3 (20%)	1 (1%)	1 (5%)
	Stability of job	4 (2%)	4 (11%)	3 (3%)	3 (20%)	1 (1%)	1 (5%)
	Job-risk	7 (3%)	5 (14%)	4 (3%)	2 (13%)	3 (2%)	3 (15%)
	Work Relationships	4 (2%)	4 (11%)	1 (1%)	1 (7%)	3 (2%)	3 (15%)
Personal characteristics	Age	7 (3%)	6 (17%)	6 (5%)	5 (33%)	1 (1%)	1 (5%)
	Personal preference	8 (3%)	7 (20%)	3 (3%)	3 (20%)	5 (4%)	4 (20%)
Job yields	Produce a consumable	3 (1%)	3 (9%)	2 (2%)	2 (13%)	1 (1%)	1 (5%)
	Amount of income	17 (7%)	14 (40%)	6 (5%)	5 (33%)	11 (8%)	9 (45%)
	Frequency of income	15 (6%)	12 (34%)	6 (5%)	5 (33%)	9 (7%)	7 (35%)
	Stability of income	23 (9%)	16 (46%)	10 (8%)	8 (53%)	13 (10%)	8 (40%)
Resources needed to do the work	Capital investment	14 (6%)	12 (34%)	7 (6%)	6 (40%)	7 (5%)	6 (30%)
	Hired help	7 (3%)	7 (20%)	5 (4%)	5 (33%)	2 (2%)	2 (10%)
	Family help	3 (1%)	3 (9%)	1 (1%)	1 (7%)	2 (2%)	2 (10%)
	Knowledge/skills	9 (4%)	7 (20%)	4 (3%)	2 (13%)	5 (4%)	5 (25%)
	Time	16 (6%)	11 (31%)	9 (8%)	6 (40%)	7 (5%)	5 (25%)
Type of job	Energy/physical strength	24 (10%)	18 (51%)	9 (8%)	8 (53%)	15 (11%)	10 (50%)
	Brain work	5 (2%)	5 (14%)	2 (2%)	2 (13%)	3 (2%)	3 (15%)
	Outdoor work	4 (2%)	4 (11%)	3 (3%)	3 (20%)	1 (1%)	1 (5%)
	WASH promotion	15 (6%)	12 (34%)	11 (9%)	8 (53%)	4 (4%)	4 (20%)
Total		**251 (100%)**		**119 (100%)**		**132 (100%)**	

4.2. Importance of constructs

Interviewees were asked to indicate which constructs were "most important" when deciding whether or not to pursue an IGA. Constructs in eighteen (82%) of the 21 construct categories were selected by interviewees as most important. It is worth noting that some interviewees selected more than one construct to be "most important" which accounted for the high number of "most important" construct categories found in the study. These "most important" construct categories are displayed in Table 10.

Importance was calculated by taking the proportion of total "most important" construct mentions that fell in each construct category. Of the total 251 times that constructs were mentioned, they were said to be among the "most important" 124 times. Of these "most important" constructs, "home-based job" related constructs were picked as "most important" most frequently (18%), followed by "stability of income" (13%), "WASH promotion" (9%), and "amount of income" (8%). This confirms that "home-based job" was not only the most dominant construct (meaning it was mentioned more frequently than any other construct), but was also the most important one for study women when deciding whether or not to engage in a certain IGA. Meanwhile, "stability of income" was the second most important construct, although it was fourth in dominance (see Table 9), slightly behind "travel" and "energy/physical strength".

Interestingly, half of constructs cited as most important (i.e., construct categories "age," "knowledge/skills," "personal preference," "produce a consumable," "family help," "job risk," "stability of job," "work relationships," and "brain work") had low dominance (<5% of mentions). This suggests that although these constructs tended to be considered a lot less frequently than others, they held more weight or were more likely to be "deal breakers" in the women's decisions on selecting IGAs.

Second, importance was calculated using the proportion of women that provided that construct at all who reported that the construct was (one of their) "most important" to consider when deciding which IGA to do. By this measure of importance, "stability of income" and "home-based job" remained important constructs among both WEwork and non-WEwork women. However, unlike WEwork women, non-WEwork women did not find "WASH promotion" as important when deciding which IGA to do.

It is worth noting that none of the women in either group selected "brain work", "outdoor work", or "hired help" as their most important constructs, which suggests these constructs did not matter as much as others for forming IGA preferences or deciding which IGA to do.

Table 10 : Most Important construct categories by study group

Domain	Construct category	Aggregate (n = 35)		WEwork (n = 15)		Non-WEwork (n = 20)	
		Total number of times construct was selected as most important	Total number of respondents selecting construct as most important	Total number of times construct was selected as most important	Total number of respondents selecting construct as most important	Total number of times construct was selected as most important	Total number of respondents selecting construct as most important
Job characteristics	Home-based job	22 (18%)	14 (40%)	7 (12%)	6 (40%)	15 (22%)	8 (40%)
	Travel	9 (7%)	7 (20%)	3 (5%)	3 (20%)	6 (9%)	4 (20%)
	Stability of job	2 (2%)	2 (6%)	1 (2%)	1 (7%)	1 (1%)	1 (5%)
	Job risk	2 (2%)	2 (6%)	0 (0%)	0 (0%)	2 (3%)	2 (10%)
	Work relationships	2 (2%)	2 (6%)	0 (0%)	0 (0%)	2 (3%)	2 (10%)
Personal characteristics	Age	4 (3%)	4 (11%)	3 (5%)	3 (20%)	1 (1%)	1 (5%)
	Personal preference	3 (2%)	3 (9%)	1 (2%)	1 (7%)	2 (3%)	1 (5%)
Job yields	Produce a consumable	3 (2%)	3 (9%)	1 (2%)	2 (13%)	2 (3%)	2 (10%)
	Amount of income	10 (8%)	7 (20%)	4 (7%)	3 (20%)	6 (9%)	4 (20%)
	Frequency of income	9 (7%)	8 (23%)	5 (9%)	4 (27%)	4 (6%)	4 (20%)
	Stability of income	16 (13%)	13 (37%)	8 (14%)	8 (53%)	8 (12%)	5 (25%)
Resources needed to do the work	Capital investment	7 (6%)	6 (17%)	5 (9%)	4 (27%)	2 (3%)	2 (10%)
	Family help	2 (2%)	2 (6%)	1 (2%)	1 (7%)	1 (1%)	1 (5%)
	Knowledge/ skills	4 (3%)	3 (9%)	2 (4%)	1 (7%)	2 (3%)	2 (10%)
	Time	8 (6%)	7 (20%)	4 (7%)	3 (20%)	4 (6%)	4 (20%)
Type of work	Energy/ physical strength	9 (7%)	8 (23%)	3 (5%)	3 (20%)	6 (9%)	5 (25%)
	Brain work	1 (1%)	1 (3%)	0 (0%)	0 (0%)	1 (1%)	1 (5%)
	WASH promotion	11 (9%)	9 (26%)	9 (16%)	7 (47%)	2 (3%)	2 (10%)
Total		**124 (100%)**		**57 (100%)**		**67 (100%)**	

4.3. Reported reasons of importance of constructs by category

4.3.1. Job characteristics & family help

Both WEwork and non-WEwork women said they picked "home-based job," "travel," and "family help" as three of the most important constructs in considering what job or IGA to do because a job with these attributes (i.e., based at home, little travel, allows family to help with work) would allow them to generate income and, at the same time, do housework and other (IGA) work. Additionally, both groups of women expressed the importance of not having to travel far or away from home so that they could "stay together with family"; and that having a job that is situated at home meant they could also take care of the house and look after children and other family members. However, only non-WEwork women further emphasized the ability to assist their spouse in his IGA (e.g., by "helping [the] husband to cast mould at home"). One of the non-WEwork women asserted that if both spouses worked, they could "get more money"; otherwise it would be "difficult to share pots and pans" (meaning difficult to split the money between both partners).

> *"I: You said, this job allows you to stay home; other jobs don't. Why is this most important to you?*
>
> *R: It's important because we can sell products/goods at home and at the same time can do a lot of other works."*
>
> **(Interview with non-WEwork woman/construction worker)**

> *"[If] we have a lot of free time, [we] can have time to stay home [...] to do housework. For example, working in the construction like [I] do now, [I] can find [time] to raise pigs and so on at home, and can also look after my house. When it comes time to spread fertilizer by hand [in my rice field], [I] can do one day and then do that again the next day, and it would be done."*
>
> **(Interview with non-WEwork woman/rice farmer)**

4.3.2. Job yields & job stability

When explaining why they picked income- and stability-related constructs ("amount" and "frequency" of income, and "stability" of income and job) and "produce a consumable" as most important to them, interviewees indicated the need to be able to receive daily income in order to financially support their family and cover daily expenses. Both study groups stated that having a job that gives consumables or produce for daily consumption was important because it could "provide a [source] of food within the family." WEwork interviewees were more likely to cite their ability to "reduce poverty in [their] family" and "earn income while also helping society." Some non-WEwork interviewees reported that yearly yields (e.g., in rice farming) could "reduce [family] expenses" as the yields could both be "consumed and sold"; non-WEwork women also mentioned being able to send children to school with the regular income earned.

4.3.3. Age & energy/physical strength

Some WEwork and non-WEwork women said a job that they could do regardless of their (old) age was very important to them. This is also linked to the importance of "energy/physical strength". Interviewees of both groups described a job that requires a lot of physical strength to do as "heavy," "exhausting," and "difficult." WEwork interviewees tended to mention this in connection with their current age. For instance, WEwork women selected jobs that "do not require a lot of physical strength" because they will "have weak physical strength" when they are old. On the other hand, non-WEwork interviewees expressed the importance of a job requiring low physical strength in terms of being able to "manage the job alone" and being able to "spend physical strength only once or twice to complete [tasks]."

> *"I: Why do you think rice farming and livestock farming is most important for you to earn income for [you] and [your] household?*
>
> *R: Because I only have that job [...] it's easy [...] [it's] different from other jobs [because] we don't need to use [much] physical strength. [...] For these [other] jobs, [I] would have to lift things, and as a woman, I have no [physical strength to do]...my spouse, he works as a government official and he's always gone, [so] it's just me alone. [...] [Job] that uses little physical strength is easy for [me], even if it makes small [amount] of money [...] because I can still manage [that job] even though [I] have little physical strength."*
>
> **(Interview with non-WEwork woman/community health worker)**

4.3.4. Knowledge/skills

The construct category "knowledge/skills" was applied when women discussed whether the job required specific skills or knowledge and whether they knew how to do the job or had experience doing it before. There appeared to be a perception among some women that having prior knowledge or skills for a given IGA would allow them to do multiple jobs simultaneously and work from home. Interviewees did not provide further explanation of how prior knowledge/skills would allow them to do so; however, one WEwork interviewee explained an IGA that she already knew how to do was important to her because she "could stay home to look after [her] children [and old parents]." Similarly, one non-WEwork interviewee said an IGA that she already knew how to do was important to her because: 1) she "could also do multiple other tasks"; and 2) she "[did] not need to go far from [home]." Moreover, another non-WEwork interviewee considered the ability to acquire or augment knowledge from a supervisor a very important aspect for her in deciding what IGA to do.

> *"Because if we don't have enough information, we cannot do any work, any job. [...] [It] doesn't matter whether [we] do business or lead others, if we don't have clear, accurate information, [we] will likely fail; it's like falling into water without anyone pushing you, it's you pushing yourself [to fail]."*
>
> **(Interview with WEwork woman/WASH product retailer/commune councilor)**

4.3.5. Time. Both groups picked "time" as one of the most important constructs for them in deciding what IGA to do. WEwork women tended to consider 1) the amount of time a job may require from them, 2) whether or not they could accommodate that time demand, and 3) whether there would be time remaining for additional income-generating work, housework, or rest/free time. Similarly, non-WEwork women conceptualized time in terms of the amount of "free time" in the job "to do housework [and] other work."

> *"I: When you decide what job to do, which of these [constructs] is most important to you?*
>
> *R: [I] consider them all; these [jobs] can all make income; it's just that for some jobs [I] can find time to do, for others [I] have to go far from home. […] If we sell products/goods at home and we're not home because we have to travel [for other jobs], who is there to sell when people come to buy [our products]?"*
>
> **(Interview with WEwork woman/commune councilor)**

4.3.6. WASH. Some WEwork women and two non-WEwork women picked "WASH promotion" as one of their most important constructs. One of the non-WEwork women who was also a community healthcare worker said the construct was most important for her because she "want[ed] to reduce poverty [in her community]," while the other woman said the construct was most important to her because it "could make people understand more about [WASH] products."

WEwork respondents who currently work as latrine sales agents or WASH product retailers explained that the construct was most important to them because of their desire to see "[their] villagers have good health and [their] village become a role model village," their desire as a community leader to see "[their] village and commune develop," their desire to "help society and the villagers to understand about health [and WASH]," and their desire to have "clear, accurate [WASH] information" disseminated to the villagers. One WEwork respondent who was not currently engaged in any WASH job reported that she selected "WASH promotion" as most important to her because it "could help villagers to reduce [their] expenses and get [more] income."

> *"I: Why is making villagers have good health most important to you?*
>
> *R: [It's] important […] because [I] would like to help children have good health and help [their] mothers reduce poverty [in their families]."*
>
> **(Interview with non-WEwork woman/community health worker)**

4.3.7. Job risk. None of the WEwork women chose "job risk" as most important for them when considering what IGA to pursue; however, two non-WEwork women chose "job risk" as most important to them. Specifically, these non-WEwork women considered aspects such as whether a job could "affect [their] health" or "keep [their] health in good [condition]" and whether or not a job was prone to a high level of risk (e.g. by "having to climb high," such as in construction). However, one of the interviewees explained the tradeoff between being able to earn income and being exposed to work-related health and safety "risk".

> *"[...] I cannot work in a factory because whenever I went to work there, I would feel dizzy. So, I cannot work in a factory even though it makes a fair [amount] of money."*
>
> **(Interview with non-WEwork woman/construction worker/rice farmer)**

4.3.8. Personal preference

One WEwork woman and two non-WEwork women selected "personal preference" as one of their most important constructs in deciding what job to pursue. However, none of these interviewees explained how liking or disliking a job is important to them in deciding what job to do; rather they tended to explain the importance of the construct in relation to other constructs and their importance. For example, the WEwork woman who currently works as a latrine sales agent said she "like[d] doing promotion" because she "want[ed] all villagers to have toilet to use at every household" (i.e. WASH promotion). On the other hand, the non-WEwork women reported that they tended to like a job in which they could "sell [products] at home" because they "want[ed] to stay home" so they could "do multiple other works" (i.e. home-based job).

4.3.9. Work relationships

None of the WEwork women chose "work relationships" as most important. Two non-WEwork women chose "work relationships" as one of the most important constructs for them for reasons including "not want[ing] to be managed or supervised by others" and not wanting to risk "getting scold[ed]" by others if they "wanted to take leave or time off" or if they "made mistakes in [their] work."

"Sometimes [I] don't want to work in construction anymore because then no one would scold me if [I] took leave. [...] This work/job (raising animals) is easy for me [...] no one scolds me...if [I] took leave. [...]"

(Interview with non-WEwork woman/construction worker)

4.4. Job Preference

At the end of each interview, interviewees were asked to choose which job they preferred if they could only choose one as their IGA. In total, there were 19 jobs preferred (Table 12). Grocery retail was the preferred job choice among study women (23%). None of the WEwork nor non-WEwork women who were doing a WASH job chose this as their preferred job. The majority of WEwork women who were doing one or more WASH jobs when the interview was conducted (n=9) preferred grocery retail (44%). The one non-WEwork woman who was currently doing a WASH job preferred rice farming. Non-WEwork women who were not doing any WASH jobs (n=19) preferred a WASH job (16%), livestock farming (16%), rice farming (16%), and grocery retail work (21%).

All five women who preferred WASH jobs were not currently in WASH. Of the six WEwork women not in WASH, one (17%) preferred to be a latrine supply business owner/operator and one (17%) preferred to be a latrine sales agent. Of the 19 non-WEwork women not in WASH, one (5%) preferred to be a latrine supply business owner/operator and two (11%) preferred to be a latrine sales agent. No interviewee in either group reported preferring to be a WASH product retailer.

The one WEwork interviewee who preferred to be a latrine sales agent stated that she would like "to share [WASH] knowledge to the villagers." The two other women who preferred to be latrine sales agents cited positive perceptions about the stability of income as well as a favorable amount of energy/strength required for the job. The two women who preferred to be latrine supply business owners perceived that this particular IGA had the potential to generate a large amount of income; they reported that latrine supply business owners/operators can produce "a lot of money" or "profit" (Table 11).

> *"[…] [I] would like to do [business] casting cement rings. […] Because this job gives income. […] [It] gives more income than other [jobs], so we would be better off with [our living]."*
>
> **(Interview with non-WEwork woman/construction worker/rice farmer)**

Table 11: Women with preference for WASH jobs

Women	Current IGA	Preferred IGA	Preference Rationale
1	Commune councilor	Latrine sales agent	To share knowledge to villagers
2	Construction worker	Latrine sales agent	It gives income
3	Construction worker	Latrine sales agent	Because it's not so exhausting
4	Construction worker	Latrine supply business owner/operator	Makes a lot of income
5	Commune councilor	Latrine supply business owner/operator	It gives profit

Table 12: Job preference by study group

Preferred job	WEwork		Non-WEwork		Aggregate
	WASH	Non-WASH	WASH	Non-WASH	
Carpentry business owner	0 (0%)	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Commune councillor	1 (11%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
Community health worker	0 (0%)	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Community worker	0 (0%)	1 (17%)	0 (0%)	0 (0%)	1 (3%)
Construction worker	0 (0%)	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Latrine sales agent (WASH job)	0 (0%)	1 (17%)	0 (0%)	2 (11%)	3 (9%)
Latrine supply business owner/operator (WASH job)	0 (0%)	1 (17%)	0 (0%)	1 (5%)	2 (6%)
Livestock farmer	0 (0%)	0 (0%)	0 (0%)	3 (16%)	3 (9%)
Rice farmer	1 (11%)	0 (0%)	1 (100%)	3 (16%)	5 (14%)
(Traditional) cake seller	1 (11%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
Grocery retailer	4 (44%)	0 (0%)	0 (0%)	4 (21%)	8 (23%)
Rice noodle seller	0 (0%)	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Rice porridge seller	0 (0%)	1 (17%)	0 (0%)	0 (0%)	1 (3%)
Vegetable seller at market	0 (0%)	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Mobile food seller	0 (0%)	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Tailor	0 (0%)	1 (17%)	0 (0%)	0 (0%)	1 (3%)
Teacher	0 (0%)	1 (17%)	0 (0%)	0 (0%)	1 (3%)
Village chief	1 (11%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
Village committee member	1 (11%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
Total	**9 (100%)**	**6 (100%)**	**1 (100%)**	**19 (100%)**	**35 (100%)**

5.Discussion

⎯ •

This research used a mixed methods, cross-sectional design to identify characteristics to predict current WASH IGA involvement among all women who were employed at the time of the study (n=215), retention in WASH IGAs among those who had ever tried a WASH IGA (n=121), and satisfaction with WASH IGAs among those who had ever tried a WASH IGA, as well as to better understand the constructs by which women evaluate IGAs, form preferences, and make decisions about which jobs to spend their time doing.

5.1. Family support

Recommendation #1: Tailor targeting strategies and program design to appeal not only to women, but also to their families.

In examining the characteristics of women involved in WASH when compared to construction workers, CHCWs, and WEwork women not involved in a WASH IGA, a few notable traits were apparent. Women who worked in WASH had a statistically higher average satisfaction score in terms of family support to do their work. WEwork women who were engaged in WASH as a primary or supplementary IGA were likely to report receiving assistance from family members with household chores in order to spend more time in their IGA and tended to perceive that their families approved of their job choice.

Interestingly, only two women who participated in the RGIs selected "family help" as one of the "most important" constructs when deciding which IGA to spend time doing. "Family help", however, was applied only when women discussed instances in which family members assisted with job tasks. Therefore, this construct alone would not capture assistance with domestic duties such that the woman herself is better able to complete job tasks.

When the quantitative and qualitative results are taken together, the findings suggest that familial support goes beyond mere approval of job choice and extends, instead, to include assistance with household chores, job tasks, etc. that allow the woman to meet the demands of both her IGA and her daily household tasks; indeed, the constructs "time" and "capital investment" were chosen as "most important" with more frequency than "family help" alone. Therefore, practitioners may consider targeting strategies that highlight the benefits of WASH IGAs for the whole family.

While family support and access to capital had been previously identified in the literature as 'barriers' or 'enablers' for women entrepreneurs (Winn, 2005; Gundry, Ben-Yoseph, & Posig, 2002), our findings on family support elucidate the relative importance and dominance of these factors in terms of their ability to 'make or break' a woman's decision around whether or not to take on the risks of entrepreneurship or other IGAs.

5.2. Home-based work

Women who worked as latrine supply business owners/operators and WASH retailers tended, more so than women in non-WASH jobs, to work close to or within their homes. The qualitative data support this finding; "home-based job" was both the most dominant and the most important construct for choosing an IGA for the sample overall. In their interviews, women expressed a desire or need to work from home in order to complete housework, supervise children and/or care for elderly family members. The literature around women's entrepreneurship in developing countries suggests that entrepreneurship is a pragmatic solution for women to provide financial support for their families and reduce household poverty (Bertaux & Crable, 2007; Sarfaraz, Mian, & Karadeniz, 2013). Various authors have asserted that entrepreneurship allows women the flexibility and personal freedom needed to balance an IGA with their 'traditional responsibilities' at home (Helms, 1997). Program designers, particularly in Cambodia, should highlight these advantages of WASH IGAs to appeal to rural women's priorities.

Women in WASH felt that they needed to provide adequate reasons to their family in order to be away from home. Counter to the expectation that WASH entrepreneurs and sales agents need to be risk-taking and highly mobile, respectively, these findings suggest that women in WASH operate within the same limiting social parameters for married women in rural areas. Thus, this research suggests that WASH jobs may be better marketed as a viable solution for women who need to balance housework and income generation, as opposed to being marketed as jobs for women with a desire for independence or a particularly positive attitude toward risk-taking. Some authors have referred to this phenomenon as "necessity entrepreneurship" in which individuals pursue business not as an opportunity-based venture, but rather as a solution to a number of limiting structural factors (Mat, Ekpe, & Razak, 2011).

The link between a woman's ability to contribute financially to the household's income and her agency in decision making is well established (Angel-Urdinola & Wodon, 2010; Bernaseki & Bajtelsmit, 2002). However, the research demonstrates that WASH jobs are not unique in their ability to offer opportunities for economic empowerment. Practitioners should not rule out other IGAs that have been found to be viable options for women's economic gain in the context in which the program will be implemented. Practitioners should avoid promoting WASH IGAs over other IGAs as a better or more fitting solution for women without first exploring the catalogue of IGAs available to women in the program area.

5.3. Personal Agency

The results around women's personal agency and participation in work-related decision-making were mixed. Women were more likely to be involved in a WASH IGA if they reported making their own work-related decisions regardless of being held responsible for the wrong decision. However, women in WASH also felt they needed to consult their husbands on work-related matters.

Women were more likely to be involved in a WASH IGA if they reported that they did not feel vulnerable to harassment in their workplace, as women. However, women in WASH tended to prefer IGAs/job tasks that allowed them to work with other women.

These mixed results appear to suggest that the women in our study may have a greater degree of 'power within' (i.e., "the knowledge, individual capabilities, sense of entitlement, self-esteem, and self-belief to make changes in their lives, including learning skills to get a job or start an enterprise") than 'power to' (i.e., "economic decision-making power within their household, community, and local economy (including markets), not just in areas that are traditionally regarded as women's realm, but extending to areas that are traditionally regarded as men's realm") (Pereznieto & Taylor, 2014). Despite confidence in their own capacities as women, respondents and interviewees expressed perceptions of men as even more capable or, sometimes, more appropriate for certain job tasks.

Personal leadership skills training may help to equip women with the tools they need to negotiate a role in work-related decision-making. These skills may also enable women to negotiate an equitable distribution of domestic duties and income-generating activities among family members.

5.4. Resources: Technical Knowledge, Professional Networks, Time, and Capital

Recommendation #4: Help women who begin WASH IGAs secure access to resources associated with entrance and retention in WASH IGAs.

There are a number of resources that appear, from the results of this study, to be associated with entrance and retention in WASH IGAs. However, due to the cross-sectional nature of this study, we cannot be sure whether women need to have access to these resources before they can expect to enter into and/or maintain jobs in the WASH market or if, by contrast, these resources are the result of entrance and retention in WASH IGAs.

Regardless, these resources are strongly associated with having and staying in WASH jobs. Therefore, practitioners may consider helping women (at least those who have already expressed interest in or begun jobs in the WASH market) to secure access to these resources. Particularly for those factors/resources that were found to be significant predictors of retention in WASH IGAs as these were the main differences between women who had tried and abandoned WASH jobs and those who had tried and retained WASH jobs.

5.4.1. Technical Knowledge

Technical knowledge around latrine sales was a significant predictor of both involvement and retention in WASH IGAs. WEwork women involved in latrine supply business ownership/operation and latrine sales felt more strongly that they had adequate knowledge regarding WASH retail, latrine production, and sales, and financial management than women not involved in WASH.

Knowledge/skills was one of the constructs more frequently selected as "most important" among interviewees but was not particularly dominant. We cannot be sure whether technical knowledge was a necessary precondition for entrance and retention in WASH IGAs or if, instead, being involved in a WASH IGA bolstered WASH-related technical knowledge.

The literature draws links between access to information or training and involvement in IGAs or women's empowerment (Mittra, Sharim, & Akanda, 2017; Chandralekha et al., 1995). Some authors have found that expert advice/guidance and access to information are relatively less significant barriers to success than issues to do with family-work balance and access to financial resources (Alam, Senik, & Jani, 2012). Our study suggests that technical knowledge is an important contributor to women's entrance and retention in WASH IGAs and that other factors/resources are equally important for these outcomes in rural Cambodia.

For women in WASH IGAs, access to technical knowledge may take the form of training, workshops, or informational resources that could be disseminated to trade organizations and/or regulatory bodies. Program designers may also consider involving other members of the household in technical skills training to help women balance and negotiate the demands of IGA tasks and domestic duties.

5.4.2. Professional Networks

WEwork women in our study were mostly getting business advice from individuals within their village; these individuals were mostly men and not other WEwork participants. Most WEwork women gave others business advice at least monthly. This suggests that, although the size of the networks established by the WEwork Collective in 2017 may not have been maintained, WEwork women continued to provide guidance and collaborative assistance to others in their professional networks.

Women in WASH were more likely than women not in WASH to know someone in the WASH sector. Knowing someone who had experience as a sales agent and who they could ask for advice was a significant predictor of involvement in WASH IGAs but was not a strong predictor of retention in WASH IGAs. While we cannot be sure whether knowing someone in the WASH sector was necessarily a precondition for a woman's involvement in a WASH IGA, this finding does suggest the presence of professional networks of WASH market actors.

The relative importance of professional networks, however, appeared to be minimal in the qualitative data. The RGI did not elicit constructs around professional networks. The nearest construct that was elicited was "work relationships"; however, this construct was employed in reference to negative experiences with supervisors or co-workers and, thus, appears to be more aptly characterized as a push factor away from working in wage employment and toward self-management as an entrepreneur. This appears to be somewhat in contrast to the published literature, which suggests that women need "support systems, mentors, advisors" to help them address the problems they face as women in the workforce (Hisrich & Brush, 1987) and that women's participation in trade associations or women's groups has a significant impact on business success (Lerner, Brush, & Hisrich, 1997). However, many of these studies draw samples from high-income countries where the problems that women face and the types of formal wage employment they do are distinctly different from those for rural women in low and middle-income countries.

For women in WASH IGAs, access to professional networks may take the form of formal trade organizations or more informal community 'talk groups.' The WEwork Collective incorporated monthly talk groups for women pursuing WASH IGAs. The groups were organized by a talk group leader, in each commune, who was also participating in the WEwork Collective. Women reported that they appreciated the informality of these meetings as this allowed them to speak openly in the absence of government officials or regulatory bodies.

5.4.3. Time

Women who reported spending the majority of time each week on income generating activities were more likely to be involved in WASH IGAs at the time of the study. Regardless of whether this is a precondition or consequence of involvement in WASH IGAs, it appears that WASH IGAs may require more time than other IGAs. In their interviews, women tied the concept of time to the construct 'skills/knowledge', explaining that having more technical knowledge or advanced skills in a given IGA would allow more time for additional IGAs. The implicit assumption here is that the more skilled someone is at a certain job or job task, the faster they will be able to perform it. Therefore, effective technical skills training may also serve to optimize women's time spent on WASH IGA tasks.

As mentioned above, women in WASH were significantly more likely than those not in WASH to report having family members who help by doing some of the household chores or taking care of children such that women can spend time working on activities that generate income. For women pursuing WASH IGAs, access to time will likely require effective negotiation to distribute IGA tasks and domestic duties among household members.

5.4.4. Capital

We would be remiss not to mention the need for capital in a discussion of resources associated with involvement and retention in WASH IGAs. While access to capital was not a significant predictor of involvement or retention in a WASH IGA, WaterSHED's previous research has demonstrated the importance of access to capital. Latrine supply business owners, male and female, reported the need for access to capital, but preferred to use savings money or sell household assets for startup capital rather than take out a loan (WaterSHED, 2018b).

Within the 'Resources needed to do the work' domain identified in the RGI analysis, 'capital investment' was one of the most dominant and important constructs. This means, when deciding which IGA to engage in, women frequently and heavily consider the degree to which a job would require them to invest capital to earn money. Additionally, women in WASH were somewhat more likely than those not in WASH to report having family members who contribute financially to their work by giving money, equipment, or paying for transportation.

Due to apprehension around taking out loans and contributing to further family debt, it may be necessary for practitioners to either identify more flexible opportunities for borrowing or ensure family buy-in such that existing assets can be pooled and used as capital to start a WASH business.

5.5. Hypothesized target groups

Recommendation #5: Consider women construction workers as a potentially viable target group for participation in the WASH market.

We hypothesized that two specific groups of women would have good-fit profiles for involvement and retention in WASH IGAs. Women in the construction sector were hypothesised to be appropriate targets, particularly for latrine supply businesses ownership/operation, due to the similar technical skill sets and physical demands required for construction work and production of toilets. Women community healthcare workers were hypothesized to be appropriate targets, particularly for work as latrine sales agents, due to similarities in challenges to entrance and retention in their work.

Although there were similarities in a range of key demographic factors between community health workers and women in the sample who were currently in WASH IGAs, there were prominent attitudinal differences that would likely be considerable barriers for targeting community healthcare workers for potential recruitment into WASH IGAs. Community healthcare workers were less likely to be able to imagine themselves selling latrines, to know people in the WASH sector, to perceive they had enough latrine sales technical knowledge, or to report spending the majority of time each week on IGAs. These were all significant predictors of entrance or retention in the WASH market.

CHCWs were also less likely to think that women were physically capable of performing the same tasks as men and considered "heavy" work to be unsuitable for women. This suggests that community health workers have pre-existing ideas regarding gender, which may be difficult to overcome for entrance into and retention in the WASH sector.

Conversely, female construction workers should be considered a potentially viable target group for participation in the WASH market, particularly as latrine supply business owners/operators. Compared to women currently in WASH IGAs, they had similar confidence in their knowledge of latrine production, installation, operation, and maintenance as well as in financial management skills. Construction workers also reported similar support from family members in terms of collaboration and assistance with domestic duties. Furthermore, construction workers had a lower average monthly income than women in WASH jobs, which could be a reasonable pull factor of WASH IGAs for these women. However, important differences between construction workers and women in WASH remain. Construction workers were less likely to know people in the WASH sector they could ask advice from and felt less confident in their technical knowledge related to selling latrines.

Interestingly, our study shows that construction workers worked 8.1 hours per day and 6.3 days per week, on average. This is confirmed by a recent study on the working conditions of construction workers in Phnom Penh, which found that construction workers "tend[ed] to work 58 to 70 hours a week without any opportunity to take days off, which exceeds the legal limit fixed by the Cambodian Labor Law" (A study on working conditions, 2018). The time-intensive nature of their current construction jobs may be an important push factor for program designers and practitioners to leverage in targeting construction workers for recruitment into WASH IGAs. Lack of available time also poses a significant challenge for technical skills training of construction workers; however, there is significant alignment between skills required for construction certain WASH IGAs.

Construction workers also felt more strongly than other groups of women that it would be difficult to advertise a business or sell products in their community and that they were not well-known by others in their community. This, again, may be due to the nature of construction work, for which women usually migrate away from their rural communities and into urban centers. Thus, those who aim to recruit construction workers into the WASH market should consider construction workers' distance from home and disconnection from their communities to be both a push factor away from construction and toward WASH IGAs as well as a challenge in making this transition. Formative research would be necessary to test the interest of and explore support needed and delivery modalities for helping this group in staring a latrine supply business.

5.6. Strengths and limitations

There were some limitations to the study. There was a large degree of non-response to the quantitative survey, which limits the overall sample size of WEwork women. Limitations in overall sample size further limit the validity of conclusions drawn from sub-group analyses (i.e. WASH vs. non-WASH within WEwork or hypothesized groups); however, the use of qualitative data to validate quantitative findings was a strength of this study and helps to reduce bias. The inclusion of hypothesized groups was a strength of this study as the findings from these groups contribute to sector knowledge both for women's economic empowerment and for WASH market actors.

Importantly, these study findings have limited external validity and should not be used to draw conclusions about women in other country contexts. Indeed, Mat, Ekpe, & Razak demonstrate that environmental factors and context can, in some circumstances, hinder the pursuits even of women with the necessary personal characteristics and attitudinal predispositions (2011).

Due to the length of the survey and the need to respect respondents' time, non-WEwork women were given an abridged version of the survey. While we feel that this is a strength in terms of research ethics, it did limit our ability to draw certain comparisons, particularly around professional networks. Additionally, the development of survey items from prior transcripts allowed the research team to develop a data collection tool that was largely in the respondents' own words and, therefore, likely creates a more valid tool. The RGI technique was, itself, a unique research methodology that has not, to the researchers' knowledge, been utilized to understand job preference or decision making around IGAs. In addition to a unique application of the technique, the researchers utilized the most inductive RGI methodologies possible to limit researcher bias. The decision to freely elicit constructs and elements, rather than provide a uniform list for interviewees to rate, was integral for the validity of the qualitative findings.

6. Conclusion

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Overall, the findings from this study suggest that WASH IGAs offer a solution for women in rural areas of Cambodia to engage in an income-generating activity while maintaining their traditional roles in the household, but that WASH IGAs are not necessarily unique in this capacity. Women expressed mixed degrees of personal agency, which may have implications for their ability to effectively negotiate a more egalitarian distribution of IGA tasks and domestic duties among household members, leading to a double burden of work for women. For these reasons, family buy-in and personal leadership training may be important components for future programs to consider.

Construction workers are potentially suitable for targeting by programs that aim to recruit women into the WASH market, particularly as latrine supply business owners/operators; our research provides important push and pull factors that can be used to recruit these women and better understand the ways in which they make decisions and form preferences. Finally, the research points to a number of resources associated with involvement and retention in IGAs including technical knowledge, professional networks, time, and capital.

This study represents an important step forward for the literature base around women's economic empowerment. Previous studies provide long lists of 'barriers' and 'enablers' for women's success. However, this study is able to indicate the relative importance of specific factors both in terms of their statistical significance as predictors of WASH IGA involvement and retention as well as their relative dominance and importance from the emic perspective.

Acknowledgements

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APPENDIX 1. Operational Definitions of WASH IGAs of Interest

Latrine supply business: In this activity, you are the owner of the latrine business that sells latrine products including cement rings, ceramic pans, and other materials for latrine construction. Within this business activity, you might also transport and install the set of latrine materials for customers.

Latrine sales agent: In this activity, you are a latrine promotion agent. You search for customers who want to buy latrines and refer them to latrine business shops. You will get some commission from latrine supply businesses every time you refer customers to them.

WASH product retailer: In this activity, you purchase WASH materials from a company with wholesale price and you sell to customers with retail price. Therefore, you can have some profit margin. Those WASH products include HappyChild Potty, LaBobo (portable hand-washing station), and Ceramic Water Purifier.

APPENDIX 2. Primary IGAs and categorization

IGA category	n	%
Latrine supply business owner	8	3.7%
Latrine sales agent	5	2.3%
Wash product retailer	2	0.9%
Crop farmer	58	26.6%
Construction worker	36	16.5%
Commune councillor	30	13.8%
Village/community leader	18	8.3%
Selling produce/groceries	16	7.3%
Village committee member	14	6.4%
Teacher	9	4.1%
Livestock farming	5	2.3%
Manufacturing	4	1.8%
Other sales	4	1.8%
NGO/Public sector	4	1.8%
None	3	1.4%
Finance	1	0.5%
Healthcare	1	0.5%
Total	**218**	**100%**