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Does household technology influence female labour force participation in Nigeria?

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ABSTRACT

The technological revolution in the production of household durable goods has no doubt influence female labour force participation in most economies of the world. Studies from the developed economies show conflicting views on the effect of household technology on female labour force. The unanswered question in the literature remains if ownership of household technologies could lead women to either decrease or increase the time allocated to household production, thereby propelling women into the work force or leading them to a greater preference for leisure. This paper therefore empirically examines the effect of ownership of modern household technology – such as washing machine, gas cooker and refrigerators – on female labour force participation in a developing economy context. Primary data obtained through questionnaires were employed in this study. The data were analysed using Logit econometric technique. Findings indicate that the ownership of washing machine has a positive significant effect on female labour force participation. The study concluded that ownership of household technology does influence female labour force participation, to an extent, in a developing economy perspective.

1. Introduction

The underlying theoretical framework for analysing female labour force participation is usually embedded in the work of Mincer and Beckers' "The labour force participation of married women" (1962) and "Theory of the allocation of time" (1965) respectively. A component of Becker's theory assumes labour supply decisions as a choice between household production and market production [1]. The theory of allocation of time recognizes the household rather than the individual concerned as the basic decision-making unit. This theory stated that the manner in which individuals allocate their time depends on choices between work and leisure in response to a wage increase. Therefore, the choices faced by women are three-fold i.e. leisure, work at home and work in the market. These choices are influenced by socio-economic factors. These choices, in part, could also be influenced by technological innovations.

In a context, drastic technological advances and innovations in the last century have significantly transformed the trends of labour market activities and system. It can no longer be denied that the radical and rapid technological revolution in the production of home durable goods has greatly influenced female labour force participation decisions across the globe. Evidence establishes that the surge in the rate of technological progress in the home durable goods sector has led to the households' adoption of time-saving technologies and the diffusion of home appliances such as washing machines, refrigerators, television set etc. However, it remains debatable in the literature if ownership of household technologies could lead women to either decrease or increase the time allocated to household production, thereby propelling women into the work force or leading them to a greater preference for leisure [2–22].

In the developed economies, research has shown that ownership of household technology, apart from socio-economic factors, do influence women's labour force participation decisions. Ref. [14] examined the impact of the consumer durable goods such as washing machines, vacuum cleaners and time-saving products on female labour force participation. The results confirmed that ownership of household technologies frees up the amount of time that females devote to housework. The presence of labour-saving durable goods increases the elasticity

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of female labour supply and explained a significant portion of the increase in married women's labour force participation rates over the course of the 20th century. Moreover, ref. [9] found that household appliance ownership did not increase single women's labour force participation between 1960 and 1970 but accounted for about one-third of the observed increase in married women's labour force participation rates during the 1960s. However, ref. [5] opined that increased adoption of these technologies did not have a significant impact on women's labour participation rates, but helped increase women's participation in professional occupations in the U.S. Generally, there are conflicting views in the literature on the effects of household technology on female labour force participation in the developed economies. There is however dearth of studies of this nature on the developing economies in the literature. Given the surge in the rate at which households in the developing economies are increasingly acquiring modern household technologies for home productions and the shortage of studies which examine its effects on female labour force participation, it becomes necessary to examine if household technology influence female labour force participation in a developing economy. This study therefore examines the effect of household technologies on female labour force participation from a developing economy's perspective. This is with a view to building on the current body of knowledge and debate on the subject matter.

2. Research methods

2.1. Data

Primary data was employed in this study. The sample consisted of randomly selected 400 adult women who were working or looking for job opportunities in Nigeria. Data were collected through the administration of detailed structured questionnaires on eligible respondents. The questionnaires were validated by framing the questions to be easily understood by the respondents and to exactly convey the purpose of the study to the respondents. The adaptation of questionnaires which have been proven to be appropriate in previous similar studies enhanced their suitability. In addition, the draft questionnaires were pre-tested by administering on few women. Then, the comments and suggestions obtained were used to improve the quality of the instrument as well as the analysis procedure.

In the survey, the outcome variable, female labour force participation was measured by asking the respondents if they are currently working or looking for job. The responses to this question is either Yes or No. This variable was then recoded as a binary variable taking the value of 1 if working or looking for job and 0 otherwise. Furthermore, ownership of household appliances was measured by asking the respondents if they had a set of listed home appliances. This variable was validated by asking those who answered in the affirmative to indicate the appliances they use regularly. These questions provide information that helped us to determine the availability and utilisation of household appliances by the respondents. Other covariates such as marital status, education and area of residence were recoded to dummy variables for ease of analysis. The indicator for marital status is a binary variable which takes the value of 1 for married and 0 otherwise. Education was measured by a dummy variable indicating if the respondents have post-secondary education or not. In the same vein, location of respondent's residence was captured by a binary indicator which specifies if the respondent live in the rural or urban area. The description of the outcome variable, independent variable of interest and the covariates is presented in Table 1.

2.2. Model specification

Due to the limited or qualitative nature of the observed dependent variable, ordinary least square (OLS) or standard economic estimators are not appropriate for this model. Therefore, the model from Ref. [12] based on collective household behaviour [7] is adopted for this study as specified below:

$$\mathbf{FLFP} = \boldsymbol{f}(\boldsymbol{SC}, \boldsymbol{HA}) \quad \text{(i)}$$

Where FLFP = female labour force participation, SC = socio-economic determinants, and HA = Ownership of household appliances. FLFP is the dependent variable, while SC and HA are the independent variables.

The description of the model is as follows:

$$\mathbf{FLFP_i} = \beta_0 + \beta_1 \mathbf{SC_i} + \beta_2 \mathbf{HA_i} + \mu_i$$
$$\mathbf{FLFP_i} = \begin{cases} 1 & \text{if a woman participates in the labour force} \\ \mathbf{0} & \text{otherwise} \end{cases} \quad \text{(ii)}$$

In this model, the dependent variable, FLFP, is a dichotomous variable that can assume only two values: 1 if the female is either currently working in the labour market or looking for work and 0 if she is not. β_i is a vector of parameters to be estimated. SC_i is the vector of socio-economic determinants of FLFP and HA_i is the vector of household appliances' variables.

3. Results and discussion

3.1. Descriptive analysis by ownership of household appliances

Table 2 presents the descriptive result of ownership of household appliances among the respondents. The result showed that less than one-quarter of the respondents (21.3%) had microwave, about 26% had washing machine while 40.8% had modern cooking gas. Majority (88.8%) of the respondents had kerosene stoves, 62% had modern refrigerator while very few (8.8% and 12.8%) had dish washer and cloth dryer respectively.

Nearly all the respondents (80.4%) who had cooking gas used them regularly. However, less than one-third of the respondents (25.5%) who had washing machine did not use them regularly. Although 77.8% of those who had modern refrigerator used them regularly, only 57.6% of those who had microwave used them regularly. About 55% of the respondents who had dish washer used them regularly while 52.9% used cloth dryer regularly. As at the time of this survey, almost half (49%) of the respondents had generating set that could power these appliances when there is no electricity supply from the public main electricity supply.

3.2. Discussion of the econometric results

Non linear Logit regression model was employed to describe the relationship, if any, between the dichotomous dependent variable (female labour force participation) and the independent variable of interest which is ownership of household appliances such as washing machine, freezer and gas cooker. Logit estimation technique was chosen rather than other forms of regression models because of the nature of the dependent variable, which was dichotomised by assigning (1) for those who participate in the labour force and zero (0) otherwise. In the model, the net effect of the individual explanatory variables on the outcome variable was estimated to assess the household socio-economic status and ownership of household appliances on female labour force participation. All the explanatory variables were re-coded into binary variables. The analysis runs a regression of the determinants of female participation in the labour market taking into cognizance