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**BUSINESS ANALYSIS REPORT:
GULF OIL COMPANY OF NIGERIA, LTD.**

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INTRODUCTION

The *TIPPS* Project (Technical Information on Population for the Private Sector) is designed to encourage private, for-profit companies to invest in family planning for employees and dependents. *TIPPS* does so by measuring the demand for family planning (birth spacing) services and analyzing the costs and benefits of such programs to a participating company. An individualized analysis provides the following information:

- Current levels of maternity-related behaviors (births, contraceptive use, etc.) among female employees, wives of male employees, and other eligible dependents.
- Current annual company expenditures for maternity-related benefits.
- Level of potential demand for family planning by company employee and dependents.
- Potential health benefits for female employees, wives of male employees, and their children through improved birth spacing and reduction of unwanted and high risk pregnancy.
- Probable costs to the company of providing family planning services, in terms of personnel, training, equipment, supplies, education, and administration.
- Probable financial benefits to the company due to reduced expenditures for hospitalization, maternity leave, illness among employees and their dependents, and other categories of employee costs related to pregnancy, child-bearing, and child health.
- Company benefits-to-costs ratios, including cash flow, present discounted value of future savings, pay-back period, and internal rate of return.

The *TIPPS* approach to the cost-benefit analysis of providing family planning services in the industrial context is based on the following assumptions:

1. A sizable proportion of the company's labor force shows low levels of contraceptive prevalence and/or use of less effective contraceptive methods. As a consequence many pregnancies are unwanted and/or mistimed.
2. Unwanted pregnancies incur high costs to the employer in terms of legislated or contractually-mandated maternity leave, child care, treatment of the complications of illegal abortions, salary supplements, and absenteeism related to women's impaired health status.
3. The promotion and provision of company-sponsored family planning services could improve contraceptive prevalence and contraceptive method mix, thereby reducing the incidence of unwanted/mistimed pregnancies.
4. The costs incurred by family planning services would be more than compensated for by cost reductions in maternity-related services and health care for dependents leading to a positive benefits-to-costs ratio, enhanced employee productivity, and other mutual employer-employee benefits.

To calculate the potential costs and benefits of providing family planning services, *TIPPS* uses a detailed mathematical, computerized model which estimates current levels of childbirth among female employees and wives, their current patterns of contraceptive use, and current rates of induced abortion. It is assumed that if more women use contraception or more effective contraceptive methods in the future, pregnancy rates will decrease and lead to fewer births, increased birth intervals and a decrease the rate of induced abortion.

This report summarizes the results of a *TIPPS* business analysis carried out for Gulf Oil Company of Nigeria, Ltd., Lagos, Nigeria, during 1986 and 1987 by *TIPPS* with assistance from UNILAG CONSULT, Ltd. of Nigeria.

The report is organized into the following chapters:

- I. **Company Description** - characteristics of the labor force and type and cost of benefits provided to employees, wives, and dependent children.
- II. **Methodology** - a brief description of the *TIPPS* methodology and the data sources used in the analysis.
- III. **Fertility and Family Planning: Current Behavior** - annual childbirth and abortion rates among female employees and wives of male employees and current contraceptive behavior.
- IV. **Benefits and Costs of Providing Family Planning Services** - potential demand for family planning services among employees and their spouses, the impact of providing such services on births and abortions in the company population, the costs of providing family planning services, and a comparison of expected financial costs and benefits.
- V. **Conclusions and Recommendations** - the most cost-effective approach to providing family planning services, supplies, training, and education.

CHAPTER I. COMPANY DESCRIPTION

A. The Company and its Location

Gulf Oil Company of Nigeria (GOCON) is a subsidiary of the Chevron Corporation of San Francisco, which has operations worldwide. GOCON is a production company engaged in the exploration, drilling, pumping, refining, and transportation of oil. GOCON is headquartered in Lagos, Nigeria, with two satellite locations at Warri and Escravos.

Much of GOCON's work is off-shore drilling and production. Employees supporting these activities live and work on oil rigs for shifts of 7, 28 and even 42 days. Approximately 400 GOCON employees and contractors receive medical benefits and housing at the Escravos installation.

B. Characteristics of Labor Force and Beneficiary Population

1. The Labor Force

As of April, 1987, GOCON had 836 permanent employees, 92.1% of whom were male (Table 1). The employed population is young. Roughly three-fourths of all employees are in the 30-44 age group, with 10% younger and 15% older. The age range reported by male employees surveyed is from 22 to 66, with a mean age of 37.5 years.

The employees are well above the Nigerian average educational level. Almost all (96%) male employees have had more than primary school education and nearly three-quarters (73%) have had either technical education or some high school. A little more than one-fifth (21%) have had some university education. The younger men are generally better educated than those who are older.

The workforce is organized into four job classes -- junior, senior, management, and expatriate. The majority of employees (60%) are classified as seniors, one-third (36%) are junior, and the remaining 4% are either management or expatriate. The vast majority (94%) are married, although some of these are not living with their spouses because of their work.

Data on employee turnover and average length of employment were not readily available, however, given the benefits of employment at GOCON and the relative difficulty of obtaining employment in Nigeria, it should be assumed that the workforce is extremely stable. GOCON management believes that the number of employees should remain constant over the next several years.

Table 1
AGE - SEX STRUCTURE OF EMPLOYEES

Numbers and Percentages of Individuals
April, 1987

AGE	EMPLOYEES				TOTAL	
	NO.	%	NO.	%	NO.	%
20-24	9	1.17%	2	3.03%	11	1.32%
25-29	70	9.09%	11	16.67%	81	9.69%
30-34	195	25.32%	12	18.18%	207	24.76%
35-39	175	22.73%	20	30.30%	195	23.33%
40-44	187	24.29%	8	12.12%	195	23.33%
45-49	87	11.30%	7	10.61%	94	11.24%
50-54	35	4.55%	0	0.00%	35	4.19%
>54	12	1.56%	6	9.09%	18	2.15%
TOTAL NO.	770		66		836	
PERCENTAGE	92.11%	100.00%	7.89%	100.00%	100.00%	100.00%

* Numbers may not total to those shown due to rounding.

Source: Medical Personnel Records, Gulf Oil Company of Nigeria, Ltd.

2. Dependent Spouses

Table 2 displays estimates of the number of employees' dependents by age group. These numbers need to be viewed with some caution since an employee might have more than one spouse. Only one spouse, however, is eligible for medical benefits. Because most of the workforce is male, the dependent spouse population is almost exclusively female. Six hundred seventy-one dependent wives comprise 94% of the 718 spouses listed. Dependent children are estimated from medical records. Of the entire population served at the six GOCON clinics, there are more individuals between 1 and 14 than any other 15 year age group.

The dependent spouse population is young; roughly three-fourths are in the fertile 25-40 year age group. They are also well educated. Only 32% have a primary education or less, the remaining two-thirds having, at least, some secondary schooling. This is very important to a successful birth spacing program since educated people are much more likely to know of and use birth spacing methods.

Table 2
AGE STRUCTURE OF DEPENDENTS

(Eligible for Company Benefits)
April, 1987

AGE	DEPENDENT SPOUSE			OTHER			GRAND TOTAL	
	WIFE	HUSBAND	TOTAL	CHILD	PARENT	TOTAL	NO.	%
<1				79		79	79	2.36%
1-4				676		676	676	20.16%
5-9				889		889	889	26.51%
10-14				653		653	653	19.48%
15-19	7		7	339		339	346	10.31%
20-24	64		64				64	1.92%
25-29	214	1	215				215	6.40%
30-34	194	8	202				202	6.03%
35-39	119	9	128				128	3.81%
40-44	50	14	64				64	1.90%
45-49	23	6	29				29	0.86%
50-54		5	5				5	0.15%
>54		4	4				4	0.12%
TOTAL	671	47	718	2636	0	2636	3354	100.00%

* Numbers may not total to those shown due to rounding.

Source: GOCON Medical Records; 148 "children" aged 20 or older have been excluded since they do not receive company benefits.

C. GOCON Benefits Available to Employees and Dependents

Table 3 displays the benefits offered by GOCON to each group. These are discussed in greater detail below.

1. Employees (Male, Female)

GOCON provides health care services to all employees. These services include all drugs, hospitalizations, and even out-of-country health care. There is no fixed maximum amount for coverage. Prenatal, maternal, and post natal care, however, are not included. Nor does GOCON offer immunizations since they are provided by the public sector. Female employees are offered 12 weeks maternity leave and a lactation supplement. GOCON has actively conducted on-going health and safety education programs, promoting wellness and addressing sensitive health problems such as sexually transmitted diseases and acquired immune deficiency syndrome.

Non-health care benefits provided to employees include some housing and transportation to and from work for people in the Satellite Town housing community. While number of dependents is one criteria considered in assigning available housing, it is given less weight than length of employment, type of responsibility and marital status. Housing has therefore not been entered in the cost-benefit model as an area where GOCON could benefit from employee decisions to limit or space their births.

2. Spouses (Male, Female)

Regardless of polygamy, GOCON provides health care services to one wife per employee. There is no difference between the health care provided to spouses and that provided to employees.

3. Dependent Children

GOCON provides health care services for up to eight children per employee. Children receive the same health care benefits which are provided to spouses and employees.

Table 3

**COMPOSITION OF BENEFITS
OFFERED TO EMPLOYEES AND DEPENDENTS**

April, 1987

BENEFIT	MALE EMPLOYEES	FEMALE EMPLOYEES	SPOUSE	CHILDREN
SALARY BENEFITS				
Maternity Leave (3)	-	X	-	-
Lactation Supplement(2)	-	X	-	-
HEALTH CARE BENEFITS				
Illness-Outpatient	X	X	X	X
Hospitalization	X	X	X	X
Pharmaceuticals	X	X	X	X
SOCIAL WELFARE				
Housing (1)	X	X	X	X
Health and Safety				
Education Programs	X	X	X	X

X Company pays full costs

Source: Interviews with executives of Gulf Oil Company, Nigeria, April 1987.

- (1) Housing provided to senior level employees on a selective basis.
- (2) Lactation Supplement is one hour per day for one year.
- (3) Maternity Leave consists of 12 weeks paid in full as per State mandate.

D. Current Costs of Employee/Dependent Benefits

Health care services are currently offered at six GOCCON clinics, and retainers have been established with local specialists and hospitals for additional service. Four of the clinics (Ikoyi, Tinubu Square, Yaba, and Satellite Town) are located in Lagos. In addition, there are clinics in Warri and Escravos, Bendel State. The clinic in Escravos, located in the oil fields, serves men only.

All of the clinics are adequate for the services presently provided. Each has a comfortable waiting room, an examination room affording appropriate privacy, facilities to sterilize instruments, adequate storage areas, and a consistent and logical patient flow.

Listed are the medical staff employed by GOCCON:

- A full-time Medical Director;
- Three part-time Doctors, two in Lagos and one in Warri;
- 18 Nursing officers, 11 female and 7 male;
- 12 Nursing aides (male & female);
- A Laboratory Technician;
- A Secretary;
- An Ambulance Driver.

The staff is adequate to meet the current patient case load which ranges from 20-150 per week in most of the six clinics. The total estimated population served is 4000 people.

Table 4 summarizes the annual variable costs of child-related benefits over the child's lifetime, e.g. in Year 0, the costs cover the year of the child's birth. The estimated average annual cost per child is 117 Naira. This reflects a range of cost from 404.99 Naira during the first year which gradually decreases to 10.08 Naira by the twentieth year.

Table 4
ANNUAL COSTS OF CHILD-RELATED BENEFITS

April, 1987

BENEFIT HORIZON (Years from birth)	TYPE OF BENEFIT, IN NAIRA		TOTAL
	HEALTHCARE Outpatient Hospitalization Pharmaceuticals	SOCIAL WELFARE (Impact not calculated)	
0	\$404.99	\$0.00	\$404.99
1	\$361.61	\$0.00	\$361.61
2	\$318.22	\$0.00	\$318.22
3	\$274.84	\$0.00	\$274.84
4	\$231.45	\$0.00	\$231.45
5	\$212.63	\$0.00	\$212.63
6	\$147.93	\$0.00	\$147.93
7	\$132.87	\$0.00	\$132.87
8	\$117.81	\$0.00	\$117.81
9	\$102.75	\$0.00	\$102.75
10	\$ 87.69	\$0.00	\$ 87.69
11	\$ 47.15	\$0.00	\$ 47.15
12	\$ 40.63	\$0.00	\$ 40.63
13	\$ 36.76	\$0.00	\$ 36.76
14	\$ 32.99	\$0.00	\$ 32.99
15	\$ 29.12	\$0.00	\$ 29.12
16	\$ 25.36	\$0.00	\$ 25.36
17	\$ 21.49	\$0.00	\$ 21.49
18	\$ 17.72	\$0.00	\$ 17.72
19	\$ 13.85	\$0.00	\$ 13.85
20	\$ 10.08	\$0.00	\$ 10.08
21	\$ 10.08	\$0.00	\$ 10.08

Source: Clinic Financial Records, Gulf Oil Company of Nigeria, Ltd.

CHAPTER II. METHODOLOGY

A. Overview of Cost-Benefit Model

The *TIPPS* cost-benefit model consists of the following submodels:

- (a) a base period fertility analysis;
- (b) the projection of births averted;
- (c) the projection of target users and acceptors;
- (d) the projection of service costs; and
- (e) the calculation of various summary cost-benefit measures.

The model was programmed in the Host programming language developed by USAID's INPLAN project, Research Triangle Institute, North Carolina. The Host environment and the *TIPPS* model are available on diskettes for use on IBM-compatible microcomputers. For further details, the reader is referred to the manual "Host Version of *TIPPS* Model".

The model proceeds through the following steps:

1. Analysis of present fertility behavior:
 - a. Annual births produced;
 - b. Current contraceptive prevalence and method mix;
 - c. Other health factors (abortion, high-risk pregnancies, etc.).
2. Estimation of potential demand for family planning services:
 - a. Expressed interest in receiving family planning;
 - b. Future fertility intentions;
 - c. Reproductive health risks from future pregnancies.
3. Projection of future fertility under present conditions and under higher contraceptive prevalence/improved method mix:
 - a. Births averted;
 - b. Induced abortions (or abortion complications) averted;
 - c. Other health improvements.
4. Estimation of potential benefits (cost reductions) associated with averted births, abortions and other health improvements.
5. Estimation of potential costs of directly providing or indirectly reimbursing costs of family planning services:
 - a. Training and capital costs;
 - b. Operating (recurring) costs.
6. Calculation of benefits-to-costs ratios:
 - a. Cash flow;
 - b. Internal rate of return (IRR);
 - c. Pay-back period;
 - d. Present discounted value.

B. Data Sources

The data required for application of the *TIPPS* model come from a variety of sources. To contain costs and speed the process of data collection, *TIPPS* utilized existing data whenever possible. For this study the following sources were utilized:

- a KAP survey administered to employees and wives; and
- company records.

1. Survey Data

A KAP questionnaire was administered to employees and dependents to collect information on knowledge, attitude, and practice of specific contraceptive methods; current fertility; future fertility intentions; and potential interest in receiving birth spacing services from GOCON. Data collection was subcontracted to UNILAG CONSULT, a consulting branch of the University of Lagos.

The *TIPPS* model survey questionnaire was adapted for local usage in Nigeria through extensive review to promote accuracy, cultural appropriateness and clarity. Separate questionnaires were designed for males and females. These were pretested on a random sample of GOCON employees. Approximately one in nine employees were included in the pretest.

In lieu of sampling, it was determined to be feasible and beneficial to survey the entire universe of permanent employees and their spouses. Temporary employees were excluded from the survey. Table 5 displays both the universe and the response rate for each category.

Table 5

MALE AND FEMALE SURVEYS

CATEGORY	SURVEY UNIVERSE			INTERVIEWED			%
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	
Employees							
Male	770		770	560		560	72.73%
Female		66	66		34	34	51.52%
Total	770	66	836	560	34	594	71.05%
Spouses							
Male	47		47	0		0	0.00%
Female		670	670		374	374	55.82%
Total	47	670	717	0	374	374	52.16%
Total	817	736	1553	560	408	968	62.33%

Source: Company records and survey documents.

The surveys commenced in August 1986, and were completed in the spring of 1987. A total of 550 male employees, 34 female employees, and 374 wives of male employees were individually interviewed by 15 interviewers with nurse/midwifery training. Selecting interviewers who were already health professionals and conversant with medical and family planning terms reduced the amount of training and orientation necessary. In addition, mature interviewers were more easily trusted by the respondents. Training was conducted on the premises of the University of Lagos by *TIPPS* and UNILAG CONSULT project staff. The training activities are outlined as follows.

1. Project objectives
2. Detailed review of questionnaires and terms
3. Techniques of interviewing
 - a. Establishing rapport
 - b. Asking questions, especially sensitive ones
 - c. Questionnaire completion
4. Data preparation: Field and Central editing
5. Field practice in question taking

Spouse interviews were conducted in the homes of respondents. Permission from husbands to interview wives of employees was obtained in all cases.

2. Company Records

Company records were examined for information on the sex and age composition of the workforce and eligible dependents, the number of births which occurred in the last year, the benefits granted to employees and dependents, and the company expenditures for these benefits. The following records were made available:

- Personnel records;
- Medical clinic patient records;
- Medical clinic financial records.

3. Published Estimates

Some data were already programmed into the *TIPPS* computer model. These data include the following:

- Estimates of maximum biological fertility;
- Use effectiveness of contraceptive methods; and
- Method continuation rates.

Original sources for these data are based on international estimates and can be found in the *TIPPS* manual. In addition, the Nigeria Fertility Survey was used in instances where comparable data from the GOCON survey was not based on a sufficient sample size to permit generalization.

4. Cost Estimates

Cost estimates for family planning services delivery were obtained by *TIPPS* staff while on site, using the services of local consultants and commercial firms. Prices for contraceptives and related supplies were quoted by Sterling Products (Nigeria) Limited. Equipment prices local to Nigeria were quoted by Health-Aids, Inc., while the University College Hospital at Ibadan provided quotations for clinical training.

CHAPTER III.

FERTILITY AND FAMILY PLANNING: CURRENT BEHAVIOR

This chapter addresses current fertility rates and use of family planning among married women, aged 20-44 years, in the company's beneficiary population. Married women (or women at risk) include all women in union, married or consensual, who receive or whose children receive benefits as a result of their or their spouse's employment.

A. Fertility Rates

Ideally, fertility rates would be estimated from company records by dividing the number of births occurring during the last year by the number of women in each age group. In this instance, however, estimates of the total births for the most recent two years were incomplete. Instead *TIPPS* utilized the countrywide Nigerian fertility rates for married women from the Nigeria Fertility Survey. The total estimated births obtained from this survey were very close to the number recorded by *GOCON* for the most recent two years.

Current fertility is enumerated in Table 6. The universe of women at risk, based on *GOCON* Medical Records, is 694 women. Table 5 shows women at risk according to status as employee or spouse by the five year age groups. Multiplying the number of women in each group by the base marital age specific fertility rate obtained from the Nigeria Fertility Survey, one obtains an estimate of 162 births for the last year.

In the female survey, women reported having given birth to an average of four children. Not surprisingly, the reported number of children born increases with the age of the women. Multiplying these rates by the number of women in each age group, one can estimate the total number of children who have ever been born to this population -- 2783.

Table 6
CURRENT (BASELINE) FERTILITY

AGE	NO. OF WOMEN AT RISK			BIRTHS LAST YEAR	BASE MARITAL AGE SPECIFIC FERTILITY RATE	CHILDREN EVER BORN PER WOMAN	ESTIMATED TOTAL CHILDREN EVER BORN
	EMPLOYEE	SPOUSE	TOTAL				
20-24	2	64	66	21	318.18	1.82	120
25-29	11	214	225	64	284.44	2.94	662
30-34	12	194	206	49	237.86	4.40	906
35-39	20	119	139	22	158.27	5.62	781
40-44	8	50	58	6	103.45	5.41	314
TOTAL NO.	53	641	694	162	5.50 *	4.01	2783

* Total Marital Fertility Rate (Age 20-44)

Source: Number of Women at Risk obtained from Medical Records, Gulf Oil Company of Nigeria, Ltd., March, 1987. Note that totals are less than in tables 1 and 2 due to exclusion of women below 20 and above 45.

Notes:

1. Births Last Year: Age specific births apportioned using fertility rates for all married women, Nigeria Fertility Survey.
2. Base Marital Age Specific Fertility Rate: Calculated by dividing births by women at risk.
3. Estimated Children Ever Born, per Woman. Entered from Survey of GOCON Female Employees and Wives. October, 1986.
4. Estimated Total Children Ever Born: Product of Women at Risk and Estimated Children ever born, per woman.

B. Contraceptive Behavior

Contraceptive prevalence rates were calculated from the female survey. These rates represent the percentage of women in each age group who are currently using some recognized means of contraception (traditional or modern). Traditional methods, unlike modern methods of contraception, are less than 50% effective and can sometimes be hazardous to a woman's health. Two of the most commonly used traditional methods in Nigeria are withdrawal and the finger ring.

Of 407 women in the sample, over 41% were practicing contraception. This proportion is quite high and reflects the fact that this population is better educated and of higher socioeconomic status than the average for Nigeria. Prevalence is highest for women between 25 and 39, with the percentage declining in the older age groups. Also, fewer younger women (20%), aged 20-24, are current users. These women have not completed their families and experience a high fertility. The adoption of birth spacing by this group would improve maternal and child health.

The estimated contraceptive prevalence levels among all female employees and spouses are presented in Table 7. The proportion of women in each age group who use specific methods of contraception is estimated from the survey results. Almost half of all users reported using Very Effective Methods (Pill 20%, IUD 24%) and Permanent methods (Tubal Ligation 1%). Over one-third (36%), however, still use less effective traditional methods.

C. Induced Abortion

The third important fertility variable is induced abortion. Abortions reduce the number of unwanted births, but may pose a significant risk to the woman's health. Unfortunately, there are no good direct measures of induced abortion rates: women often conceal their abortions, and since not all abortions result in complications, hospital records are also incomplete. The model uses an indirect calculation of abortion rates, based on theoretical estimates of what maximum fertility would be if women used no means of fertility limitation. Although actual survey data regarding abortions was not directly input to the cost-benefit model, one in five of the females surveyed reported having had an abortion at some time in her life. It should be noted that abortion is illegal in Nigeria except in cases of certifiable risk to the woman's health. Illegal abortions are risky to women's health. Therefore, birth spacing will improve women's health by reducing abortions. Furthermore, programs which have the effect of reducing the incidence of induced abortion clearly are consistent with Nigerian social policy.

Table 7

**Current Rates of Contraceptive Use by Method
as Adapted for Cost-Benefit Model**

Age	20-24	25-29	30-34	35-39	40-44	TOTAL*
Women at Risk	66	225	206	139	58	694
Contraceptive Prevalence	20.5%	43.8%	43.2%	44.4%	36.7%	41.7%
Total Contraceptive Users	13	100	89	62	22	286
LEAST EFFECTIVE/TRAD.						
Natural Family Planning	50.0%	32.0%	43.0%	34.0%	28.0%	36.4%
Users	7	32	38	21	6	104
LESS EFFECTIVE						
Barrier	25.0%	26.0%	11.0%	18.0%	9.0%	18.2%
Users	3	26	10	11	2	52
VERY EFFECTIVE						
Pill	0.0%	24.0%	17.0%	25.0%	18.0%	20.4%
Users	0	24	15	15	4	58
IUD	25.0%	18.0%	28.0%	22.0%	36.0%	23.7%
Users	3	18	25	14	8	68
PERMANENT						
Ligation	0.0%	0.0%	1.0%	1.0%	9.0%	1.2%
Users	0	0	1	1	2	4
TOTAL*						
Users	13	100	89	62	22	286

* Numbers may not total to those shown due to rounding.

Sources: Company records and female survey results

- Notes:
1. Women at Risk as calculated in Table 6
 2. Proportion using contraception (Contraceptive Prevalence) from Female survey, Table 18, October 1986
 3. Method Mix percentages adapted from results of Female Survey

CHAPTER IV. BENEFITS AND COSTS OF PROVIDING FAMILY PLANNING SERVICES

This chapter evaluates the potential demand for company-provided or subsidized family planning services among employees and spouses. Based upon this demand, we then project the impact of family planning services on maternity-related behaviors and benefit expenditures; estimate the cost of providing these services; and compare the benefits (savings) and costs accruing from the program.

A. Potential Demand for Family Planning

Potential users of family planning services include couples who either do not want more children or would like to delay their next pregnancy at least two years and are not presently using a contraceptive method. The larger this pool of potential users, the greater the potential demand for birth spacing and the greater the potential impact of offering company-provided birth spacing services.

1. Ideal versus Achieved Fertility

While most GOCON couples are still young (wives average 27 years of age), many are already approaching their ideal family size. For this population the average ideal number of children ranges from 5.5 for women to 5.7 for men (See Table 8). The results of the surveys indicate the following:

- Males have a slightly higher average ideal number than females.
- Young persons tend to have a lower ideal number of children than those who are older.
- The number of ever-born children reported by males was higher than that reported by females. (This may be because some male employees have more than one wife with children.)

Even with an average of four children, most couples have not completed their families. Table 8 clearly shows a desire for additional children. If fertility continues at the current rate, however, the achieved number of children is likely to be higher than the desired number. It is, therefore, helpful to look at childbearing intentions in more detail.

Over 56% of all men surveyed wanted additional children. Nearly two-thirds of the men with three living children desired more children. The average number of additional children desired is 1.5. Women, on the average, also want an additional 1.6 children.

Table 9 displays the percentages of women who want additional children and when they would like their next child. A total of 69% of the married women in the survey want more children. This percentage includes 30% who want additional children in one year or less, 21% who want more children in two or more years and 18% who are ambivalent. Of the total 69%, all but those who want children within the next year should be using a birth spacing method to plan their next birth. The percentage of married women reporting no desire for additional children is 31%. This includes two subgroups, the spacers (two years or more) and the limiters (no more children). The spacers and the limiters represent the total potential demand for birth spacing services.

TABLE 8
IDEAL VERSUS ACHIEVED FERTILITY

AGE	20-24	25-29	30-34	35-39	40-44	45-49	TOTAL*
WOMEN'S SURVEY N = 408							
IDEAL # OF CHILDREN (mean)	4.68	5.15	5.46	6.46	5.04	6.50	5.48
CHILDREN EVER-BORN (mean)	1.82	2.94	4.40	5.62	5.41	6.36	4.00
LIVING CHILDREN (mean)	1.69	2.91	4.29	5.43	5.14	6.21	3.89
GAP BETWEEN IDEAL # AND CHILDREN EVER BORN	2.86	2.21	1.06	0.84	-0.37	0.14	1.48
MEN'S SURVEY N = 560							
IDEAL # OF CHILDREN (mean)	5.50	4.70	4.80	5.60	6.30	6.50	5.70
CHILDREN EVER-BORN (mean)	2.50	1.80	2.80	4.40	6.20	6.00	4.50
GAP BETWEEN IDEAL # AND CHILDREN EVER BORN	3.00	2.90	2.00	1.20	0.10	0.50	1.20

* Weighted Means

Sources: Female responses from Women's Survey, Tables 15 and 6, October 1986
Male responses from Men's Survey, Tables 8 and 5, April 1986

TABLE 9
FERTILITY INTENTIONS
AND CURRENT CONTRACEPTIVE BEHAVIOR
OF SURVEY RESPONDENTS

FUTURE FERTILITY INTENTIONS	CONTRACEPTIVE USERS								NON-USERS		TOTAL	
	NON-EFFECTIVE METHODS		LESS EFFECTIVE METHODS		EFFECTIVE METHODS		ALL USERS		N	%	N	%
	N	%	N	%	N	%	N	%				
WANT CHILDREN IMMEDIATELY												
Within 1 year	4	6.8%	0	0.0%	2	2.7%	6	3.6%	89	37.9%	95	23.6%
In one year	6	10.2%	0	0.0%	6	8.2%	12	7.1%	14	6.0%	26	6.5%
Total Immediately	10	16.9%	0	0.0%	8	11.0%	18	10.7%	103	43.8%	121	30.1%
SPACERS AND LIMITERS												
Delayed (spacers)												
In two years	7	11.9%	8	22.2%	7	9.6%	22	13.1%	16	6.8%	38	9.4%
In three/more years	8	13.6%	8	22.2%	7	9.6%	23	13.7%	22	9.4%	45	11.2%
Total Spacers	15	25.4%	16	44.4%	14	19.2%	45	26.8%	38	16.2%	83	20.6%
No More Children (limiters)	18	30.5%	12	33.3%	45	61.6%	75	44.6%	51	21.7%	126	31.3%
Total Spacers/Limiter	33	55.9%	28	77.7%	59	80.8%	120	71.4%	89	37.9%	209	51.9%
Per Cent of Total	15.8%		13.4%		28.2%		57.4%		42.6%		100.0%	
Per Cent of Users	27.5%		23.3%		49.2%		100.0%					
OTHER												
God Decides	9	15.3%	1	2.8%	0	0.0%	10	6.0%	20	8.5%	30	7.4%
Don't Know when	1	1.7%	2	5.6%	0	0.0%	3	1.8%	6	2.6%	9	2.2%
Don't Know whether	6	10.2%	5	13.9%	6	8.2%	17	10.1%	16	6.8%	33	8.2%
Other		0.0%		0.0%	0	0.0%	0	0.0%	1	0.4%	1	0.2%
Total Other	16	27.1%	8	22.3%	6	8.2%	30	17.9%	43	18.3%	73	18.0%
TOTAL	59	100.0%	36	100.0%	73	100.0%	168	100.0%	235	100.0%	403	100.0%
Per Cent of Total	14.6%		8.9%		18.1%		41.7%		58.3%		100.0%	
Per Cent of Users	35.1%		21.4%		43.5%		100.0%					
INVALID RESPONSES							0		5		5	
GRAND TOTAL	59		36		73		168		240		408	

* Numbers may not total to those shown due to rounding.

Table 9 cross-tabulates the desire for additional children with current birth spacing practices. Among those who practice birth spacing, 44% use effective methods. These users, however, represent only 18% of the female survey population, of whom 59% are currently not using any birth spacing method. Quite reasonably, the 235 current non-users include 103 women who want additional children soon. This non-user group, however, also includes another 89 women who wish to space their next pregnancy or have no more at all.

TIPPS concludes that there is a significant gap between the childbearing intentions of many GOCON families and the means being employed to realize those intentions.

2. Current Knowledge of Contraceptive Methods

Lack of familiarity with the various contraceptive methods can be a deterrent to contraceptive use. Information and education programs, on the other hand, can help dispel unnecessary fears and acquaint potential users with the means to choose a method appropriate for their individual situation. The lower the general knowledge about contraceptive methods among the target population, the greater the information and education efforts must be to stimulate demand for services. Given this background, determining the current knowledge of contraceptive methods among female GOCON employees and dependent wives is important.

Female respondents were asked if they were aware of specific birth spacing methods. (See Table 10). Impressively, about nine in ten women were familiar with the very effective methods--pill, IUD, and injection. Another 60% were familiar with female sterilization, and about half knew of the barrier methods.

Favorable attitudes toward family planning are as important as knowledge of methods. Given the role men play in most households in Nigeria, their attitudes regarding decision-making have an important impact on this issue. When asked, "do you agree or disagree with birth spacing methods or contraceptives?", over-two thirds (69%) of the men agreed with all or almost all methods, while over one-fifth (22%) agreed only with natural methods.

3. Potential Demand for Company-Provided Family Planning

Over 70% of the male respondents indicated they would like more information about family planning, with younger men expressing a stronger interest than the older men. Nearly two-thirds of the men also stated that their wives needed more information. Similarly, over three-fourths (79%) of the female respondents expressed a desire to receive more information, with almost all (91%) of the youngest women, aged 18-24, in this category.

Most importantly 82% of the women reported that they would use GOCON birth spacing services. Many of these women already use a birth spacing method. Thirty-six percent of these current users, however, employ traditional methods which are relatively ineffective. When queried about their preferred contraceptive method if GOCON were to provide birth spacing services, the proportion preferring traditional contraceptive methods significantly decreased from 36% to 14%. Under a GOCON program many of these women would change to a more effective, modern birth spacing method (with a preference for the IUD, pill, and injection).

Table 10

CURRENT KNOWLEDGE OF CONTRACEPTIVE METHODS

METHOD	WOMEN	
	Number of Women	%
LEAST EFFECTIVE/TRADITIONAL		
Rhythm/Temperature	230	56.4%
Traditional Methods	175	42.9%
LESS EFFECTIVE/BARRIER		
Condom	NA	
Diaphragm	187	45.8%
Chemical Barrier: Jelly, Cream	169	41.4%
Chemical Barrier: Foam Tablets	211	51.7%
VERY EFFECTIVE		
Pill	388	95.1%
Injection	358	87.7%
IUD	367	90.0%
PERMANENT		
Vasectomy	NA	
Female Sterilization	253	62.0%

Note: Knowledge of Condom and Vasectomy were not asked of female respondents.

The larger portion of potential users of GOCON birth spacing services, however, are currently non-users (59%). These new users, plus the women who switch to more effective methods, are the key to the benefit which GOCON can realize through the addition of birth spacing to its health services.

TABLE 11
POTENTIAL DEMAND FOR
COMPANY PROVIDED FAMILY PLANNING

CURRENT CONTRACEPTIVE USE	N =	WOULD USE COMPANY SERVICES					
		YES		NO		UNDECIDED	
	408	N =	% =	N =	% =	N =	% =
CURRENT USERS	N = 168	146	43.4%	19	29.6%	3	38.7%
	% =	86.9%		11.3%		1.8%	
CURRENT NON-USERS	N = 240	190	56.6%	45	70.4%	5	61.3%
	% =	79.2%		18.8%		2.0%	
TOTALS	N = 408	336	100.0%	64	100.0%	8	100.0%
	% =	82.4%		15.7%		1.9%	

Source: Information from Female Survey, October 1986

B. Impact of Providing Family Planning (High vs. Low Demand)

The central assumption of the *TIPPS* approach is that satisfying the demand for birth spacing services through company provided or subsidized programs will both increase the use of contraception and lead to the adoption of more effective methods. Greater and better contraceptive use will reduce the number of unwanted or mistimed births, as well as the number of abortions and abortion complications and other health problems associated with high-risk pregnancies.

In Chapter 1, the maternity-related benefits offered by GOCON to employees and dependents were described and per-capita annual expenditures for these benefits were estimated from company financial records. Every unwanted pregnancy prevented by the use of birth spacing not only contributes to the health of the woman and the well-being of the family, but also saves the company resources by reducing health care costs.

The *TIPPS*/GOCON surveys have shown a demand for birth spacing services among employees and spouses. GOCON's investment in such a program will provide its couples with a safe, convenient and affordable means to achieve their desired family size. This section will assess the impact of such a program.

TABLE 12

PROJECTED CONTRACEPTIVE PREVALENCE FIVE YEARS AFTER PROGRAM LAUNCH

High Target Prevalence represents increase of 50% over current prevalence.

Low Target Prevalence represents increase of 25% over current prevalence.

Age	20-24	25-29	30-34	35-39	40-44	TOTAL
Women at Risk	66	225	206	139	58	694
Base Contraceptive Prevalence	20.5%	43.8%	43.2%	44.4%	36.7%	40.9%
High Target Prevalence	30.7%	65.7%	64.8%	66.6%	55.0%	61.4%
Low Target Prevalence	25.6%	54.7%	54.0%	55.5%	45.9%	51.2%
Total Contraceptive Users	14	99	89	62	21	284
High Target Users	20	148	133	93	32	426
Low Target Users	17	123	111	77	27	355
LEAST EFFECTIVE/TRADITIONAL						
Target Method Mix	3.0%	2.0%	3.0%	2.0%	0.0%	2.2%
High Target Users	1	3	4	2	0	9
Low Target Users	1	2	3	2	0	8
LESS EFFECTIVE/BARRIER						
Target Method Mix	21.0%	15.0%	8.0%	8.0%	24.0%	12.2%
High Target Users	4	22	11	7	8	52
Low Target Users	4	18	9	6	6	43
VERY EFFECTIVE/PILL						
Target Method Mix	52.0%	41.0%	39.0%	46.0%	29.0%	41.1%
High Target Users	11	61	52	43	9	175
Low Target Users	9	51	43	35	8	146
VERY EFFECTIVE/IUD						
Target Method Mix	21.0%	41.0%	45.0%	40.0%	47.0%	41.5%
High Target Users	4	61	60	37	15	177
Low Target Users	4	51	50	31	13	147
PERMANENT/LIGATION						
Target Method Mix	3.0%	1.0%	5.0%	4.0%	0.0%	2.9%
High Target Users	1	1	7	4	0	12
Low Target Users	1	1	6	3	0	10
TOTAL*						
Target Method Mix	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
High Target Users	20	148	133	93	32	426
Low Target Users	17	123	111	77	27	355

* Numbers may not total to those shown due to rounding.

Source: Female survey report, Tables 6, 7, and 18

1. Projected Contraceptive Prevalence

Future contraceptive prevalence levels at GOCON will depend upon employee/spouse attitude, the quality of the company program, and the impact of information, education and communication (IE&C) activities. The potential demand for birth spacing services as determined through the female survey, however, serves as a guideline to project future contraceptive use. Based on survey results, TIPPS developed two demand scenarios. These demand scenarios represent high and low target acceptor rates. The two demand scenarios were analyzed to contrast estimated costs and benefits under varied assumptions of program success. Under the high demand scenario, contraceptive prevalence will increase to 61% or 426 total users. This represents a 50% increase in contraceptive prevalence over a five-year period. Under the low demand scenario, contraceptive prevalence will increase to 51% or 355 total users. TIPPS believes the level of target acceptors under the high demand scenario is an appropriate, moderately conservative and achievable goal for the GOCON birth spacing program.

TIPPS also expects that many current users will shift to more effective methods of birth spacing (See Table 13). Thus, the impact of the family planning program will be greater than a simple increase in the number of acceptors.

The interest in birth spacing expressed by employees/spouses and GOCON's history of providing good quality health care are factors that contribute to the potential for a successful birth spacing program. The key, however, to a successful program at GOCON is a well developed IE&C campaign. Given that GOCON is very active in promoting wellness through health education programs, the infrastructure for an IE&C campaign already exists. With proper training and motivation of medical personnel, a GOCON-sponsored birth spacing program will reach high levels of contraceptive prevalence in an efficient manner.

TABLE 13

**CONTRACEPTIVE METHOD MIX:
PROJECTED SHIFT TO EFFECTIVE METHODS**

(High Demand)

METHODS	YEAR	
	* 0 (baseline)	** 5
Ligation	2%	3%
Pill/Injectable	20%	41%
IUD	24%	42%
Barrier	18%	12%
Traditional	36%	2%
Total	100%	100%
Number of Women	284	426

* Year 0 baseline data derived from Female Survey
 ** Year 5 data is based on projected acceptors and method switchers.

2. Projected Fertility

TIPPS expects that the adoption of birth spacing practices by GOCON couples will assist them in spacing their children and achieving their desired family size. Since the average number of children desired by each couple is less than the biological maximum, the net effect of birth spacing will be lower fertility.

Table 14 illustrates the expected impact. Projecting from current survey data and from GOCON health records, the number of births will gradually increase during the next five years if no program is established. The introduction of birth spacing services in the GOCON clinics, however, will enable GOCON couples to gradually decrease the number of births toward desired levels.

The difference between the fertility levels projected with and without the addition of birth spacing services represents the births of children inconsistent with the fertility intentions of GOCON couples. With a birth spacing program, many of these births will be averted. Since the program is entirely voluntary and is intended to assist couples in achieving the number of children they desire, the births which will have been averted represent unwanted or mistimed fertility.

TABLE 14:
FAMILY PLANNING PROGRAM IMPACT ON BIRTHS,
FIRST FIVE YEARS OF PROGRAM

(High Demand)

PERIOD	Expected (No Program)	Expected (w/Program)	Difference (Births Averted)
Base Period	162	162	0
Program Year 1	171	162	9
Program Year 2	172	153	19
Program Year 3	172	143	29
Program Year 4	175	133	42
Program Year 5	176	120	56

C. Costs of Providing Family Planning Services

GOCON already pays for employee and dependent medical care. Adding a birth spacing program to the current medical/social welfare services will require modest financial investment. The exact cost depends upon the service delivery modality chosen, the information and education efforts needed to stimulate demand, the volume of family planning services to be delivered, and the equipment required to expand clinic capabilities. Previous experience in other settings has shown that the first users of a new program include many women who were already using a birth spacing method. These program "switchers" incur costs without immediately generating benefits. In the long run, however, switching can be beneficial since many of these users continue their methods for longer periods and/or adopt more effective methods offered by the new program.

GOCON is in an excellent position to provide birth spacing services since there is presently excess capacity within its clinic system. All six clinics must be staffed at a minimum level regardless of patient volume. At all clinics, the number of patients is less than the capacity of the current staff.

For this reason, the costing for a GOCON birth spacing program (See Table 15) shows no additional expenditure for staff. Because each clinic presently has excess capacity, and no increase in operating hours is anticipated, the introduction of a birth spacing program will require no additional facility costs.

There are a number of fixed, first-year costs, however, which will be incurred:

- one time equipment purchases;
- training in birth spacing for the current clinic staff; and
- the initial inventory of supplies and commodities which must then be replaced as utilized.

In addition to these first-year, start-up costs, there are recurrent program costs which depend upon the number of patients who enter the program. Birth spacing commodity costs are based upon the number of users for each method. Also, there are other consumable items which depend upon the number of patient visits or consultations. Table 15 shows the projected total program budget by activity. Table 16 estimates total program costs from the first through fifth year. Note that while start-up costs are substantial, the recurrent costs for program maintenance are minimal.

TABLE 15
COSTS OF PROVIDING FAMILY PLANNING SERVICES
IN-HOUSE

(High Demand)

ITEM	START-UP	ANNUAL FIXED COSTS	ANNUAL VARIABLE	TOTAL NAIRA
PERSONNEL (NO ADDITIONAL PERSONNEL REQUIRED)				
TRAINING	\$24,228	\$ 0	\$ 0	\$24,228
EQUIPMENT	\$ 8,512	\$ 0	\$ 0	\$ 8,512
FAMILY PLANNING COMMODITIES	\$ 2,170	\$ 0	\$1,911	\$ 4,081
CONSUMABLE SUPPLIES	\$ 802	\$ 0	\$1,989	\$ 2,791
PROMOTIONAL MATERIAL/IE&C	\$ 750	\$250	\$ 0	\$ 1,000
OFFICE SUPPLY/ADMINISTRATIVE OVERHEAD	\$ 175	\$120	\$ 0	\$ 295
TOTAL	\$36,637	\$370	\$3,900	\$40,907

Note: Budget Assumes following utilization:

First Year Contraceptive Users, by Method:

Barrier	53
Natural Family Planning	93
IUD	85
Pill	77
Ligation	5
Total	313

TABLE 16
FIVE YEAR ESTIMATES,
COSTS OF PROVIDING FAMILY PLANNING SERVICES
IN-HOUSE

(High Demand)

ITEM	NAIRA PER YEAR				
	ONE	TWO	THREE	FOUR	FIVE
PERSONNEL (NO ADDITIONAL PERSONNEL REQUIRED)					
TRAINING	\$24,228	\$ 0	\$ 0	\$ 0	\$ 0
EQUIPMENT	\$ 8,512	\$ 0	\$ 0	\$ 0	\$ 0
FAMILY PLANNING COMMODITIES	\$ 4,081	\$1,814	\$2,125	\$2,457	\$2,817
CONSUMABLE SUPPLIES	\$ 2,791	\$1,989	\$2,321	\$2,690	\$3,096
PROMOTIONAL MATERIAL/IE&C	\$ 1,000	\$ 250	\$ 250	\$ 250	\$ 250
OFFICE SUPPLY/ADMINISTRATIVE OVERHEAD	\$ 295	\$ 0	\$ 0	\$ 0	\$ 0
TOTAL	\$40,907	\$4,053	\$4,696	\$5,397	\$6,163

D. Comparison of Benefits and Costs

The projected costs and benefits show that the investment required to offer company based birth spacing services is relatively modest. To demonstrate the cost effectiveness of birth spacing, six cost-benefit measures have been calculated.

1. Annual Costs and Benefits

Table 17 displays the annual cash inflows and outflows associated with birth spacing service delivery under the high and low demand scenarios. The break-even point for the investment, or the point at which the annual benefits exceed the annual costs, occurs in the third year of the program for both scenarios.

2. Cumulative Costs and Benefits

Table 18, which lists the cumulative costs and benefits, shows that the payback period for the program is five years under the high demand scenario and six years under the low demand scenario. This means that if the birth spacing program is successful enough to reach the high demand target, then the company will recoup its financial resources invested in the program by the fifth year. Under the low demand scenario the investment is regained in the sixth year.

3. Benefit to Cost Ratio

The benefit to cost ratio is a profitability ratio which shows that for every Naira invested in the birth spacing program GOCON will have realized, by the end of the 20 year projection period, 8.23 Naira in profit under the low demand and 11.87 Naira under high demand.

4. Present Value of Benefits and Costs

Table 19 shows the current value of the future cash inflows/outflows and the discounted benefits/costs. In the cost-benefit model these costs can be discounted to account for the time value of money. In the present study, the discount rate was set at zero.

5. Internal Rate of Return

The internal rate of return is the discounted rate that equates the present value of the cash outflows with that of the cash inflows. This rate may be compared with the return on other investment opportunities to assist in investment decision making. The IRR in the twentieth program year is 50.66% under the high demand scenario and 38.73% under the low demand scenario.

6. Extended Benefits to Cost Ratios

The extended benefit stream includes benefits accumulating from the program as well as those that accrue after the program terminates. The births that are averted in the last year of the program will continue to provide benefits for 21 years (See Table 4). This benefit stream is used in the calculation of the extended discounted benefits, IRR, and cost-benefit ratio.

TABLE 17

ANNUAL BENEFITS AND COSTS OF PROVIDING FAMILY PLANNING SERVICES

PERIOD	LOW PROJECTION			HIGH PROJECTION		
	BENEFITS (naira)	COSTS (naira)	DIFFERENCE (naira)	BENEFITS (naira)	COSTS (naira)	DIFFERENCE (naira)
1	0	40742	-40742	0	40907	-40907
2	2430	3822	-1392	3776	4173	-397
3	7167	4264	2903	11221	4816	6405
4	14083	4740	9343	22225	5517	16708
5	23042	5251	17791	36686	6283	30403
6	33905	5023	28882	54507	5967	48540
7	43457	5023	38434	70179	5967	64212
8	51577	5023	46554	83521	5967	77554
9	58439	5023	53416	94801	5967	88834
10	64222	5023	59199	104310	5967	98343
11	69118	5023	64095	112360	5967	106393
12	73136	5023	68113	118949	5967	112982
13	76495	5023	71472	124475	5967	118508
14	79237	5023	74214	128998	5967	123031
15	81423	5023	76400	132610	5967	126643
16	83118	5023	78095	135406	5967	129439
17	84389	5023	79366	137491	5967	131524
18	85512	5023	80489	139332	5967	133365
19	86507	5023	81484	140962	5967	134995
20	87373	5023	82350	142384	5967	136417

TABLE 18

CUMULATIVE COSTS AND BENEFITS OF PROVIDING FAMILY PLANNING SERVICES

PERIOD	CUMULATIVE LOW PROJECTION				CUMULATIVE HIGH PROJECTION				DIF- FERENCE IN RATIO
	BENEFITS (naira)	COSTS (naira)	DIFFERENCE (naira)	RATIO	BENEFITS (naira)	COSTS (naira)	DIFFERENCE (naira)	RATIO	
1	0	40742	-40742	0.00	0	40907	-40907	0.00	0.00
2	2430	44564	-42134	0.05	3776	45080	-41304	0.08	0.03
3	9597	48828	-39231	0.20	14997	49896	-34899	0.30	0.10
4	23680	53568	-29888	0.44	37222	55412	-18190	0.67	0.23
5	46722	58819	-12097	0.79	73907	61695	12212	1.20	0.40
6	80628	63942	16786	1.26	128414	67663	60751	1.90	0.63
7	124085	68866	55219	1.80	198594	73630	124964	2.70	0.90
8	175662	73867	101773	2.38	282115	79598	202517	3.54	1.17
9	234101	78912	155189	2.97	376916	85565	291351	4.41	1.44
10	298322	83935	214387	3.55	481226	91533	389693	5.26	1.70
11	367440	88959	278481	4.13	593586	97500	496086	6.09	1.96
12	440577	93982	346595	4.69	712535	103468	609067	6.89	2.20
13	517071	99005	418066	5.22	837009	109435	727574	7.65	2.43
14	596308	104028	492280	5.73	966008	115403	850605	8.37	2.64
15	677731	109052	568679	6.21	1098618	121370	977248	9.05	2.84
16	760848	114075	646773	6.67	1234024	127338	1106686	9.69	3.02
17	845238	119098	726140	7.10	1371515	133305	1238210	10.29	3.19
18	930750	124121	806629	7.50	1510847	139273	1371574	10.85	3.35
19	1017257	129144	888113	7.88	1651809	145240	1506569	11.37	3.50
20	1104630	134168	970462	8.23	1794194	151208	1642986	11.87	3.63

E. Health Benefits

A GOCON sponsored birth spacing program will improve maternal and child health. International studies indicate that birth spacing has a positive effect on the health status of women and children. Studies have determined that annually a half million maternal deaths occur worldwide, 99% of which take place in lesser developed countries (LDC's). Furthermore, women in LDC's have a 50 to 100 times greater risk of dying during pregnancy and childbirth, respectively. If a woman should die during or soon after childbirth, it is unlikely that her infant will survive. Her other children under age five also have a higher risk of mortality. According to the World Fertility Study 1981/82, women in Nigeria, on average, could expect to lose approximately one out of every four or five children she has given birth to before the end of her reproductive period. Birth spacing improves the health of women by helping them to avoid high-risk pregnancies. Additionally, when women have access to effective methods of contraception they are less likely to resort to dangerous illegal abortions to control their fertility. A GOCON-sponsored birth spacing program will help women bear their children during the healthiest times for mother and baby and will help prevent the unnecessary deaths of mothers, infants and children.

TABLE 19
COST-BENEFIT SUMMARY INDICATORS

PROJECTION	LOW	HIGH
Discounted Benefits (naira)	1,104,629.67	1,794,193.52
Discounted Costs (naira)	134,167.65	151,207.54
IRR (percent/10 ⁻²)	38.73	50.66
Cost-Benefit Ratio	8.23	11.87
Extended Discounted Benefits (naira)	1,520,851.54	2,472,597.14
Extended IRR (percent/10 ⁻²)	38.86	50.70
Extended Benefit - Cost Ratio	11.34	16.35

CHAPTER V. CONCLUSIONS AND RECOMMENDATIONS

The *TIPPS* study illustrates that potential demand for birth spacing services exists among GOCON employees and spouses and that provision of birth spacing services would be cost-beneficial to GOCON. Based on actual demand, between 52% and 62% of the eligible, fertile-aged women are expected to begin using, or switch to, company services within five program years.

A modest financial investment in birth spacing by GOCON could assist couples to achieve their desired family size and avoid unwanted or mistimed pregnancies, while promoting healthier women and children. *TIPPS* recommends that GOCON invest in a birth spacing program for employees and dependents. As determined through the business analysis, the addition of a birth spacing component to in-house health care services would be the most cost-effective approach to service delivery. Listed are five key factors that led to *TIPPS* recommendation for in-house birth spacing services:

1. GOCON's clinical infrastructure is well developed.
2. Current staff are underutilized and motivated.
3. All six clinics are well equipped.
4. GOCON has a successful on-going health education program.
5. Start-up and recurring costs are modest.

The *TIPPS* business analysis estimates the costs for an in-house birth spacing program for the first year at 40,907 Naira which reflects initial training, education, equipment, and inventory costs. By the fifth program year, costs should stabilize at between 5,000 and 6,000 Naira. Benefits, in terms of health-care related cost reductions to the company, will begin in the second year of the program. Based on demand, third-year net savings are projected at 2,903 to 6,405 Naira. The program should achieve a positive cash flow in its third year and pay back its start-up costs in year five or six. Total benefits to costs accrued over the first twenty years of program operation should show a ratio of approximately 11.87 Naira (high projection) in benefits to each Naira spent, for an internal rate of return of 50.66%.

In anticipation of GOCON sponsoring an in-house birth spacing program, *TIPPS* designed a service delivery workplan which addresses training, commodity supply, and IE&C activities. The plan calls for clinical training of eight medical personnel at University College Hospital at Ibadan (six-week course). Also, *TIPPS* has arranged logistics for contraceptive supply through Sterling Products (Nigeria) Limited. Regarding IE&C, *TIPPS* sponsored a US-based study tour for four GOCON staff. During the study tour the GOCON staff learned how to set-up a family planning program and how to conduct an IE&C campaign. Additionally, GOCON employs a trained health educator who has been preparing for birth spacing program initiation. (See Appendix A.)

In view of the current interest in birth spacing among the GOCON population, *TIPPS* recommends that the action plan outlined above be mobilized in a timely manner. Given the level of time and financial investment required to implement an in-house birth spacing program, *TIPPS* will assist GOCON to initiate birth spacing services by February, 1988. An evaluation mechanism will be built into the GOCON birth spacing program which will enable *TIPPS* to follow-up on program effectiveness.

II. Contraceptive Supply Component

Supplier - Sterling Products (Nigeria) Limited
Contact Hadja O. A. Masha
Plot A&K, Illupeju Industrial Estate,
P.O. Box 3199,
Lagos
Telephone: 900740 -7

Upjohn, Inc. (for Depo Provera)
Contact Mr. Olu Adesanya
Agbara Industrial Estate,
Badagry Express Road,
PMB 1182 Oshodi,
Lagos
Telephone: 963978

Commodity Prices: Subsidized Trade Price

Pill - 95 kobo /per cycle

IUD - 5 Naira

IUD Insertion Kit - 300 Naira/per kit

Includes: 2 dozen sterile gloves, 1 sponge forceps, 1 artery forcept, 1 scissor, 1 uterine sound, 2 cusco, 1 sim speculum, 1 tenaculum, 1 bowl, 2 small lotion bowls, 1 receiver, 1 instrument tray with lid, and 1 allegator forcept.

Condom - 65 kobo/per strip of 4

Vaginal Foaming
Tablets - 65 kobo/per 4 tablets

INITIAL 3 MONTH CONTRACEPTIVE SUPPLY BUDGET

# of Users	Commod. Require.	Unit Sold	Purchase Order	Price
33 Pill	132 cycles (33 x 4 ea.)	100 cycles/box	2 boxes	190 N
20 IUD (380T)	30 (3 per 2)	single	30 iud	150 N
IUD Kit	6 (2 per clinic)	single	6 kits	1800 N
100 Condom	4800 (4 per wk.)	100 units/box	48 boxes	5120 N
25 F.Tab.	400 (4 per wk.)	100 units/box	12 boxes	260 N

INITIAL 3 MONTH CONTRACEPTIVE SUPPLY BUDGET = 5,520 N

YEAR ONE CONTRACEPTIVE SUPPLY BUDGET

# of Users *	Commod. Require.	Unit Sold	Purchase Order	Price
77 Pill	1001 cycles (77 x 13ca.)	100 cycles/box	11 bxs	1045 N
85 IUD (380T)	128 (3 per 2)	20 per bx	7 bxs	700 N
IUD Kit	6 (2 per clinic)	single	6 kits	1800 N
150 Condom	31200 (4 per wk.)	100 units/bx	312 bxs	5070 N
53 F.Tab.	11024 (4 per wk.)	100 units/bx	111 bxs	1791 N

TOTAL CONTRACEPTIVE BUDGET FOR YEAR ONE = 10,406 N

* Projected Users by Method Yr 1 (based on GOCON survey results)

III. IEC Component

SUGGESTED PROGRAM SCHEDULE SUBJECT TO GOCON RATIFICATION

Satellite Town -	Early January 1988
Warri -	January 1988
Ikoyi -	February 1988
Yaba -	February 1988
Escravos -	February 1988
Tinubu Square -	February 1988

General Format and Requirements for IEC Presentation

- * Conception and Contraception film
- * Booklets on use of all methods (available at PPFN)
- * Posters (GOCON can make their own or get from PPFN)
- * Flip Charts (Visual Aid for explaining methods)
- * Locally made visual aid on modern and traditional methods of contraceptives (\$15 each, available through UCH Ibadan)
- * Slides
- * Projector and Screen
- * Microphone

Mrs. Grace E. Delano will be available to provide technical assistance in all aspects of implementing the GOCON birth spacing program. She will gladly assist in collecting information on where IEC materials can be purchased or obtained.

Please inform Mrs. Delano well in advance of GOCON's intended schedule of conducting IEC presentations so that she or her assistants can help GOCON as necessary (subject to GOCON's request.)