

Women in Small Scale Enterprises and Poverty Reduction in Dekina Local Government Area of Kogi State: A Logistic Regression Approach

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Abstract: *This study investigated Women in Small Scale Enterprises (SSEs) and poverty reduction in Dekina Local Government Area, Kogi State. The study used interviews and questionnaires to elicit information from the respondents. A total of 300 questionnaires were distributed to women in the local government area. Four wards namely: Egume, Dekina, Ayangba, and Iyale were selected and questionnaires were distributed to women in the area of soap making, Palm oil production and fashion and designing. The study used simple percentages, interviews, and logit regression model. The result of the study shows that women are involved in SSEs to earn income that will enable them to take care of their families. The logistic regression shows that SSEs have impacted significantly on women in the local government area. The study therefore recommends that women in SSEs should form co-operative societies so that they can pool resources together to finance their businesses and also that the local government council and the state government should create an enabling environment through the provision of facilities such as farming equipment, land to construct shops and funds to carry out their businesses so that women can venture into SSEs.*

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I. Introduction

The high poverty level occasioned by the decline in oil prices and unfavorable foreign exchange against the Nigerian currency is a major problem that has befallen the economy since the emergence of democracy in 1999. As a result, the public and the private sectors are finding it increasingly difficult to absorb the teeming unemployed youth with the attendant consequences of crime, rape, and other vices. Given that financial institutions are reluctant to give loans on a long-term basis; this has really constrained productive activities and has led to the decline in the nation's growth and development.

The Nigerian government conscious of the high level of unemployment and with the view of alleviating the problem introduced various programmes and schemes such as the National Directorate of Employment, the Entrepreneurship Development Programme, Youth Empowerment Programme just to mention but a few. These programmes were established to develop the entrepreneurship skills among Nigerians so that they can establish their own businesses and create employment opportunities for others. This initiative has led to the tremendous involvement of people in SSEs in recent time which can be seen with the enthusiasm with which people have established small shops in urban and rural areas.

In urban centres, for example, shops are seen along major roads in cities and small stalls in front of people's houses as well as marketplaces which are all geared towards providing means of subsistence for families. In Taiwan, according to Saikou and Wen-Chi (2008), small and medium enterprises account for 97.8 percent of the total enterprises and employed about 78 percent of the total workforce. The involvement of women in SSEs than men is no longer news since they are more likely to operate a business from a home because of their responsibility as housewives.

The need to enhance the growth and development of an economy through the activities of women in the participation of SSEs has gained tremendous support in development literature (World Bank Policy Research Report (2001); Saikou and Wen-Chi, 2008; International Finance Corporation 2011 and Mahmood and Hanafi (2013). It was also observed that women involvement in SMEs leads to welfare maximization and poverty reduction. According to Stupnytska, Koch, Macbeath, Lawson, and Matsui (2014), the involvement of women in SMEs can increase per capita GDP, increase the propensity to use their earnings and increase their bargaining power to buy goods and services as well as support the development of human capital.

The need to establish microenterprise has been an easy process considering the fact that it is very easy to establish these enterprises with little capital in some Less Developed Countries (LDCs). It is estimated that there are about 8 to 10 million formal SMEs with at least one women owner in developing

countries (International Finance Corporation, 2011 and Mahmood and Hanafi, 2013). This is reinforced by the fact that women constitute about 49 percent of Nigeria's population hence their involvement in SMEs contribute to economic growth and poverty reduction.

The supportive role of women in SMEs is not well documented. Saikou and Wen-Chi (2008) observed that there is also lack of sufficient research on women's role in small and medium enterprise development on women entrepreneurs. This is even more so in the rural areas where there is insufficient information on women in SSEs. Towards this end, some pertinent questions come to mind. To what extent have SSEs contributed to employment generation and poverty reduction in Nigeria? Can the Nigerian government use the SSEs to diversify the economy? These questions beg for answers. This paper is significant because it contributes to the existing literature on women in SSEs especially now that there is a renewed emphasis of the Nigerian government anchored on diversification of the economy through the promotion of SSEs and entrepreneurship development. A study of this nature is timely because it will expose how participation of women in SSEs has impacted on employment generation and poverty reduction in Dekina local government area of Kogi state.

Conceptual Framework (SSEs)

Small-scale enterprises in Nigeria and in the less developed countries have come a long way in contributing significantly to economic growth and development. The preponderance of small-scale enterprises in Nigeria is because it requires little capital to set up. It can easily be seen in someone's house, compound, or in front of a company or building site. They can be found in the rural or urban centres with goods such as soap, sweets, rice, oil, sugar, detergent, pens, confectionaries etc on display. In fact, the essence of setting up a small business is to take care of one's immediate needs such as food, clothing, school fees, and house rent etc. The size of a small business depends on what one is willing to sell. Sometimes, it takes the form of a makeshift arrangement. Hence, they do not have a permanent place where their businesses are sited. That is why you see most people involved in the small-scale business move from one part of a market or place to another all in the efforts of trying to sell or buy their goods. Sometimes, it can be permanent in front of a house or marketplace. In fact, it can easily be set up in an area where people are available and willing to patronize them. Okpe, Fefa, and Audu (2016) used a working definition of small-scale businesses as that which has the capital base of ₦50,000 to ₦150,000 and employs 4-7 persons.

II. Empirical Literature

Investigating the effect of capital base of banks on the performance of SMEs in Nigeria, Ogujiuba, Ohuche and Adenuga (2004) observed using ratios and percentages that SMEs are discriminated upon in terms of the provision of long-term loan facilities and adding that banks capitalize on the internal problems confronting SMEs not to give them loan facilities. Bidzakin (2009) assessed the Performance of Micro and Small-scale Agribusinesses in Northern Ghana using stochastic frontier model. The result obtained shows that about 60 percent of potential maximum profit is gained due to production efficiency while inefficiency model has negative coefficients, meaning that as educational level, farming experience, and household size increases, the profit efficiency of the farmer increases other variables such as sex of proprietor and age are positive. The average profit efficiency of 0.601 suggests that considerable amount of profit is gained among maize producers in the sampled area.

In the study, conducted by Fapohunda (2012) on women in Mushin, Agege and Lagos Island areas using survey method to collect information on 150 women the study shows that women involved in the informal sector in Nigeria contribute to economic growth because it can be easily set up in one's home. The study identified some of the challenges faced by women in SMEs to be the legal and socio-cultural constraint, access to formal education and training. Also in Lagos, Adebisi, Alaneme, and Ofuani (2015) used ratios and percentages and correlation and t-test on 222 respondents discovered that respondents faced problems such as inadequate funds from financial institutions since most of them depend on personal savings to start and maintain the survival of their businesses, poor power supply, high-interest rate on loans and high demand for collaterals.

The study conducted by Anis and Hasan (2013) on women empowerment through skills acquisition in SMEs in Rajshahi area in Bangladesh on 150 respondents using ratios and percentages identified challenges faced by women to include shortage of raw materials, skilled manpower, power supply, access to credit facilities, training facilities, credit inadequacy, poor educational and absence of potential business knowledge, poor infrastructural facilities, poor transport and communication, marketing and lack of private initiative to carry on a business.

Okeke, Ezenwafor, and Femiwole (2013) undertook a study in Anambra and Ekiti states from 226 respondents drawn from production, service and merchandise trade. Cronbach Alpha method and ANOVA were used to present the result of the study. The result shows that insufficient cash flow and sale volume are some of the factors that affect SMEs during the period of financial crises.

On the role of micro financial institutions on women in SMEs in Kenya, Muteru (2013) used the stratified random sampling method to select 162 women. The result was presented using tables, frequency, graphs, and charts. The findings show that microfinance banks have aided the empowered women through the provision of loans that enabled them to purchase equipment and employment of additional staff. This result was collaborated by Oyedokun (2015) and Musomandera, Jaya and Anthony (2015) who opined that microfinance banks have a significant effect on the economic growth in the area of craft, education, textile, construction, agro-processing, and catering.

The study conducted by Khan (2014) in Bangladesh on financing SMEs using ratios and percentages shows that the SMEs accessing finance have increased over time from 27 percent in 2004 to 50 percent in 2011. In addition, the study identified certain constraints affecting SMEs such as finance and infrastructural facilities, strict collateral, guarantee requirements and high-interest rate on loans as well as high paid up capital. Gichuki, Njeru, and Tirimba (2014) used descriptive statistics such as frequency tables, bar charts, arithmetic mean, standard deviation, pie chart, and tabulation obtained through stratified random sampling from 241 respondents in Nairobi City County, Kenya. The findings show the constraints faced by women in SMEs to include the high cost of borrowing, collateral, cost of repayment, processing fee, short repayment period and the unwillingness of people to act as guarantors.

On the socio-cultural factors influencing women performance in Tanzania, Majenga and Mashene (2014) used frequency distribution and percentages generated from questionnaires. Their findings show that women were able to start their businesses from personal savings and income from husband and/or relations and loans from banks. Some of the problems faced are the low level of education, the high-interest rate on loans, collateral to obtain loans from banks, inadequate husband support, inadequate information and business training, poor accesses to business information and interference from husbands.

Studies conducted by Ilhaamie, Arni, Rosmani and Al-Banna (2014) used ratios and percentages from questionnaires distributed to 250 Muslim in Malaysia. The result shows that about 15.9 percent of them are involved in the business. It was also discovered that they faced certain constraints such as inadequate finance, demand, and location.

Adeusi and Aluko (2014) used questionnaires to elicit information from 40 respondents in SMEs in Kabba/Bunu local government area of Kogi state. The results from regression and analysis of variance show that government plays a significant impact on SMEs in Nigeria. Likewise in North Western Nigeria, Ibrahim and Mohd (2015) investigated the performance of SMEs using 362 respondents in which both questionnaires and partial least squares structural equation were used. The result shows that strategic orientation is an important factor that determines firms' access to finances. Other factors that may aid firms financing are cash flow, profits, and retained earnings.

Osakwe, Verter, Bečvařova, and Chovancova (2015) used the Ordinary Least Squares technique to assess the growth of some macroeconomic variables on SMEs in the Czech Republic. The result shows that unemployment negatively affects the growth of SMEs. The study also shows that economic growth has a significant effect on the performance of SMEs while credit from the financial sector has an insignificant effect on SMEs.

In accessing government encouragement of SMEs through loans, Mbuva, Kimunduu, and Shisia (2015) carried out a study in Machakos County, Kenya using stratified and simple random sampling method to select 383 respondents. The result was analyzed using frequency tables. The findings show that 50 percent of women within the study area have access to government funds to carry out their businesses most especially through government policy of low-interest rate and long-term repayment period. The study also discovered that women are also favorably disposed to loans from the informal financial credit.

Taiwo, Onasanya, Agwu, and Benson, (2016) conducted a study on financial institutions and the performance of businesses in Lagos state, Nigeria using the simple random sampling method to select 15 small businesses in the state. The findings from the method (ratios and percentages) show that majority of the people engaged in small businesses are within the ages of 26 to 45 and that the small businesses are faced with the problems of a high-interest rate on loans. The study, however, concluded that microfinance banks have the potential of developing small businesses in the area while Kesinro, Ogunlusi, and Adu (2016) investigated entrepreneur marketing and the performance of SMEs in Badagry local government area of Lagos state using descriptive survey and chi-square technique. Questionnaires were used on 100 respondents who observed that there is a positive relationship between entrepreneur marketing and the performance of SMEs in the area.

Theoretical Framework

A logit model is a probability function which uses poverty status as a dichotomous dependent variable. The model used socio-economic variables to determine the factors influencing poverty. Ramakrishna and Demeke (2002) implicitly expressed the model as:

$$P_1 = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_{i1} + \dots + \beta_k X_{ik})}} \dots \text{eq 1.1}$$

Where P_1 is probability that poverty is reduced, β_0 is constant term, β_1 is coefficient to be estimated, X is independent variable and K is number of independent variables

Let $Z = \beta_0 + \sum \beta_k X_k \dots \text{eq.1.2}$

$$P = \frac{1}{1 + e^{-z}} \dots \text{eq 1.3}$$

As Z ranges from $-\infty$ to $+\infty$, P ranges from 0 to 1 and P_1 is non-linearly related to Z_i . The logit of the unknown binomial probabilities, that is, the logarithms of the odds, are modeled as a linear function of the X_j . In estimated form, the model is expressed as:

$$\text{Logit}(P_1) = \text{Ln}Y_i = \frac{P_i}{(1 - P_i)} = \beta_0 + \beta_1 X_{i1} + \dots + \beta_k X_{ki} + U \dots \text{eq1.4}$$

The unknown parameters β_{1-7} , are usually estimated by maximum likelihood. Thus, the model is explicitly expressed as:

$$\text{POVSTAT} = \beta_0 + \beta_1 \text{EXPEDU} + \beta_2 \text{EXPFDD} + \beta_3 \text{AVINC} + \beta_4 \text{HLTFAC} + \beta_5 \text{CAPBASE} + \beta_6 \text{HHHED} + \beta_7 \text{CLTHSLF}$$

where:

POVSTAT = Poverty status (equal to 0 if poverty has reduced and 1 if poverty has not reduced).

β_0 = Constant term; β_i = Coefficient of the parameters to be estimated; EXPEDU = Impact of the business on children education (equal to total annual expenditure on education) (₦); EXPFDD= Expenditure on food (₦); AVINC = Average Annual income of respondents (₦); HLTFAC = Access to a health facility (equal to 1 if the family has access to health and 0 if otherwise); CAPBASE = Business size (capital base of the business); HHHED = Household head (equal to 1 if headed by a woman and 0 if otherwise); CLTHSLF = Access to clothing (1 if at least one new cloth involvement in SSE, 0 if otherwise). From the apriori expectation, it is expected that women involvement in small-scale businesses should have a significant impact on their welfare. It is thus expected that from the estimated model, the $\beta_3, \beta_4, \beta_5$ and β_7 are expected to be negative while β_1, β_2 and β_6 are expected to be positive. This is because increases in $\beta_3, \beta_4, \beta_5$ and β_7 will increase the probability that poverty will reduce whereas increases in β_1, β_2 and β_6 will reduce the probability of one being poor.

III. Methodology

Sampling Procedures

This study examined women who own small-scale businesses in soap making, fashion design, and palm oil production. This study adopted purposive and simple random sampling procedures. Four wards were purposely selected out of the twelve council wards in Dekina LGA. The wards are Ayangba, Dekina, Egume, and Iyale. The choice of these wards is because they are the hub of the local government with Ayangba having a state university. The development of these areas will spread to the other wards that are closer to the university and also the place is agrarian in nature. Based on pre-survey carried out in the study area, a sample of 1800 SSEs was observed. A sample size of 300 questionnaires was arrived at using Yamen (1969) proportionate sample procedure but a total of 293 (representing 97.7 percent) were returned while 7 questionnaires were wrongly filled or were mutilated hence useful information could not be derived from them hence they were not used in this analysis.

Presentation and Discussion of Results

The Logit regression was used to present the result derived from this study. The model was estimated to ascertain the effect of participation of women in SSEs on poverty status of the sampled respondents. The Results was presented in Appendix 1. The Classification Table a, b (Block O) output as shown in Appendix 1 includes the intercept (constants). Given the base rates of two options ($^{171}/_{221} = 77.3\%$ that a sampled respondent is non-poor, $^{50}/_{221} = 22.7\%$ that a sampled respondent is poor), and no other information, the best strategy is to predict for every case (see case processing Summary Table in Appendix 1), that a sampled respondent will be non-poor. Using this strategy, the table shows that, such prediction would be correct 77.3% of the time.

Omnibus Tests of Model Coefficients gives us a chi-square with i degree of freedom, where i is the number of independent variables. This is used to determine if the overall model is statistically significant and has performed well. The chi-square of 170.823 on 6 df, is significant beyond 0.001. This indicates that the overall model is statistically significant and has performed very well. In other words, the model predicts a high degree of accuracy, the likelihood of a sampled respondent being poor or non-poor in the study area. This explains why chi-square is also known as Likelihood Ratio (LR). Under **Model Summary** in Appendix 1, the -2 Log Likelihood statistics is 64.999. This statistic measures how poorly or otherwise the model predicts the odds ratio of a sampled respondent being poor or non-poor after getting involved in SSEs. Theory specifies that the smaller the statistics (-2LL) the better. From the appendix 1, the -2LL of 64.999 is small and this shows that the model predicts well odds ratios of a sampled respondent being poor or non-poor when she joined SSE. The Nagelkerke R^2 of 0.821 implies that 82.1% variation in the poverty status of the sampled respondents is explained by activities of SSEs in the study area.

The **Hosmer-Lemeshow Test** is used extensively to assess the fitness of the logistic regression model. The Hosmer-Lemeshow tests the fact that there is a linear relationship between the predictor variables and log odds of the criterion variable. Cases are arranged in order by their predicted probability on the criterion variable. These ordered cases are then divided into 10 groups. Each of these groups is then divided into two groups on the basis of the actual score on the criterion variable. (See Contingency Table for Hosmer-Lemeshow Test in Appendix I). This results in a 2 x 10 contingency table. Expected frequencies are computed based on the assumption that there is a linear relationship between the weighted combination of the predictor variables and the log odds of the criterion variable. A chi-square statistic is computed comparing the observed frequencies with those expected under the linear model. A non-significant chi-square (shown in Appendix I) indicates that the data will fit the model well.

The Block O “Variables not in the Equation” shows how much the -2LL would drop if a single predictor (independent) variable was added to the model. This indicates that -2LL will drop by about 147.73% if an independent variable is introduced into the model. A note must be taken of the fact that, estimated probability for stepwise at last step of the estimation process was put at classification cut off of 0.5 at maximum iteration. The default cut-off probability of 0.5 for this model gives quite good results.

The results of the various variables were explained using appendix 1. The results from the appendix indicate that the coefficient of the EXPEDU variable (i.e. Expenditure on the education of the sampled respondents) is negative (-0.793) correctly signed and statistically significant at 10% level. This implies that EXPEDU of the respondents has an influence on the probability of a sampled respondents being non-poor. The Exp. (β) of 0.916 indicates that a unit change (increase) in expenditure on education of the sampled respondents from SMEs would reduce their likelihood of being poor by 91.6%.

The parameter estimate for the expenditure on food (EXPPFD) with income generated from SME is negatively-correctly signed (-0.787) and statistically significant at 5% level. This implies that the number of times a household spends on food in a day with income obtained from SMEs, indeed does have an influence on the odds or probability of a respondent being non-poor. The Exp (β) or odds ratio of 0.197 indicates that the odds or probability of a sampled respondent being non-poor can be explained at 19.7% by a unit increase in the expenditure on food the respondent undertakes. The results from the appendix further indicate that the coefficient of the AVINC (Average income of the respondents) is negatively-correctly signed and statistically significant at 10 percent level. This implies that average annual income has an influence on the probability of a sampled respondent being non-poor. The Exp. (β) of 0.300 indicates that a unit change in the average annual income of the respondents from SMEs would reduce their likelihood of being poor by 30%.

The parameter estimate of HLTFAC (health facility accessed) of the respondent is positively incorrectly signed (0.022), but it is statistically significant at 10% level. This implies that access to ‘improved’ health facilities by a sampled respondent will tend to increase her poverty status. This may be due to the fact that ‘improved’ health facilities in Dekina Local Government Area are in short supply and very expensive, and hence access to them will rather impoverish those patronizing them. This implies that respondents who visit ‘improved’ health facilities for medical attention will be left with little income which will make them absolutely poor. The Exp (β) of 0.002 indicates that the odds of a sampled respondent being non-poor are a minimal at 2.2%.

Appendix 1 also shows that the capital base (CAPBASE) of a sampled respondent is negatively-correctly signed (-0.684) and statistically significant at 10% level. This implies that an increase in the capital base of a respondent involved in SSEs can reduce poverty. The Exp (β) of 0.052 indicates that a unit change in CAPBASE can reduce poverty by 5.2%. The parameter estimate of HHHED is positively-correctly signed and statistically significant at 5% level. Even though economics theory is not explicit about this position, but the researchers assumed a household head that is a woman would have a positive relationship with the respondents’

poverty status. The Exp (β) of 0.225 indicates that a unit change in the HHED to a woman would increase her poverty by 22.5%. Thus, given that the Likelihood Ratio (LR) is 170.823 and its ρ -value at classification cut-off of 0.5, we observe very clear that LR is greater than 0.5. Therefore, we reject the null hypothesis that all β 's are not significantly different from zero, that is, the participation of women in SSEs has significantly alleviated poverty in Dekina Local Government Area of Kogi State. The Nagelkerke R^2 of 0.821 (82.1%) shows that participation of respondents in SSEs tends to influence their poverty status.

IV. Conclusion

The study concludes based on the findings that women participation in SSEs has significantly reduced poverty in Dekina Local Government Area of Kogi state. This is because women that are involved in soap making, palm oil production, soap making and tailoring earn income that is used to take care of their families. It is therefore recommended that efforts should be made by the women involved in SSEs to encourage other women through provision of financial resources to help them establish their own small businesses. This will help them earn income and to complement their husbands' effort in taking care of their families. The local government council and the state government should create an enabling environment through the provision of facilities like farming equipment, land to construct shops and funds to carry out their businesses so that women can be efficient in performing their businesses. This will enable the local and state governments to key into the transformation agenda of the federal government by encouraging SSEs to fight poverty. Enlightenment campaigns can be carried out by relevant authorities like national directorate of employment etc on the need for women to be involved in SSEs. Microfinance institutions can also key into the transformation agenda of the federal government by providing low interest-rate loans to women in the rural area which will assist them towards starting up SSEs to ameliorate the level of poverty in the area.

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APPENDIX 1

Logistic Regression

[Data Set 0]

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	220	99.5
	Missing Cases	1	.5
	Total	221	100.0
Unselected Cases		0	.0
Total		221	100.0

a. If weight is in effect, see classification table for the total number of cases

Dependent Variable

Encoding

Original value	Internal Value
0	0
1	1

Block 0: Beginning Block

Classification Table^{a,b}

Observed		Predicted		
		PTY		Percentage Correct
		0	1	
Step 0	PTY	0	1	
		170	0	100.0
		50	0	.0
				77.3
Overall Percentage				

a. Constant is included in the model

Variables not in the Equation^a

Step 0	Variables	Score	df	Sig
	EXPEDU	49.176	1	.000
	EXPFD	.070	1	.107
	AVINC	.662	1	.000
	HLTFAC	3.406	1	.000
	CAPBASE	88.362	1	.000
	HHHED	2.688	1	.727
	CLTHSLF	3.406	1	.223

a. Residual Chi-Squares are not computed because of redundancies

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

Step 1	Step	Chi-square	Df	Sig
	Step	170.823	6	.000
	Block	170.823	6	.000
	Model	170.823	6	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	.64.999 ^a	.540	.821

a. Estimation terminated at iteration number 20 because maximum iterations had been reached. Final solution cannot be found.

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	7.847	8	.449

Contingency Table for Hosmer and Lemeshow Test

		PTY = 0		PTY = 1		Total
		Observed	Expected	Observed	Expected	
Step 1	1	22	22.000	0	.000	22
	2	22	22.000	0	.000	22
	3	22	22.000	0	.000	22
	4	22	22.000	0	.000	22
	5	22	22.000	0	.000	22
	6	18	18.636	1	.364	19
	7	21	17.084	0	3.916	21
	8	15	17.519	7	4.481	22
	9	6	6.761	16	15.239	22
	10	6	.000	26	26.000	26

Classification Table^a

Observed	PTY	Predicted		
		PTY		Percentage Correct
		0	1	
Step 1	PTY 0	166	4	97.6
	1	10	40	80.0
Overall Percentage				93.6

a. The cut value is 500

Variables not in the Equation^a

Step 1 ^a	Variables	B	S.E	Wald	df	Sig	Exp(B)
	EXPEDU	-.793	.165	.000	1	.050	.916
	EXPFD	-.787	.755	.000	1	.040	.197
	AVINC	-.996	.556	.003	1	.055	.300
	HLTFAC	-.022	.507	.000	1	.070	.022
	CAPBASE	-.684	.581	.000	1	.097	.052
	HHHED	.203	.086	5.600	1	.018	.225
	Constant	53.483	.701	.000	1	.997	.000

Variables(s) entered on step 1:EXPEDU, EXPED, AVINC, HLTFAC, CAPBASE, HHHED