



## The Determinants Of Home-Based Worker: Evidence From Married Women in Indonesia

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### ABSTRACT

*A home-based worker is defined as a worker who performs to work at home or a neighbor's home. Using data from the National Labor Force Survey (Sakernas 2018), this research aims to analyze the determinants of married women becoming home-based workers. We build two models using internet access to categorize a dependent variable. Observation unit in this research is employed married women aged 15 years and over. The models in this research are estimated by multinomial logit. Independent variables that examined including socio-demographic characteristics, family characteristics, work characteristics, and regional characteristics. Our finding shows that younger women, having children under age 5, having employed household head, working on industry sector as sales and service worker, self-employed and had work training experience are more likely to be a home-based worker in both models.*

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## BACKGROUND

The Indonesian economy is in stable condition over the past few years. This is expected to have a positive impact on employment, including increasing the participation of women. Related issues of gender equality, so it is important to study women's opportunities to enter the labor market. Women have long participated in formal and informal employment. In Indonesia, this phenomenon is seen in the labor force participation rate (LFPR) of women that continue to increase. Sakernas data showed, in 1971 women's LFPR was 37 percent, increased to 44.6 percent in 1990 and has jumped to 55.44 percent by 2018. However, when compared with men, women's LFPR is much lower. This is reflected in the Sakernas results of the last few years, in which men's LFPR is approximately 1.5 times women's LFPR. In 2018 men's LFPR reached 83.01 percent while women's only 55.44 percent. So that can be interpreted from 100 people of working age of men, about 83 people included in the labor force, while women only 55 included.

The low participation of women in the labor market reflects the low utilization of them in the labor force, also stated especially for those who are already married. Limited employment for women is one of the reasons. Based on the marital status, there is a strong connection between marital status and the impetus of women to participate in the labor market. Married women are always related to their role as homemaker, while men's as breadwinners. Household's responsibility becomes a consideration for women to join or not in the labor market. Along with gender and education equality, it changes the way society views the role of women in families and communities. Women are not only seen as a homemaker but they also can play an active role in the labor market to sustain a family's economy.

Home-based work is one of the solutions to women's dilemma. Married women can participate in the labor market while still running the domestic duties. Home-based work has several terms: home-based business, home-located production, home working (Felstead, A., & Jewson, 2000), home-based work (Edwards, L. N., & Hendrey, 2002). Based on the National Statistic Office concept, there are two aspects in term of home-based work, the first is an activity to work in accordance the concept of work at least one hour in a row to gain profit, the second related to the concept of a location where the work is done at home/yard/neighboring house. The selection of work location is intended to keep performing domestic duties.

A Home-based work is showing an upward trend. (Gelderen, 2008) stated that a home-based business using the internet has a great impact on the economy. The development of technology and information that occurred in Indonesia influence the social and economic aspects. Based on the National Socio-Economic Survey, internet users aged 5 years and over in 2016 amounted to 25.37 percent and rose to 32.34 percent in 2017. Meanwhile, households using technological devices such as telephones and computers/laptops in 2016 and 2017 are ranged from 19 percent. The rapid development of technology connectivity, potentially bringing up flexible work, such as teleworking or e-homeworking (Wynarczyk, P., & Graham, 2013). Data from Sakernas 2018 shows that workers who use internet technology for working are about 15 percent. Internet technology is used for promotion, communicating with client, and transaction.

Research on the use of the internet for home-based business in Canada linked IT utilization and home-located production (HLP) participation. (Gelderen, 2008) conducted an in-depth interview with 8 owners/founders of home-based internet business (HBIB) in New Zealand.

(Felstead, A., & Jewson, 2000) conducted a study in the United of States about census results in 1990 and found that home-based work is an interesting option for women having young children, disabled, or living in rural areas. Hence, entrepreneurship is preferred over working in the office.

Researches on home-based workers have been done in developed countries that have experienced gender equality in employment. In contrast, researches of home-based workers have not been widely practiced in developing countries due to data limitations. This paper is the first research conducted in Indonesia that addresses a problem of home-based workers using microdata in national level. In addition, the question about a workplace and the use of internet access is also a new variable in Sakernas 2018. The purpose of this research is to analyze the determinants of married women becoming a home-based worker and knowing the usage of internet access for work. The examined variables of their influence on married women's decision making to work include socio-demographic characteristics, family characteristics, work characteristics, and regional characteristics.

Hence, for knowing the factors that influence the decision of married women to work, this research using multinomial logit model by three options, such as the decision to work at home using internet access, working at home using no internet access, and working outside the home. This article is organized as follows. The second section we present a literature review. The third section is about data and methodology. Empirical result is presented in the fourth section, and the last section is about a conclusion.

## LITERATURE REVIEW

Limited employment is one of the reasons for the low women's participation in the labor market, meanwhile married women are encouraged to participate

in the labor market. Therefore, the emergence of home-based work can be a solution for married women to participate in the labor market. Home-based work or home working has the potential to offer flexible employment to people who unable having access to formal waged work due to child care and family responsibilities so that given socio-economic norms women dominate among this group (Berke, 2003). Reviewing that home-based work is an important source of employment for women, where home-based work that found in rural areas refers to employment in the non-agricultural sector, while in urban areas refers to employment in the manufacturing and service sectors (Baines, 2002). There is some evidence that suggests about home-based work, first at least about 10% workers in the manufacturing sector are home-workers and over 80% the home-based workers are women in Argentina, second in the Philippines over 10% workers in informal sector are home workers and almost 80% are women, and third in the other countries like the Federal Republic of Germany, Hongkong, Italy, and Mexico more than 85% a home workers are women.

At least in the case of women, it should be distinguished between working at home and leisure. Explains a new approach to the theory of time allocation which is differentiated from productive working time and productive time used for leisure such as watching tv and others. And to meet the daily needs, then women will reduce the time of leisure to allocate time to work (productive working time).

The factor that encourages married women to enter the labor market is their education (Phimister, E., Vera-Toscano, E., & Weersink, 2002). Meanwhile, married women in Japan will enter labor market when their responsibility to take care their children are handled by their parents or parents-in-law, and if it is not so they need to be at home to take care all the home de-

mands. In addition to education, other factors that influence the decision of married women to work at home are having young children, having a disability, and living in the rural area (Edwards, L. N., & Hendrey, 2002). Wellington, (2006) also states that higher education makes women more responsive to family responsibilities so that working at home as self-employed is the best choice for them to balance a career and family life. Hence, Chalmers, (2008) states that family is a great influence for women to work at home.

State that home-based work is selected because of women having limited alternatives and weakest position to start a new business at home, since pursuing home-based business need greater support in the form of both resources and training. Besides that, home-based work also being chosen for women because it is classified as a cost-reducing strategy. And another factor such as the advancement of technology which makes married women able to do their work at home through internet access is also a trigger for married women to work at home as presented by Oettinger, (2010).

The use of technology as internet access is also able to increase worker's productivity which can increase the revenue so that worker at home has more earning than the worker on site Oettinger, (2010). Increased revenue due to the advancement of technology answered the discovery, Edwards, L. N., & Hendrey, (2002) stating that women working at home have less income than women working on site. Nevertheless, Edwards, L. N., & Hendrey, (2002) argue that the advancement of technology gives benefit to women working at home in terms of flexibility to manage working time and do not have to pay transportation's cost to the office. This rapid development of technology also provides a significant potential for e-flexible opportunities, such as teleworking or e-home-

working (Wynarczyk, P., & Graham, 2013).

Based on Wellington, (2006) the advancement of technology can be used to combine self-employed career and childcare. However, this technology is more used for highly educated women because of their capability to use it, therefore the self-employment rates for women who have young children are raising. Wellington, (2006) also states that increased women's labor participation by women who have young children due to they want to spend time with their children. Therefore, this home-based work is a benefit for women who want to spend the time with their children and working at the same time. Adding trust as a variable which has an influence on women labor force participation. When a mother has less trust in others for taking care of her child, she will decide to take care of her child instead of working. Hence, if a mother has solid trust, she likely wants to enter a labor market.

Married women who enter the labor market can be included in women's labor supply. As mentioned above, there are several reasons for women to enter the labor market and choose home-based work for their source of income. As explained by Wellington, (2006) that women's labor supply that comes from married women who become mother for children under age 5 or have just given birth to return or enter the labor market is because of income in the family considered not enough for paying child care, the lack of paid parental leave, and women with high wages before they take time off to give birth is also reason for women to return to the labor market.

## DATA AND METHODS

The data used for this research are taken from the National Labor Force Survey (Sakernas February 2018) which has estimation in provincial level. The total sample is 50.000 households spread throughout Indonesia. Since 2016 Sakernas has been provided question about

the location of work (home-based work & on-site work), then Sakernas also provide a question about internet access that used for working in 2018. Observation unit in this research is employed married women aged 15 years and over.

A multinomial logit model is estimated to examine the determinants of a home-based worker. The dependent variable in a multinomial logit model has more than two categories. The general form of a multinomial logistic regression model is:

$$(1)$$

where  $k = 0, 1, 2$  ;

$$z_0(x) = 0 \text{ and } \sum_0^2 Prob(Y = k) = 1$$

The probability of each category of a logistic regression model with three categories is:

$$\ln \left[ \frac{p_1}{p_0} \right] = z_1 = \beta_{10} + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1n}x_n + \varepsilon_1$$

$$\ln \left[ \frac{p_2}{p_0} \right] = z_2 = \beta_{20} + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2n}x_n + \varepsilon_2$$

Category  $Y=0$  referred as reference /comparison category. The parameter estimate in multinomial logistic regression are expressed in the following equation:

$$\ln \left[ \frac{p_1}{p_0} \right] = z_1 = \beta_{10} + \beta_{11}x_1 + \beta_{12}x_2 + \dots + \beta_{1n}x_n + \varepsilon_1$$

$$\ln \left[ \frac{p_2}{p_0} \right] = z_2 = \beta_{20} + \beta_{21}x_1 + \beta_{22}x_2 + \dots + \beta_{2n}x_n + \varepsilon_2$$

In this research, the dependent variable includes three categories based on their location of work and the usage of internet access for work. This research focuses on a home-based worker, and an on-site worker is added as a reference category. The dependent variable used in the model is represented as  $Y$ :  $Y=0$ ; On-Site Workers,  $Y=1$ ; Home-based

worker using the internet for work,  $Y=2$ ; Home-based using no internet.

The model is obtained as follows:

1. The probability to be home-based worker using internet access for work.

$$\ln \left( \frac{p_1}{p_0} \right) = \alpha_0 + \alpha_{1,1}X_{1,1} + \alpha_{1,2}X_{1,2} + \alpha_{2,1}X_{2,1} + \alpha_{2,2}X_{2,2} + \alpha_{3,1}X_{3,1} + \alpha_{3,2}X_{3,2} + \alpha_{4,1}X_{4,1} + \alpha_{4,2}X_{4,2} + \alpha_{5,1}X_{5,1} + \alpha_{5,2}X_{5,2} + \alpha_{6,1}X_{6,1} + \alpha_{6,2}X_{6,2} + \alpha_{6,3}X_{6,3} + \alpha_{6,4}X_{6,4} + \alpha_{7,1}X_{7,1} + \alpha_{7,2}X_{7,2} + \alpha_{8,1}X_{8,1} + \alpha_{8,2}X_{8,2} + \alpha_{9,1}X_{9,1} + \alpha_{9,2}X_{9,2} + \alpha_{10}X_{10} + \alpha_{11}X_{11} + \alpha_{12}X_{12} \quad (4)$$

2. The probability to be home-based worker using no internet access.

$$\ln \left( \frac{p_2}{p_0} \right) = \beta_0 + \beta_{1,1}X_{1,1} + \beta_{1,2}X_{1,2} + \beta_{2,1}X_{2,1} + \beta_{2,2}X_{2,2} + \beta_{3,1}X_{3,1} + \beta_{3,2}X_{3,2} + \beta_{4,1}X_{4,1} + \beta_{4,2}X_{4,2} + \beta_{5,1}X_{5,1} + \beta_{5,2}X_{5,2} + \beta_{6,1}X_{6,1} + \beta_{6,2}X_{6,2} + \beta_{6,3}X_{6,3} + \beta_{6,4}X_{6,4} + \beta_{7,1}X_{7,1} + \beta_{7,2}X_{7,2} + \beta_{8,1}X_{8,1} + \beta_{8,2}X_{8,2} + \beta_{9,1}X_{9,1} + \beta_{9,2}X_{9,2} + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} \quad (5)$$

Where:  $X_1$  = Age,  $X_2$  = Education,  $X_3$  = Children under age 5,  $X_4$  = Household activity,  $X_5$  = Household education,  $X_6$  = Working sector,  $X_7$  = Occupation,  $X_8$  = Class of worker,  $X_9$  = Working hours per week,  $X_{10}$  = Working experience,  $X_{11}$  = Work training experience,  $X_{12}$  = Region

Our model assumes that married women will have the opportunity to enter into one of two alternatives: to be involved as a home-based worker who uses internet access or involved as a home-based worker who uses no internet access. This opportunity depends on the characteristics of the independent variables. In this research, independent variables that examined include socio-demographic characteristics, family characteristics, work characteristics, and regional characteristics.

Socio-demographic characteristics include age and educational attainment. We classified married women's age into three categories: 15-24 (1), 25-39 (2), and 40+ (3). Meanwhile, education is also divided into three categories, low for primary and junior graduate (basic education in Indonesia must be taken in 9 years) middle for a high-school graduate, and high for a college graduate.

Family characteristics include a

number of children under age 5, the employment status of household head, and educational attainment of a household head. Number of children will influence a mother's decision to devote some of her time from work to take care of the household. Therefore, this research stating that a number of children under age 5 in a household are categorized as three: a household with 1-2 children under age 5 (1); a household with children under age 5  $\geq 3$  (2); a household with no children under age 5 (3). Referring to Anggraeni's research (2015), the employment status of the household head is categorized into three: work (1), unemployment (2), and not labor force (3). Educational attainment of the household head variable is defined as the level of education obtained by the household head and proved by a certificate. This household head level of education is the same as married women level of education that categorized as follows: low (1), middle (2), and high (3).

Work characteristics include sector category, occupation category, class of work, hours of work, work experience, and work training experience. Sector category, occupation category, and a class of work are variables to see the characteristics of the performed work. Sector category is divided into 5: Agriculture (1); Industry (2); Trade, accommodation, and food service activities (3); Social and personal service (4); Others such as Mining, Electricity Gas and Water, Construction, Transportation, and Financial Institution (5). Occupation category is categorized into 3: Professional and management (1); Sales and Services workers (2); Agriculture workers, production workers, and others (3). Class of work of respondents is categorized into 3: Self-employed in own business (1); Employee (2); Causal worker, unpaid family, and unpaid worker (3). The number of working hours for a week is also categorized into 3: <35 hours (1); 35-48 hours (2); and >48 hours (3). Working experience variable is

derived from the question "Have you ever had a job before?". Respondent's answers are divided into: Yes (1); No (2). Similarly, the job training variable is obtained from the question "Have you ever received courses/training and obtained certificates?". Respondent's answers are divided into Yes (1); No (2). The last variable is regional characteristics which are categorized as: rural area (1); and urban area (2). For each variable, a selected reference category represents a condition that is not the focus of the research. The notation of the variables used in the model above are as follows (Table 1).

After the model equation is formed, the next step is to analyze the sign and magnitude of the regression parameter coefficients which contained in the equation. Interpretation of parameter coefficients in the logistic regression model is done in the form of odds ratio. The Odds ratio is used to find out how much the tendency of observation with a particular characteristic (eg  $X = 1$ ) to experience a successful event (eg  $Y = 1$ ) compared to an observation that has reference characteristics (eg  $X = 0$ ).

$$Odds_j(x, x_0) = \frac{P(y = j|x)P(y = 0|x)}{P(y = j|x_0)P(y = 0|x_0)}, j = 1,2 \quad (6)$$

For categorical variables, the positive value of OR means that the tendency of X variable with category 1 for the occurrence of  $Y = 1$  compared to  $Y = 0$  is higher OR times than variable X as a reference category. For continuous variables, if the OR has a positive value, then any addition of one unit of variables will increase the occurrence of  $Y = 1$  compared to  $Y = 0$  of OR.

## RESULT AND DISCUSSION

We start the descriptive analysis by comparing the data between married women and married men. From table 2 we know that the labor force for married women has the same pattern as a general condition. Married women's labor force is

**Table 1**  
**Definition of Variable**

<b>Variable</b>	<b>Symbol</b>
Dependent Variable	
Home-based worker using internet	Y <sub>1</sub>
Home-based worker using no internet	Y <sub>2</sub>
Onsite worker	(reference category)
Age group	
15-24	X <sub>1.1</sub>
25-39	X <sub>1.2</sub>
40+	(reference category)
Education	
Low	X <sub>2.1</sub>
Middle	X <sub>2.2</sub>
High	(reference category)
Children under age 5	
1-2	X <sub>3.1</sub>
>3	X <sub>3.2</sub>
0	(reference category)
Household activity	
Work	X <sub>4.1</sub>
Unemployment	X <sub>4.2</sub>
Not labor force	(reference category)
Household Education	
Low	X <sub>5.1</sub>
Middle	X <sub>5.2</sub>
High	(reference category)
Sector	
Agriculture	X <sub>6.1</sub>
Industry	X <sub>6.2</sub>
Trade, accommodation, and food service activities	X <sub>6.3</sub>
Social and personal service	X <sub>6.4</sub>
Others	(reference category)
Occupation	
Professional and management	X <sub>7.1</sub>
Sales workers and Services workers	X <sub>7.2</sub>
Agriculture workers, production workers, and others	(reference category)
Class of worker	
Self-employed in own business	X <sub>8.1</sub>
Employee	X <sub>8.2</sub>
Casual worker, Unpaid family, and Unpaid worker	(reference category)
Working hours per week	
Under 35	X <sub>9.1</sub>
35-48	X <sub>9.2</sub>
49+	(reference category)
Working experience	
Yes	X <sub>10</sub>
No	(reference category)
Work Training experience	
Yes	X <sub>11</sub>
No	(reference category)
Region	
Urban	X <sub>12</sub>
Rural	(reference category)

far below married men's, however, this percentage is higher than the percentage of married women who not in the labor force. It suggests that married women are more actively engaged in the economy. Married women who work as a home-based worker (3.1 percent) are higher than married men (2.0 percent). Our finding is consistent with the preliminary assertion that married women as a homemaker are more likely to work at home, whereas married men are more likely to work on-site. The percentage of married women who use internet access for working (3.1 percent) is higher than married men (2.0 percent). The difference is not significant, so it can be said that there is no digital dividing between married women and married men home-based worker.

a middle education (51.4 percent). Meanwhile, a home-based worker who use no internet access and the on-site worker is dominated by those aged 40 years and over who have low education. From this phenomenon, we can conclude that internet access usage requires a higher level of education. Relate to family characteristics, the percentage of married women who have children under age 5 is higher in the, home-based worker rather than the on-site worker. Another family characteristic that is examined is household head characteristics. In general, married women workers have an employed household head with low and middle education.

Based on work characteristics, most of the home-based worker is in the trade,

**Table 2**  
**Percentage Distribution of Married Women and Married Men Aged 15 Years and Over**

	<b>Married Woman</b>	<b>Married Men</b>
Population		
• Labor Force	59.2	92.1
• Not in Labor Force	40.8	7.9
Labor force		
• Work	97.7	98.0
• Unemployment	2.3	2.0
Working		
• Home-based work using internet	3.1	2.0
• Home-based work using no internet	28.6	10.5
• On-site work	68.3	87.5

Source : Sakernas 2018, processed

To provide additional background analysis, table 3 presents the percentage distribution of married women aged 15 years and over based on each independent variable. The socio-demographic characteristics show that home-based workers who use internet access for working are dominated by those aged 25-39 years (56.5 percent) and those who have

accommodation, and food service activities sector (about 54.4 percent and 53.2 percent), as Sales and Services workers (65.2 percent and 55.4 percent) and working as self-employed in own business (75.3 percent and 63.2 percent). Mostly, they work under 35 hours per week (46.4 percent and 42.0 percent). This also informed that most of the home-based workers are

**Table 3**  
**Percentage of Married Women Aged 15 Years and Over According to Each Independent Variable**

Variable	Home-based Worker		On-Site worker (%)
	Using Internet (%)	Using no Internet (%)	
<b>Age group</b>			
15-24	8.0	5.8	5.6
25-39	56.5	39.5	41.1
40+	35.5	54.7	53.3
<b>Education</b>			
Low	24.8	72.9	63.5
Middle	51.4	23.8	18.9
High	23.8	3.4	17.6
<b>Number of Children under 5 years</b>			
1-2	41.7	33.7	30.7
>3	1.0	0.3	0.3
0	57.3	66.0	69.0
<b>Household Head Employment Status</b>			
Work	91.2	91.7	89.4
Unemployment	1.1	1.3	1.2
Not in labor force	7.7	7.0	9.4
<b>Household Head Education</b>			
Low	32.1	70.3	66.5
Middle	43.3	24.6	23.4
High	24.6	5.1	10.1
<b>Sector</b>			
Agriculture	2.1	11.5	40.7
Industry	19.9	24.9	10.0
Trade, accommodation and food services activities	54.4	53.2	21.2
Social and personal service	13.2	9.5	24.9
Others	10.4	0.9	3.2
<b>Occupation</b>			
Professional and technician, Management, Clerical and related occupation	12.0	2.9	21.6
Sales workers and Services workers	62.5	55.4	21.2
Agriculture workers, production workers, and others	25.5	41.7	57.2
<b>Class of worker</b>			
Self-employed in own business	75.3	63.2	21.0
Employee	2.1	5.0	41.1
Casual worker, unpaid family and unpaid worker	22.6	31.8	37.9
<b>Working hours per week</b>			
Under 35	46.4	42.0	44.0
35-48	24.5	22.0	41.4
49+	29.1	36.0	14.6
<b>Working experience</b>			
Yes	56.1	48.8	43.1
No	43.9	51.2	56.9
<b>Work Training experience</b>			
Yes	26.2	8.8	16.8
No	73.8	91.2	83.2
<b>Region</b>			
Urban	80.8	53.5	46.8
Rural	19.2	46.5	53.2

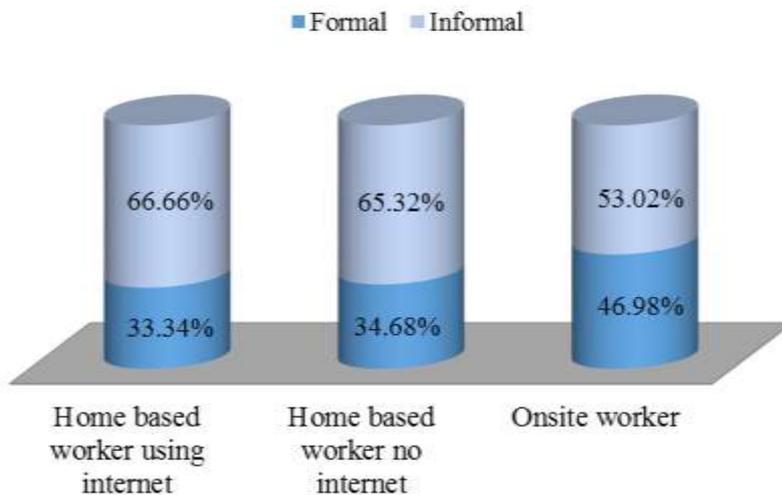
Source : Sakernas 2018, processed

under-employment. According to working experience, home-based workers who use internet access are dominated by those who have working experience (56.1 percent), on the other hand, home-based workers who use no internet access are dominated by those who do not have working experience (51.2 percent). Based on work training experience, mostly home-based and on-site workers do not have work training experience. It can be informed that married women worker are mostly unskilled.

Based on region characteristics, the majority of home-based workers who use internet access living in urban areas is about 80.8 percent. Meanwhile, for home-based workers who use no internet access, the composition of workers living in urban is about 53.5 percent and rural is 46.5 percent, so it is not much different. This also informed that the urban area tends to have better internet connectivity and more developed in information technology. In the other side, on-site workers mostly living in the rural area (53.2 percent).

with yes or no. According to the result, a home-based worker using internet access for promotion amounted to 58.89 percent, for communication is about 76.71 percent, and for transactions is about 45.81 percent. The Percentage of a homemaker who used Digital-based transaction is low, so we can conclude that internet usage is still not optimal. whereas in the current era, people's shopping behavior prefers through online transactions.

Women are over-represented in informal employment in a developing country. The informal sector is usually closely related to weak economic entities, lacks legal protection, and not covered by the social security of employment. Our findings show that the majority of married women work in the informal sector (more than 50 percent). The concept of informality in Sakernas is a combination of a class of worker with bookkeeping and social security. The informal sector is easy to enter but on the other hand, tend to be vulnerable.



**Figure 1**  
**Workers Based on Sector**

The role of technology in Sakernas is identified by the question of internet access whether used for promotion, communication with consumers or transactions. Then the respondent will answer

Self-employed as well as unpaid family workers potential to categorize in informal employment.

Table 4 presents the result of our multinomial logit model. From age groups,

we find that married women aged 15-24 and 25-39 tend to be home-based worker than married women aged 40 years and over (model 1 and model 2). This condition can be explained as follows: a) more productive age allows to be more actively working, b) younger age is more potential having children under age 5 years so they prefer to be a home-based worker. The probability of younger age to be a home-based worker is higher in model 1 than model 2. This can be informed that younger age is a significant factor related to internet access usage because they are more adaptive to the development of information and technology.

Married women who have low and middle education, respectively, 0.2 times and 0.8 times less likely to be home-based worker using internet access than high educated married women. As we expected, we find a positive effect of education with internet access usage in model 1, the probability of being home-based workers using internet access is higher as education increase. Furthermore, the probability of married women with low and middle education has a bigger opportunity to be home-based worker using no internet access in model 2. Married women with low and middle education, respectively, 1.65 times and 1.75 times more likely to be classified in model 2 compared to those with high education.

Family characteristics are represented by the number of children under age 5 and the household head characteristics. From model 1 and model 2 we can conclude that the more children under age 5 in a household, the more possible for married women to be a home-based worker. This is in line with research conducted by Chalmer (2008) and Edwards and Field-Hendrey (2002) which stated the odds of participating as a home-based worker are significantly greater when young children are present for women. Work located at home is compatible with a

maternal role because it can be combined with childcare. Married women's employment status is influenced by a husband's characteristics. In this research, a household head characteristic is used as a proxy for the husband's characteristics. Both models show that married women tend to be home-based worker if the household head is an employed person. Men's role as breadwinner and married women choose to support family economy from home. Further, married women who have a household head with low and middle education, respectively, 0.43 and 0.71 times less likely to be classified in model 1 compared to married women with a highly educated household head. Otherwise, married women who have a household head with low and middle education, 1.11 and 1.12 times tend to be classified in model 2 rather than married women with a highly educated household head.

Married women who work in the industry sector as self-employed in own business are more likely to be home-based worker than other categories. A study by Wyncarczyk, P., & Graham, (2013) informed that flexibility and balancing life-work is the main reason to be a home-based worker. Self-employment status is very possible for that. Based on occupation, married women as sales and services workers are more likely to be home-based workers. Home-based worker as a sales worker in model 1 can be greatly helped by internet access as promotion and transaction media. Otherwise, married women as a professional and manager have a smaller probability to be a home-based worker, it is represented in both model. In other words, this informs that professional workers prefer to work on-site. The productivity of a home-based worker can be measured by working hours. Married women who work as under-employment (<35 hours per week) tend to be a home-based worker in model 1. On the contrary, married women who work in excessive hours

**Table 4**  
**The Result of Multinomial Logit Regression**

	Internet (Model 1)		Internet (Model 2)	
	Coeff	Odds Ratio	Coeff	Odds Ratio
Intercept	-1.46		-1.31	
<b>Socio-demographic Characteristics</b>				
Age group				
15-24	1.26*	3.51	0.29*	1.33
25-39	0.69*	1.98	0.09*	1.09
40+ (Ref.)				
Education				
Low	-1.49*	0.23	0.50*	1.65
Middle	-0.18*	0.83	0.56*	1.75
High (Ref.)				
<b>Family Characteristics</b>				
Children under 5 years				
1-2	0.16*	1.18	0.22*	1.24
>3	0.95*	2.59	0.29*	1.34
0 (Ref.)				
Household Head activity				
Working	0.33*	1.39	0.27*	1.32
Unemployment	-0.19*	0.83	0.07*	1.07
Not labor force (Ref.)				
Household Head Education				
Low	-0.84*	0.43	0.11*	1.11
Middle	-0.34*	0.71	0.11*	1.12
High (Ref.)				
<b>Work Characteristics</b>				
Sector				
Agriculture	-3.74*	0.02	-1.39*	0.25
Industry	0.75*	2.12	2.44*	11.42
Trade, accommodation and food services activities	-1.18*	0.31	0.67*	1.95
Social and personal service	-0.56*	0.57	1.24*	3.44
Others (Ref.)				
Occupation				
Professional Managerial, Sales workers and Services workers	-0.20*	0.82	-0.75*	0.47
Agriculture workers, production workers, and others (Ref.)	0.29*	1.34	0.10*	1.12
Class of worker				
Self-employed in own business	0.69*	1.99	0.33*	1.39
Employee	-4.86*	0.01	-3.36*	0.03
Casual worker, Unpaid family, Unpaid worker (Ref.)				
Working hours per week				
Under 35	0.12*	1.13	-0.33*	0.72
35-48	-0.36*	0.69	-0.84*	0.43
49+ (Ref.)				
Working experience				
Yes	0.08*	1.08	-0.01*	0.99
No (Ref.)				
Work Training Experience				
Yes	0.18*	1.19	0.07*	1.08
No (Ref.)				
<b>Regional Characteristics</b>				
Region				
Urban	0.73*	2.07	-0.03*	0.97
Rural (Ref.)				
-2 Log Likelihood	14251490.4237309			
Nagelkerke R <sup>2</sup>	0.52			

The reference category: On-site Worked

\*Significant at the 1% level

(>49 hours per week) are more likely to be a home-based worker in model 2.

Region characteristics give a significant difference in model 1 and model 2. The probability of married women who live in the urban area is 2.07 times more likely to be home-based worker using internet access compared to those who live in the rural area. In another side, the probability of married women who live in the rural area is 0.97 times less likely to be home-based worker using no internet access. As we stated before, internet access and information technology are more developed in the urban area.

## CONCLUSION

We investigate the extent to which the characteristics of married women could be associated with a home-based worker in Indonesia. The results show all independent variables are significant in the model. The probability of being home-based worker using internet access will increase if married women are in younger aged, and well educated. Majority of married home-based female worker choose to work in the industrial sector as sales and service worker. Living in urban areas provides an opportunity for married women to become a home-based workers using the internet. Women who choose to become a home-based workers are women who have work experience previously.

Increasing employment opportunities for married women can affect women's labor participation. Women's involvement in employment will support the economy and family welfare. Home-based work gives women flexibility regard to work and domestic duties, this can be an alternative to enter the labor market. However, the increase in women's employment opportunities should be in line with improving the quality of work. Our findings show that most of home-based worker are in the informal sector, so it is important for policymakers to encourage decent work. Generally, the

achievement of a higher level of education, the provision of vocational training and entrepreneurship program, business credit assistance, and also social security regulation may increase decent work opportunities for women. Related to a home-based worker who uses internet access, the result shows significant differences in rural and urban areas. Therefore, we suggest the improvement of internet access in rural areas. Internet access could provide women with a wider market, expanded knowledge and may enable women to work from anywhere, including working from home.

Research on the home-based worker is still limited in developing countries due to data problems. For further research, it is advisable to add information about the business in the industry sector that exists in the home worker's environment so that it can be further analyzed whether the home-based worker is related to the industrial activity. The other thing that we can suggest for future research is to give more detailed information related to information technology. As we know that the rapid development of technology could create some impacts on economic activity or employment.

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