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report

WILLINGNESS TO PAY FOR CONTRACEPTIVE VAGINAL RINGS IN SENEGAL

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NOVEMBER 2015

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List of Acronyms

ADEMAS	Agence de Développement pour le Marketing Social
ANSD	Agence Nationale de la Statistique et de la Démographie
BMGF	Bill & Melinda Gates Foundation
CNERS	Comité National d'Ethique pour la Recherche en Santé
COG	Cost of Goods
CPR	Contraceptive Prevalence Rate
CPT	Contraception Procurement Table
CVR	Contraceptive Vaginal Ring
DHS	Demographic and Health Survey
DPM	Direction de la Pharmacie et du Médicament (Direction of Pharmacy and Drug)
DSRSE	Direction de la Santé de la Reproduction et de la Survie de l'Enfant
ECP	Emergency Contraceptive Pill
FP	Family Planning
GDP	Gross Domestic Product
IMR	Infant Mortality Rate
IPM	Informed Push Model
IUD	Intrauterine Device
MCH	Maternal and Child Health
MOH	Ministry of Health
MSAS	Ministry of Health and Social Action
NAPFP	National Action Plan for Family Planning
NES/EE	Nestorone®/Ethinyl Estradiol
OB/GYN	Obstetrician/Gynecologist
PNA	Pharmacie National d'Approvisionnement (National Pharmacy Supply)
PVR	Progesterone Vaginal Ring
STEP UP	Strengthening Evidence for Programming on Unintended Pregnancy
TFR	Total Fertility Rate
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
WTP	Willingness to Pay

Executive Summary

Since 2013, the Population Council, with funding from the Bill & Melinda Gates Foundation (BMGF) and United States Agency for International Development (USAID), has been conducting various pre-introductory activities to facilitate the introduction of the Progesterone Vaginal Ring (PVR) in sub-Saharan African countries where women practice prolonged lactation and also have a high unmet need for postpartum family planning. The PVR is a new method that offers greater ease of use, especially in terms of not requiring daily action, is woman-controlled, and does not require medical providers and significant health system infrastructures for service delivery. New product introduction strategies often suffer from the lack of available market research and rely on hypothetical approaches to gauge consumer demand. As a new product in sub-Saharan Africa, the PVR faces a similar challenge and can benefit immensely from a "Willingness to Pay" (WTP) study.

STUDY OBJECTIVES

1. To obtain a reliable estimate of consumers' demand for the PVR in Senegal by studying the effect of price on demand;
2. To assess the "Willingness to Provide" by family planning providers and "Willingness to Procure" by procurers;
3. To facilitate evidence-based pricing for the PVR in the three sectors of interest—public, private nonprofit, and private commercial; and
4. To explore respondents' willingness to pay for future vaginal rings (including long-acting, reversible options for nonbreastfeeding women) to assess potential demand and to design effective access strategies.

METHODS

We used a multidimensional and multisectoral approach to determine Willingness to Pay (WTP) for contraceptive vaginal rings. We used a stakeholder-driven approach comprised of three key actors--potential consumers, providers, and procurers. This approach explored the three dimensions of WTP—WT Pay, WT Provide, and WT Procure—by incorporating the voices of these three stakeholders. Second, we used a sector-driven approach to WTP designed to explore the different sectors that serve family planning customers—public, private nonprofit, and private commercial sectors. This innovative approach to assessing WTP for the PVR utilizes the principles of a total market model.

We created surveys for the three types of stakeholders. We conducted a consumers' WT Pay survey by interviewing family planning (FP) users or potential users and asking questions focused on PVR pricing following a bidding-game model. A total of 505 consumers**,** aged 18–49, were interviewed across the three sectors. We interviewed 134 providers across the three sectors cited above to measure their willingness to provide the PVR. We asked their views about PVR introduction into the method mix and about PVR pricing. We interviewed 14 procurers using an in-depth interview guide, eliciting their opinions about a reasonable price estimate for procuring the PVR and assessing their "Willingness to Procure" this new product. Finally, we interviewed 96 respondents who are responsible for family planning (FP) commodities management in their respective institutions to get a snapshot of the pricing landscape of contraceptives currently sold in the country. The study was conducted after obtaining the necessary national technical and ethical approvals, and all respondents participated after providing informed consent to be interviewed.

RESULTS

- Among potential consumers who saw the PVR and learned about it for the first time, more than 70% expressed interest in using it. This high level of "willingness to try" a new contraceptive method highlights the levels of unmet need and the opportunity for the PVR to create value in the lives of the Senegalese women. Of those interested, over 85% reported a willingness to pay (WTP) for the PVR even as the price rose. Respondents explained that their WTP was based upon the intention to avoid unintended pregnancy.
- Consumer demand curves generated by the study indicate a high elasticity of demand in the public and private nonprofits sectors. There is very little differentiation between consumers in the public and private nonprofit sectors. In contrast, as expected, the demand in the private sector is less elastic to price changes indicating that a higher price for the PVR can be charged in the private sector. The estimated price range in the public and private nonprofit sectors is 500–1,000 FCFA (around US$1–2/ring).
- The level of discretionary spending by consumers also provides some guidance for pegging the price of new products. Expenses such as hair salon visits and mobile phone use provide guidance for tailoring affordable pricing strategies.
- Providers from all sectors were willing to provide the PVR and were supportive of it being included into the national family planning program. Over 70% of providers in the public and private nonprofit sectors supported a price of up to 1,000 FCFA. Providers in the commercial private sector were willing to provide at a price higher than 1,000 FCFA.
- Procurers across all sectors were interested and supportive of the introduction of the PVR. The price recommended for the public sector was 500 FCFA, with higher prices in the private sector (private nonprofit sector: 1,000–1,500 FCFA (approx. US$2–3/ring) and private commercial sector: 2,000–5,000 FCFA (approx. US$4–5 ring).
- Consumers, providers, and procurers expressed interest and support for the one-year investigational Nestorone®/Ethinyl Estradiol (NES/EE) Contraceptive Vaginal Ring (CVR) as well as the PVR.
- The active role of the three sectors in FP provision is indicative of a vibrant total market in Senegal that can be utilized for the introduction of the PVR to serve its customer segments based on their levels of willingness to pay.
- Provider interest in a user-initiated method indicates the support for self-administered methods with minimal provider counseling to ease the burden on community health workers.
- Improvements in procurement systems with the Informed Push Model (IPM)* heralding a supply chain revival for FP commodities in Senegal and other government initiatives indicate an efficient supply chain capable of handling new products with minimal stress on the existing health system.

The results generated will inform and guide next steps about product introduction. Specifically, the findings of this study will be integrated with results from a market segmentation exercise conducted earlier to develop a pricing model for the PVR. The price will reflect not only the cost of goods (COGS) and costs of product introduction (e.g., training, educational material, marketing and branding, demand creation) but also the benefits to the health system (e.g., limited need for infrastructure and equipment, potential for multiple service outlets and health cadres). The results will also be useful to refine the market segmentation for the PVR and tailor specific strategies for product introduction including innovative financing approaches. Through this study we have gained better insights into the socioeconomic determinants of product use, including willingness to pay among consumers, and also the priorities that drive the important stakeholders—providers and procurers.

In summary, consumers expressed their WTP for this product, providers expressed willingness to offer it, and procurers expressed willingness to order it. Introductory strategies will need to include communication and promotional activities, integration with appropriate services such as Maternal and Child Health (MCH), and continued engagement with all stakeholders, including consumers.

* The Informed Push Model is a project supporting an FP procurement system in country to ensure contraceptive availability at all levels of the health pyramid.

Introduction

With a population size estimated at 13 million inhabitants in 2014, Senegal continues to experience a high population growth rate (2.5%) even as it begins its demographic transition (République du Sénégal 2014). The high growth rate contributes to the predominantly young population structure; approximatively 53% of the population is under age 20. This dynamic is attributed to a long-sustained high fertility combined with a slow decrease of the Infant Mortality Rate (IMR). The Total Fertility Rate (TFR) decreased from 6.4 children per woman in 1986 to 5.0 in 2010–11 (Population Council 2015). The Continuous Demographic and Health Survey (DHS) conducted in 2013 estimated TFR at 5.3 children per woman which is close to the desired family size expressed by women (5.3 for married women). In contrast, the desired family size for men is 8 (ANSD 2012). The desire for large families in Senegal comes from cultural beliefs that children bring life into the household and that they are an investment. The high fertility rate is also related to the low use of modern contraceptive methods; in 2012, only 12% of married women used a modern contraceptive method (ANSD 2012).

Following its engagement in the Ouagadougou Declaration, the Ministry of Health (MOH) launched a voluntary National Action Plan for Family Planning (NAPFP) in November 2012. The objective of this ambitious plan is to increase the Contraceptive Prevalence Rate (CPR) from 12% to 27% by 2015 and to 45% in 2020 (MSAS 2012). To achieve its goals, six broad domains for strategic interventions have been defined: (1) a wide-reaching national communication plan, including research and targeted communication campaigns; (2) targeted advocacy to raise awareness of and support for family planning on local and national agendas and to increase resources to address family planning needs; (3) commodity security for contraceptive products, particularly through the implementation of the Informed Push Model (IPM); (4) improvement of services offered by the public health sector, particularly long-term methods, by securing material resources and reinforcing competencies of health agents; (5) reinforcement of services offered by the private sector, notably by increasing market choice and availability of products; and (6) expansion of community-level distribution of products in order to reach hard-to-reach communities (MSAS 2012).

These efforts have resulted in the CPR increasing from 16% in 2013 to 20% in 2014. Yet, many challenges remain to be addressed. Differences in the use of modern contraception remain between socioeconomic categories; between urban and rural residents (20% in urban areas compared to 7% in rural areas); by education (26% among women with secondary education or higher compared to 21% among women with primary education and 8% with no formal education); and economic quintile (23% of women in the wealthiest quintile compared to 4% in the poorest quintile). The public sector remains the main source of FP services and commodities (85%) followed by the private commercial sector (12%). Private nonprofit covers 3% of FP services and commodity distribution (STEP UP 2014).

In the Dakar region, which has the highest population density, unmet need for family planning is at 32%, despite a higher Modern Contraceptive Prevalence Rate (MCPR) of 21%. This can be explained by the frequent contraceptive stockouts in public facilities, where 85% of women access FP services. In addition, the unmet need for FP in the postpartum period remains high. According to the 2010–2011 DHS, 60% of women who had a birth in the two years prior to the survey reported an unmet need for FP (STEP UP 2014). Among postpartum women, 66% who were breastfeeding reported an unmet need compared to 40% for those who were not breastfeeding.

Low perception of pregnancy risk during the first six months among postpartum women and the high level of discontinuation in the first year of FP use constitute real challenges for addressing unmet need for family planning among these groups. In addition, low availability of FP services in many health facilities and shortage

of skilled family planning providers, especially in remote rural areas, limits access to FP services. Furthermore, geographical disparities in health system coverage exacerbates issues of access to FP services. So, to address the need for contraception among breastfeeding women and ensure sustainable protection over a longer period of time, alternative contraceptives are required. To this end, the MOH has encouraged initiatives that aim to expand contraceptive choice with the introduction of new contraceptives and delivery approaches. These initiatives include community-level service delivery of Depo Provera IM and Depo-subQ Provera (Sayana Press) by matrons, and the introduction of new contraceptives such as the Implanon implant.

Ever-increasing changes in the funding landscape have prompted governments to explore "total market" solutions. The Total Market Approach (TMA) identifies specific roles for the public and private sectors in meeting the family planning needs of the population. Specifically, it focuses on ensuring that free or subsidized contraceptives are available to the needy and poor, and social marketing channels and other private commercial sales of contraceptives cater to those who are able to pay. This approach can help ensure equity and sustainability of products and services over time and also manage funding shortfalls. A crucial step in total market planning in Senegal is the identification of the population's ability and willingness to pay.

Since 2013, the Population Council, with funding from the Bill & Melinda Gates Foundation (BMGF) and the United State Agency for International Development (USAID), has been conducting research activities to facilitate the introduction of the PVR in sub-Saharan African countries where women practice prolonged lactation and also have a high unmet need for postpartum family planning.[1] The PVR is a new method that offers greater ease of use (especially in terms of not requiring daily action), is woman-controlled, and does not require medical providers and significant health system infrastructure for service delivery. One of the pre-introductory activities entails the assessment of "Willingness to Pay" (WTP) for the PVR. WTP is defined as the maximum amount of money that individuals are prepared to spend for what they gain (in terms of utility and satisfaction) from the consumption of particular goods or services. In the case of contraceptives, WTP identifies the value that people attach to the benefits of various contraceptives, especially their intentions to purchase them. The study will provide new knowledge on the maximum amount of money that consumers accessing different sources of contraceptive supply (i.e., public, private nonprofit, and private commercial) and belonging to different socioeconomic groups are willing to pay for available contraceptives. Information collected from consumers will be complemented with input gathered from providers and procurers to assess their "Willingness to Provide" and "Willingness to Procure," respectively.

A previously concluded market segmentation exercise for vaginal rings provides us with the knowledge of the various customer segments that we will be serving with the introduction of vaginal rings into the FP method mix in Senegal. By matching different types of providers and services to their appropriate target segments, we can promote effective intersectoral coordination and help the Senegalese government better allocate resources to meet its FP2020 goals and beyond. In the PVR introduction pathway, this study offers a reliable way of making evidence-based pricing decisions for a new FP product and designing programs to achieve a total market solution and balance the scales of sustainability and cost recovery.

[1] Approximately 60% of women of reproductive age in Senegal have unmet need for postpartum family planning (STEP UP 2014).

Setting

ECONOMIC CONTEXT

Senegal is a lower-middle-income economy primarily driven by agriculture. For several decades, the country has experienced low economic growth with a rate close to the population growth rate (2.5% per year). During 2006–13, on average, the Gross Domestic Product (GDP) growth rate was 3.3% per year, which barely exceeds the population growth rate of 2.6%. Therefore, between 2006 and 2011, the poverty rate has declined only 1.6 percentage points, from 48.3% to 46.7%. Prior to 2005, GDP growth was 4.5% per year and there was a reduction in the poverty rate from 68% to 48% over the ten-year period of 1995–2005 (World Bank Group 2014). While some sectors such as services have experienced progress in 2014, others such as the agricultural sector and private formal sectors faced difficulties during the recent period and limited their contribution to the GDP.

GDP growth rose in 2014 to an estimated 4.7%, its highest pace since 2008. Services continued to be the most dynamic sector (+5.6%), but the secondary sector, led by construction, has improved significantly, increasing by 4.9% after declining in 2013. Erratic rainfall once again led to a disappointing harvest, with rain-fed cereal production down 20%, although production in irrigated rice improved by 28%. As a result, 30% of rural households are estimated to face food insecurity and more than 55% of those households are poor. It has been estimated that almost 20% of the active population was unemployed in 2011 (World Bank Group 2014). This rate has not changed since 2001 despite the entrance into the workforce of younger Senegalese in line with the secular trend of the demographic age pyramid. According to forecasts, the Senegalese workforce is expected to increase by 36% over the next decade (World Bank Group 2014).

As of 2013, the per capita household final consumption expenditure in Senegal (the market value of all goods and services, including durable products such as cars, washing machines, and home computers purchased by households) is on an upward trend reaching US$623[2] while the gross national income per capita remains stable around US$988 (current US$). Also, in 2013, private health expenditure (% of GDP), which includes direct household (out-of-pocket) spending, private insurance, charitable donations by private corporations, was 2.03%, the lowest it has been over the past 18 years. Public health expenditure[3] (as % of GDP) was 2.22 as of 2013. Total health expenditure[4] (% of GDP) was 4.25. Its highest value over the past 18 years was 5.68 in 2004, while its lowest value was 3.93 in 1995. Senegal's consumer price index (CPI) inflation rate[5] continues to trend extremely low, partly owing to the very high degree of monetary stability due to the country's membership in the West African Economic and Monetary Union (WAEMU).

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[2] Data reported in constant 2005 US dollars. Sources: World Bank national accounts data; Organisation for Economic Co-operation and Development (OECD) National Accounts data files.

[3] Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.

[4] Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health, but does not include provision of water and sanitation.

[5] Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly.

TABLE 1 Cost of living snapshot in Dakar, Senegal

Commodity	Quantity	Average Price (US$)
Milk	1 gallon	6.50
Bread	1 pound	0.70
Eggs	1 dozen	1.90
Onions	1 pound	0.50
Beef	1 pound	3.00
Gasoline	1 gallon	5.30

Source: www.numbeo.com.

The outlook for the Senegalese economy is positive and is expected to accelerate in 2016 with the new government prioritizing diversification and exports. The Emerging Senegal Plan or "Plan Senegal Emergent" (Republic du Senegal 2014) aims to increase the productivity of Senegal's economy in the public and private sectors.[6]

FAMILY PLANNING FINANCING CONTEXT

USAID and UNFPA are the two key organizations that procure approximately 99% of the contraceptive commodities for the public sector in Senegal. In 2012, USAID procured around 3 million dollars' worth of FP commodities and UNFPA slightly less than that. Both agencies procure through their own official channels (Results in Health 2013). Following the Ouagadougou Partnership declaration, the Ministry of Health, through the Directorate of Reproductive Health and Child Survival (DSRSE), adopted a Family Planning Action Plan for the period 2012–15. Since then the government has committed to procuring FP commodities with the National Pharmacy Supply (PNA) through a proper distributors' channel. This engagement to support FP product procurement was renewed through the FP2020 declaration (London Summit). The MOH intends to increase the budget allocated to FP commodities procurement by 200% and to double the budget allocated for the FP program (Health Senegal-FP2020). At the same time, a ministerial circular has been issued providing guidance to public-sector facilities about the pricing of various contraceptives. Male and female condoms are to be provided free of cost, pills at US$0.2, injectables and Cycle Beads at US$0.4, implants and intrauterine devices (IUDs) at US$1, and Emergency Contraceptive Pills (ECPs) at US$0.15 (MSAP 2010). In the private commercial sector, the median cost of contraceptives in Senegal ranges from US$0.83 for ECPs, US$2 for injectables, to more than US$5 for IUDs (information shared by ADEMAS).[7]

Use of modern contraceptives has increased gradually over time. Today about 12 percent of married women are using modern contraceptive methods, and an additional 1 percent rely on traditional methods. Nevertheless, many women express unmet need for FP. Nearly one in three (29%) married women would like to space or limit births but are not using contraception.

[6] World Bank: www.worldbank.org.

[7] The Agency for the Development of Social Marketing (ADEMAS) is a Senegalese nonprofit organization established in 1998. ADEMAS was formed from the Senegalese contraceptive social marketing project (SOMARC), funded by USAID.

To make contraceptives more accessible and affordable, the government purchased contraceptive products from the national budget during 2010–12, eliminated import duties for contraceptives, added FP products to the formal drug-distribution system, harmonized FP product prices across the service-delivery system, introduced measures to reduce contraceptive stockouts, and strengthened social marketing activities. Nongovernmental organizations (NGOs) benefit from subsidized contraceptive products and can purchase contraceptives through the government system. Other initiatives include providing long-term FP methods at service-delivery points and through mobile services, introducing injectables in community outreach services, extending FP services to communities in 56 districts, initiating franchising with the private sector, promoting peer education for youth, and removing the requirement for husbands to authorize their wives to receive FP services. Despite these efforts, many barriers to FP remain, including the relatively high cost of basic health services for the poorest people, health providers' attitudes toward FP, religious opposition, socio-cultural resistance, and unnecessary medical requirements.

The most recent effort comes from the World Bank's Health and Nutrition Financing Project for Senegal that aims to increase utilization and quality of maternal, neonatal, and child health and nutritional services, especially among the poorest households in targeted areas of Senegal and is estimated to be implemented at a cost of US$40 million. One of the key components of this project involves improved access to maternal, nutrition, and child health services including making more modern contraceptives available to Senegalese women. This project will support several mechanisms whose main purpose is to subsidize demand for maternal health and nutrition services. Understanding the financing context for family planning in Senegal will facilitate effective placement of the PVR in the public and private sectors using affordable pricing strategies and a total market approach.

Study Objectives

New product introduction strategies often suffer from the lack of available market research and rely on hypothetical approaches to gauge consumer demand. As a new product in sub-Saharan Africa, the PVR also faces a similar challenge and can benefit immensely from a "Willingness to Pay" study. A "Willingness to Pay" study for the PVR will enable achievement of the following objectives:

1. Obtain reliable estimate of consumers' demand for the PVR in Senegal by studying the effect of price on demand;

2. Assess the "Willingness to Provide" by family planning providers and "Willingness to Procure" by procurers;

3. Facilitate evidence-based pricing for the PVR in the three sectors of interest—public, private nonprofit, and private commercial; and

4. Explore respondents' WTP for future vaginal rings (including long-acting, reversible options for nonbreastfeeding women) to assess potential demand and design access strategies.

Methods

To assess "Willingness to Pay" as part of the introduction strategy for the PVR, a multidimensional and multisectoral approach was used.

STAKEHOLDER-DRIVEN APPROACH TO WTP: THREE STAKEHOLDERS

The stakeholder-driven approach identified three key actors in the PVR WTP assessment landscape:

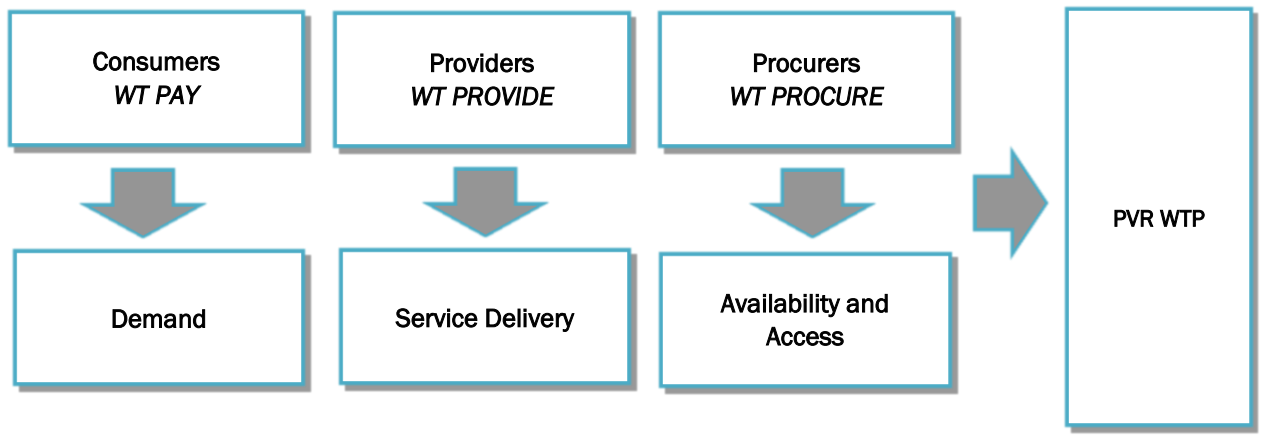
- Potential Consumers
- Family Planning Providers
- Procurers

By incorporating the voices of these three stakeholders, this approach explores the three dimensions of WTP—"Willingness to Pay," "Willingness to Provide," and "Willingness to Procure" (see Figure 1). "Willingness to Pay" for the PVR by potential consumers will help inform the demand forecast for the PVR, while ease of service delivery of the PVR can be gauged by the "Willingness to Provide" responses gathered from providers. Together, this will help bolster the case for governments/donors to assess their "Willingness to Procure" the PVR and thereby facilitate access to this new product.

SECTOR-DRIVEN APPROACH TO WTP: THREE SECTORS

Employing the guiding principles of improved access, efficient use of public resources, and increased equity, a sector-driven approach uses a potential total market model for the PVR that could involve the public sector concentrating its efforts on poor and hard-to-reach women, while the private (commercial and nonprofit) sectors predominantly focusing their efforts on wealthier women who are more likely to use or intend to use FP. Private-sector providers could offer convenient and affordable services to middle- and higher-income clients, focusing their efforts on clients with a willingness and ability to pay. It must be noted, however, that this approach does not mandate that customers use a particular provider but rather it helps them choose the providers that are most convenient, affordable, and responsive to their needs. Following this theme, an approach was designed to explore the different sectors that serve FP customers—public, private nonprofit, and private commercial sectors.

FIGURE 1 THREE DIMENSIONS OF WILLINGNESS TO PAY FOR THE PVR—WILLINGNESS TO PAY, PROVIDE, AND PROCURE



DESIGN MERITS: USING A TOTAL MARKET APPROACH

This study design incorporates a Total Market Approach (TMA). The aim of a TMA is to improve the performance of health systems by delivering the highest degree of effectiveness, equity, and efficiency with the help of coordinated activities across the three sources of supply. A previously conducted market-segmentation exercise based on DHS data revealed three broad segments of potential PVR customers (Obare et al. 2014). Based on the analysis of the socioeconomic profiles of these segments, the first segment denoted as "Easy Switchers" (urban, educated women from rich households) presents the group with potentially the highest WTP while the other two segments—"Remote First-Timers" (rural, poorly educated women from the poorest households) and "Growth Feeders" (young women with a future need for the PVR) present potentially decreasing levels of WTP. By utilizing a stakeholder-driven multisectoral approach to assess users' WTP, this study will help develop affordable yet competitive pricing strategies for the PVR. The study findings will help us formulate distribution strategies to match the potential PVR consumer segments to the sectors that can best serve them, adopting a total market model.

SURVEY TOOLS

The following specific survey instruments have been designed for target respondents (Table 2 summarizes the study design and methodology):

1. For primary stakeholders, the potential PVR consumer, a two-pronged strategy to assess their "Willingness to Pay" (WT Pay) was designed:

    a. WT Pay Survey (Direct Method): Consisted of interviews with potential PVR consumers directly to estimate the potential number of women who will pay a given price for the PVR and the characteristics of the individuals who will or will not pay that price. Exit interviews were conducted with women as they left facilities where FP services were offered. Respondents were shown a product sample and provided with a detailed description (use/benefits) of the PVR. Respondent interest was ascertained (by providing an option to rate their interest in the PVR before starting the survey) and uninterested respondents were not interviewed after recording the reason for their lack of interest. Questions focused on PVR pricing following a bidding game model of the Contingent Valuation methodology (Foreit and Foreit 2004). Questions started with a modest price assumption with a starter price of the PVR pegged to a three-month supply of Progestin-only pills. The series of questions assume a 10% increase in the price and subsequently a higher or lower increase based on the participant's response. Different price references for the PVR have been defined based on the sector (public, private nonprofit, and private commercial sectors).

    b. Price-Tracking Survey (Indirect Method): In this survey, adapted from the price-tracking survey manual designed by the World Health Organization (WHO) and Health Action International (HAI),[8] we tracked the real prices paid by women for family planning services/products in the three sectors: public, private nonprofit, and private commercial. This survey consisted of interviews with staff in facilities that were responsible for FP commodities management to get a snapshot of the pricing landscape of currently sold contraceptives in country and to estimate "Affordability" and "Ability to Pay" of potential PVR consumers to enable competitive pricing for the PVR.

[8] WHO/HAI: http://www.haiweb.org/medicineprices.

2. For the Providers, a "WT Provide Survey" was conducted. Providers were asked questions to gauge their willingness to provide the PVR as part of the existing family planning method options. In addition, they were asked to estimate the maximum amount that should be charged (if any) for the product or as a service fee for providing the PVR. Questions to assess the providers' interest in potential rings of the future (long-acting reversible options for nonbreastfeeding women) were also included to help inform new innovation and design service delivery strategies.

3. For the procurers, a "WT Procure Survey" was conducted to ask them to provide the price list of procured family planning commodities and their assessment of a reasonable price estimate for procuring the PVR, and to assess their "Willingness to Procure" this new product.

TABLE 2 Study design, methodology, and scope

Stakeholder	Methodology	Target respondents
Consumers	a) WT Pay Survey b) Price-Tracking Survey	a) Potential consumers (women aged 18–49) b) Pharmacists; facilities in charge at social marketing outlets; and public FP clinics
Providers	WT Providers' Survey	FP service providers and members of professional associations, such as pharmacists, OB/GYNs, midwives, nurses, other providers
Procurers	WT Procurers' Survey	MOH, USAID Mission, UNFPA, MSI/Senegal, ADEMAS, and large pharma distributors

SAMPLES AND FACILITIES

A stratified sampling strategy was used for the consumer, price-tracking, and provider surveys. The sample size for each sector is proportional to the family planning coverage offered by each sector in the country and is based on DHS data. The surveys covered seven urban and peri-urban districts in the Dakar region.[9] Within these districts, 49 public facilities (including hospitals, health centers, and health posts), 13 private nonprofit facilities (including health centers and health posts), and 32 private commercial facilities (including private clinics and pharmacies) were selected. The selection of the facilities was based on FP services uptake and facilitated by district Reproductive Health Coordinators from the DSRSE.

- For the consumer's survey, sample size was estimated at 400 urban women aged 18 or above split proportionally into the three sectors as shown in Table 3. In the public sector, a range of 8 to 10 consumers was fixed for hospitals and health centers and a range of 4 to 5 consumers for the health posts to reflect the FP caseload at each type of facility. In the private nonprofit sector, a range of 2 to 3 FP consumers was fixed and in the private commercial sector, 1 FP client was fixed.

[9] These districts matched with the study areas of an acceptability study of the PVR conducted earlier. They included: District Sud, District Centre, District Nord, District Ouest, Guediawaye District, Pikine District, and Rufisque District

TABLE 3 Consumer survey sample size

Sector	Number of respondents	Percentage
Public	388	77
Private nonprofit	61	12
Private commercial	56	11
Total	**505**	**100**

- For the price-tracking survey, 94 facilities were visited and a total of 96 respondents in charge of FP commodities management were interviewed. Various cadres of staff were included in the survey (pharmacy owners and vendors, managers, logisticians) and all three sectors were covered. Table 4 summarizes the number and type of respondents by sector.

TABLE 4 Price-tracking survey sample size

Sector	Number of respondents	Percentage
Public	50	52
Private nonprofit	13	13
Private commercial	33	35
Total	**96**	**100**

- For the providers' survey (see Table 5), a total of 134 FP providers of different cadres were interviewed in all three sectors.

- For the procurers' survey, a total of 14 procurers participated in in-depth interviews. These interviews were conducted by Population Council staff. Respondents of this survey included representatives from both the global procurement agencies (UNFPA and USAID), key procurers in the country such as PNA, ADEMAS, MSI/Senegal, and other large commercial pharmaceutical distributors.

TABLE 5 Providers survey sample size

Sector	Number of respondents	Percentage
Public	87	65
Private nonprofit	17	13
Private commercial	30	22
Total	**134**	**100**

STUDY LOGISTICS

Ethical Considerations: The study protocol was approved by the Population Council's IRB and by the National Committee for Ethics in Health Research (CNERS). Informed consent was obtained from all participants. Anonymity of participants and confidentiality of the information provided was ensured.

Training of Data Collectors: Five data collectors were trained over two days in the objectives of the study, ethics in research, and questionnaire administration. All survey questionnaires were pretested and adapted before the data-collection process commenced.

Study Monitoring: Population Council staff managed the process of data collection through a daily visit schedule in the first week and twice a week for the rest of the period. Data collection took 20 days for the three surveys and more for the procurers' survey, due to the lack of availability of some of these stakeholders.

Data Management: Data were entered in CS-PRO and cleaned before being transposed into SPSS and STATA format for analysis. Univariate and bivariate analysis were used for data interpretation. For procurers' interviews, a content analysis approach was used for data interpretation.

Results

PRICE-TRACKING SURVEY

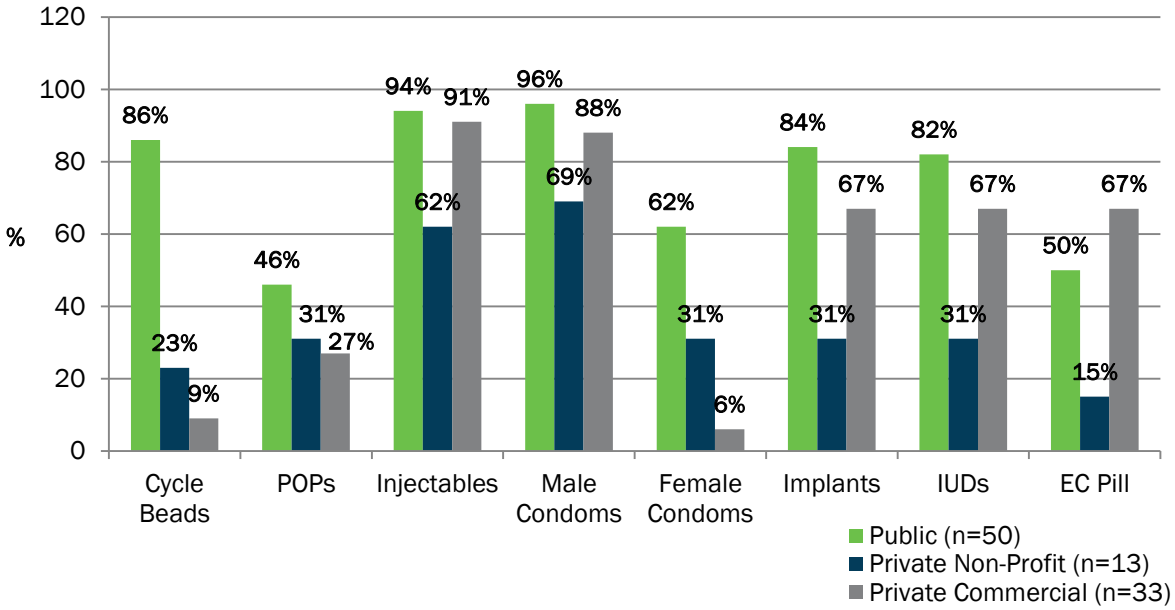
This survey included 94 facilities across the three sectors, and Table 6 presents the profile of respondents by sector. A total of 96 respondents participated in this survey. In each facility, staff in charge of FP commodities procurement and management were interviewed. In the public sector, site managers and logisticians in charge of FP commodities procurement and management were the majority of respondents. In the private nonprofit and commercial sectors, pharmacy/private clinic owners and managers were interviewed reflecting the differences in how the functions are carried out across the three sectors.

TABLE 6 Price-tracking survey sample characteristics

Type of participant	Public sector (%)	Private nonprofit sector (%)	Private commercial sector (%)
Pharmacy/clinic owner/site responsible	2	0	39
Manager	58	77	39
Logisticians	40	23	6
Pharmacy counter staff	0	0	16

Method Availability by Sector

FIGURE 2 CONTRACEPTIVE AVAILABILITY SNAPSHOT BY SECTOR AS REPORTED ON THE DAY OF THE SURVEY



EC = Emergency contraceptive.

The range of methods defined by the National Action Plan for Family Planning is available in all three sectors. Cycle Beads and female condoms are mostly available in the public sector. EC pills as well as implants are less available in the private nonprofit sector than the other two sectors. Injectables and male condoms are well stocked in both the public and private commercial sectors. As in most countries, EC pills are more widely available in the private commercial sector than the other two sectors; this could indicate that users may prefer to obtain this method from pharmacies and other outlets that provide privacy and immediate availability. This pattern can suggest that in addition to the public and the nonprofit sectors, the utilization of commercial outlets such as pharmacies for the provision of the PVR might be important from the users' perspective since it is also a user-initiated method.

Table 7 shows the coverage of brands of contraceptives offered by the respective sectors from the facilities surveyed. The sector offering the highest coverage for a brand is denoted by ✓. From the table, we can see that common brands of pills (POPs and COCPs) were mostly covered by the public sector. Injectables such as Depo Provera enjoy equally high coverage in all three sectors. This indicates that the demand for injectables is handled and distributed in an equitable manner among the three sectors.

TABLE 7 Price-tracking survey: Coverage of contraceptive brands by sector[10]

Method	Brand	Public sector	Private nonprofit sector	Private commercial sector
Progestin-only-pills (POPs)	Microlut	✓		
	Minidril	✓		
	Ovrette	✓		
	Microval	✓		
Combined oral contraceptive pills (COCPs)	Lofemenal	✓		
	Adepal			✓
	Microgynon	✓		
	Securil	✓		
	Stediril	✓		
	Trinordiol	✓	-	-
Emergency contraceptive pills (EC pills)	Norlevo	✓		✓
Injectables	Depo Provera	✓	✓	✓
Male condoms		✓		✓
Female condoms		✓		
Implants		✓		✓
IUDs		✓		✓
Cycle Beads		✓		

Pills and injectables are the most popular methods requested by users in these facilities. This finding is in agreement with modern FP use reported in the national DHS (ANSD 2010–11).

Inter-Sectoral Price Comparisons

Table 8 shows the price comparisons across the three sectors for the commonly available methods.

TABLE 8 Price range (FCFA) of commonly available contraceptives by sector

Type of method	Public sector		Private nonprofit sector		Private commercial sector	
	Min.	Max.	Min.	Max.	Min.	Max.
Cycle beads	100	500	0	200	200	2,000
Pills	200	300	200	2,000	882	2,635
Injectables	200	300	200	2,000	300	2,200
Male condoms	0[11]	480	600	5,400	100	5,900
Female condoms	100	200	—	—	—	—
Implants	500	1,000	500	3,000	500	5,000
IUDs	500	1,000	500	3,000	1,000	7,000
Emergency contraceptive pills	75	5,037	100	5,037	500	5,000

[10] A ✓ mark denotes the sector with highest availability (%) of a particular brand; all of these methods/brands (except Trinordiol) were available in all three sectors.

[11] Most respondents reported that male condoms are given free of cost.

Contraceptive prices are lower in the public sector than in the private nonprofit and private commercial sectors. The maximum price reported by respondents often includes additional costs related to the provision of these methods such as consultation fees and other charges for equipment/consumables, such as method administration kits. Respondents are not always knowledgeable about the system of pricing and the level of margin and taxes that are included in the price. Providers reported that these decisions are the responsibility of national authorities. Some methods, such as EC Pills, are sold at comparable prices across the 3 sectors (~5,000 FCFA), while others such as implants (1,000–5,000 FCFA) and injectables (300–2,200 FCFA) varied widely between the sectors. In general, pricing in the nonprofit sector is competitive and almost the same as the commercial sector. This indicates that the population in general has the ability to pay for FP products and can be effectively served via the private sectors.

Product Pricing and Stocking Frequency

As indicated above, respondents are not often aware of how contraceptives are priced and procured. For public and private nonprofit sector respondents, prices are fixed by the government. Some reported that the price is defined by district level or by the Informed Push Model and also by the Ministry of Health. This divergence of pricing has been noted across other reproductive health technologies as well and is further complicated by decentralized governance whereby districts can procure and sell the same contraceptives at prices that differ from another health district. The respondents also reported that product pricing has remained stable since 2012 and price changes are infrequent.

For the private commercial sector, prices are defined based on the purchase price from suppliers. Taxes and margins are then applied on the price, but respondents are not aware about the level of margin applied for commodity pricing. For the public sector, respondents reported that the margin is fixed by the Ministry of Health for each level of the health pyramid. Periodicity of FP commodity procurement varies according to the need and the sector. FP commodities can be purchased on a daily, monthly, or quarterly basis. Decisions on purchasing FP commodities depend on the level of stock available. In general, the informed push distribution model seems to be effectively implemented in the public sector facilities and stocking of commodities is well regulated. Most facilities reported that they replenish their supplies on a periodic basis to avoid stockouts.

CONSUMER SURVEY

Consumer Demographic Characteristics by Sector

Consumers' profile by age indicates a young population. In all the three sectors, seven women in ten are under 35 years of age, with a median age of 29. Table 9 shows that irrespective of sector, the sample is well represented by young and educated women who fit into the segment of likely users of modern contraceptives including new methods such as the PVR.

TABLE 9 Distribution of women by age, education, marital status, and sector

Variable	Public		Private nonprofit		Private commercial	
	n=388	%	n=61	%	n=56	%
Age						
15–24	100	26	20	33	13	23
25–34	192	49	23	38	29	52
>35	96	25	18	30	14	25
Median Age	*29*		*29*		*29*	
Education						
None	97	25	11	18	3	5.4
Primary	127	32.5	20	32.8	16	28.6
College and higher	131	34	27	44.3	33	58.9
Other	33	8.5	3	4.9	4	7.1
Marital Status						
Yes	364	93	56	91.8	49	87.5
No	24	6.2	5	8.2	7	12.5

Table 9 also indicates that women's educational status remains low for the public and private nonprofit sectors. Half of the respondents have primary schooling or less. On the other hand, among the respondents who accessed the private commercial sector for their FP needs, 58.9% are highly educated women having attained college- or university-level education. Data shows also that the majority are married.

TABLE 10 Distribution of occupations among women and partner by sector

Variable	Public sector		Private nonprofit sector		Private commercial sector	
	n=388	%	n=61	%	n=56	%
Occupation						
Housewife/not working	164	42.3	24	39.3	19	33.9
Petty business/hawker	87	22.4	11	18	9	16.1
Business (wholesale/ retail)	3	0.8	1	1.6	0	0
Independent (working in informal sector)	39	10.1	6	9.8	13	23.2
Manual (factory/domestic svc/farm laborer)	57	14.7	10	16.4	7	12.5
Partner's occupation						
Business (wholesale/retail)	36	9.3	5	8.2	4	7.1
Not working	23	5.9	4	6.6	4	7.1
Independent (working in informal sector)	125	32.2	17	27.9	24	42.9
Working in public sector (administration)	42	10.8	5	8.2	4	7.1
Manual (factory/domestic svc/farm laborer)	95	24.5	14	23	6	10.7

The majority of the respondents, irrespective of sector, are involved in activities that do not generate substantial income. They are either not working or involved in small cash businesses. Women working in independent informal businesses are more represented in the private commercial sector. Their partners predominantly work in the informal sector (32% within the public sector consumers, 28% and 43% among the private nonprofit and commercial sectors, respectively). This is representative of the national occupation trend as the informal sector contributes to about 42% of GDP in Senegal.[12] Partners also engage in manual labor, including factory services and agriculture (25% in public sector, 23% in private nonprofit sector, and 11% in private commercial sectors).

[12] Agence de Presse Senegalaise: https://asokoinsight.com/news/senegal-the-informal-sector-accounts-for-41-6-of-the-gdp/;
The African Development Bank Group: "Informal sector contributes about 55 percent of sub-Saharan Africa's GDP and 80 percent of the labor force."

Respondents' Family planning and Socioeconomic profile

A consumer's socioeconomic status is one of the most important aspects of gauging willingness to pay for FP commodities in these settings. Visits to the hair salon and expenses related to cell phone use can be used to index the level of discretionary spending of these user groups. The reproductive health profiles of respondents indicate that nearly two-thirds of them have less than four children and that most of them are using or intend to use contraceptives (9 in 10). The majority of the women belong to a household owning a television (9 in 10).

TABLE 11 Distribution of women by family planning and economic profile, according to sector

Variable	Public		Private nonprofit		Private commercial	
	n=388	%	n=61	%	n=56	%
Number of children						
1–3	264	68	37	60.7	36	64.3
3–5	56	14.4	11	18	8	14.3
>5	30	7.7	4	6.5	3	5.4
No children	38	9.8	9	14.8	9	16.1
FP use/Intent						
Yes, I use	259	66.8	36	59	25	44.6
Intend to use	107	27.6	18	29.5	28	50
Do not use	22	5.7	7	11.5	3	5.4
Household items						
Television	359	92.5	56	91.8	53	94.6
Refrigerator	216	55.7	38	62.3	44	78.6
Car	50	12.9	13	21.3	18	32.1
Mobile phone	371	95.6	61	100	56	100
Radio	266	68.6	47	77	51	91.1
Salon visits						
Once/week	24	6.2	2	3.3	3	5.4
Twice/month	44	11.3	7	11.5	5	8.9
Once/month	154	39.7	24	39.3	29	51.8
Occasionally	84	21.7	16	26.2	9	16.1
Do not visit	48	12.4	4	6.6	4	7.1
Monthly income (FCFA)						
<100,000	58	15	4	6.6	3	5.4
100,000–499,000	63	16.2	4	6.6	7	12.5
500,000–999,000	15	3.9	3	4.9	3	5.4
>1,000,000	6	1.5	0	0	3	5.4
Did not respond	246	63.4	50	82	40	71.4
Monthly expenses (FCFA)						
<50,000	16	4.1	2	3.3	0	0
50,000–100,000	101	26	14	23	10	17.9
101,000–150,000	69	17.8	15	24.6	7	12.5
151,000–200,000	58	15	11	18	8	14.3
>200,000	89	22.9	11	18	26	46.4
Did not respond	55	14.2	8	13.1	5	8.9
Monthly FP expense (FCFA)						
<500	6	1.6	5	8.2	2	3.6
500–1,500	219	56.5	23	37.7	7	5.4
1,500 –3,000	23	6	8	13.1	11	19.6
>3,001	8	2.1	3	4.9	4	7.1
Did not respond	125	32.2	21	34.4	32	57.1

Respondents reporting that their household owns a car are slightly more represented in the private commercial sector (32%). More importantly, nearly all women own a mobile phone for self-use.[13] Periodicity of visiting a hair salon is more likely on a monthly basis as shown in Table 11, with a greater percentage of respondents linked to the private commercial sector. The commercial sector consumers clearly spend more on salons and use technology at home (cell phones, television).

Most of the respondents were not aware of their household income or were reluctant to report it in a survey. Out of those who responded, 16% were earning up to 500,000 FCFA (approx. US$830) per month. Respondents reporting a monthly family expense over 150,000 FCFA (approx. US$300) are most represented in the private commercial sector (6 women in 10). Although an important percentage of respondents did not respond regarding their FP expense, data show that for the public sector and the private nonprofit sector, FP monthly expenses are estimated to be in the range of 500–1,000 FCFA (approx. US$1–2/month). This finding suggests the amount respondents are willing to spend on a monthly basis, even if they are not currently using a contraceptive. This amount is equivalent to the price of a dozen eggs or two pounds of onions in the Dakar region.

Willingness to Pay (WTP) for the PVR by Level of Increments and Sector

Following the Contingent Valuation methodology, a bidding game was played with respondents who expressed an interest in the PVR after seeing a sample and learning how this new contraceptive vaginal ring works. These comprised 291 respondents in the public sector, 47 in the private nonprofit sector, and 38 in the private commercial sector. The willingness to try a new product was very high (75%) among public and private nonprofit sector respondents. About 68% of respondents from the private commercial sector expressed interest in trying the PVR. The women who did not express an interest in the PVR exited the survey without proceeding to the game.

To estimate consumers' WTP for the PVR, a starter price was defined for each sector.[14] This starter price was based on a three-month supply of Progestin-only pills and was fixed at US$0.62, US$1.86, and US$2.49, respectively, for the public, private nonprofit, and private commercial sectors. Then, a series of questions assuming an increase of 10% in the price and subsequently a higher or lower increase based on the participant's response were asked to gauge consumers' WTP for the PVR.

Table 12 shows that in all three sectors consumers expressed a real interest in purchasing the PVR. Their interest in purchasing this new product was confirmed when they were asked if they were ready to pay for it at the starter price, and even if this price were to increase. In all three sectors, the majority of consumers expressed an interest in paying for the PVR, even if the price increased 20% from the starter price—97% (282) in the public, 95% (39) in the private nonprofit, and 97% (37) in the private commercial sector. Moreover, 97% of respondents interested in the method indicated that they would pay an additional 5% over their maximum price. They were willing to step up and pay more for the PVR if the additional 5% charge would be used toward facilitating contraception for rural women who face access challenges.

[13] The lowest price for a phone card for talk-time is around $2 (968 FCFA) and sometimes there are plans that provide talk-time for $1 (484 FCFA) for 30 minutes. This indicates that women can be reached by cell phone for information and education.

[14] At the time of the survey, US$1 = 484 FCFA.

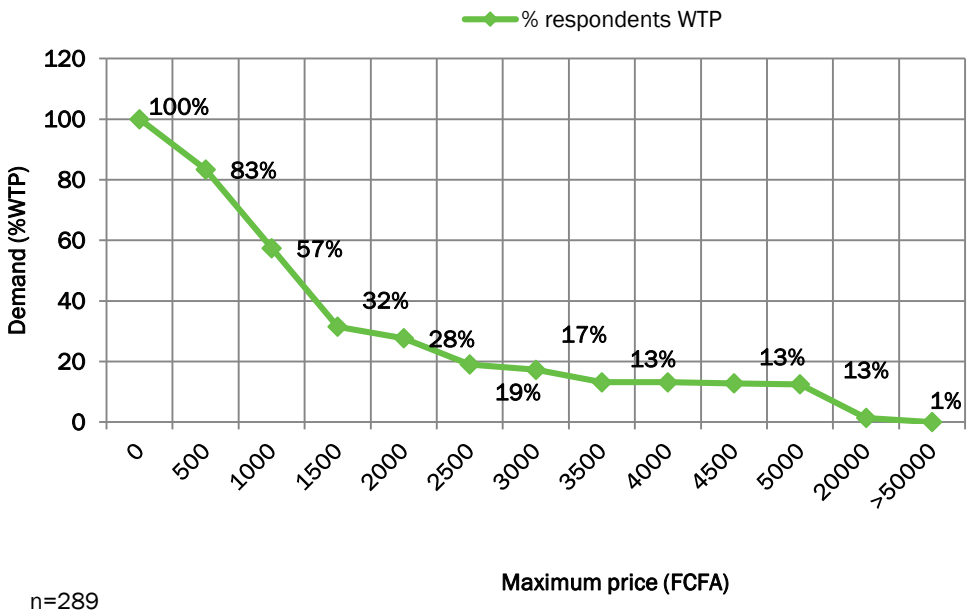
TABLE 12 Willingness to Pay for the PVR by level of increments and sector

Variable	Public sector (300 FCFA = US$0.62)	Private nonprofit sector (900 FCFA = US$1.86)	Private commercial sector (1,200 FCFA = US$2.49)
	n	n	n
Starter price	289	44	37
10% increment	283	39	37
20% increment	282	39	37
Respondents interested in PVR	291	47	38
Total	**388**	**61**	**56**

Demand Curves by Sector

Figure 3 describes public sector consumers' maximum willingness to pay for the PVR. The Y axis shows the demand for the PVR as the price point changes along the X axis.

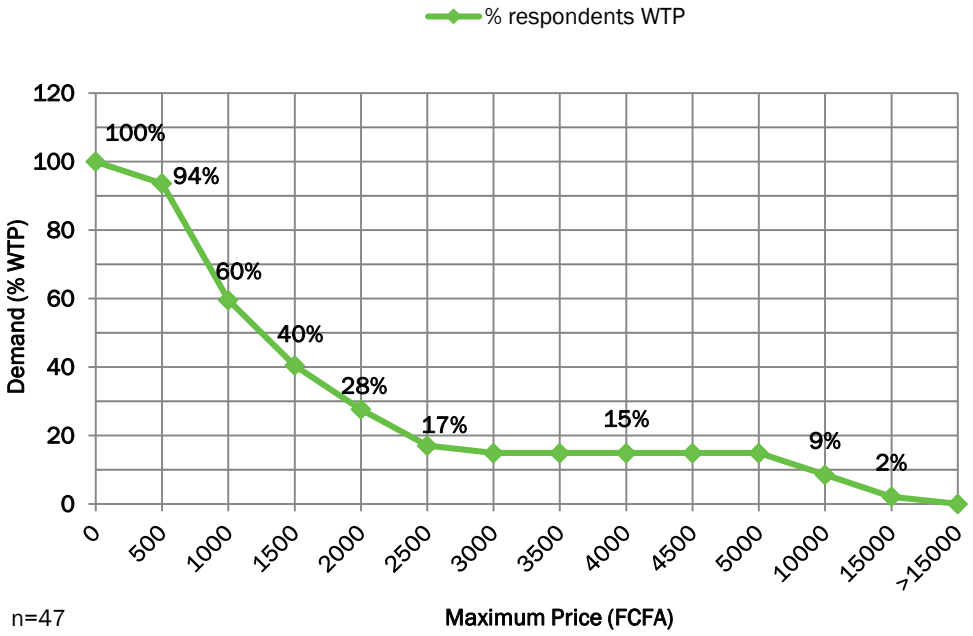
FIGURE 3 CONSUMER DEMAND CURVE FOR PVR—PUBLIC SECTOR



n=289

Most public sector respondents (83%) indicated that the PVR should be offered at a price of 500 FCFA. The demand for PVR at 1,000 FCFA stands at 57% and reduces to 13% when the price is 3,500 FCFA, with subsequent declines thereafter. We compared these findings with discretionary spending on hair salon visits that we had estimated to be 5,670 FCFA per visit. These findings suggest that there is significant room for pricing the PVR over 500 FCFA (approx. US$1) in the public sector.

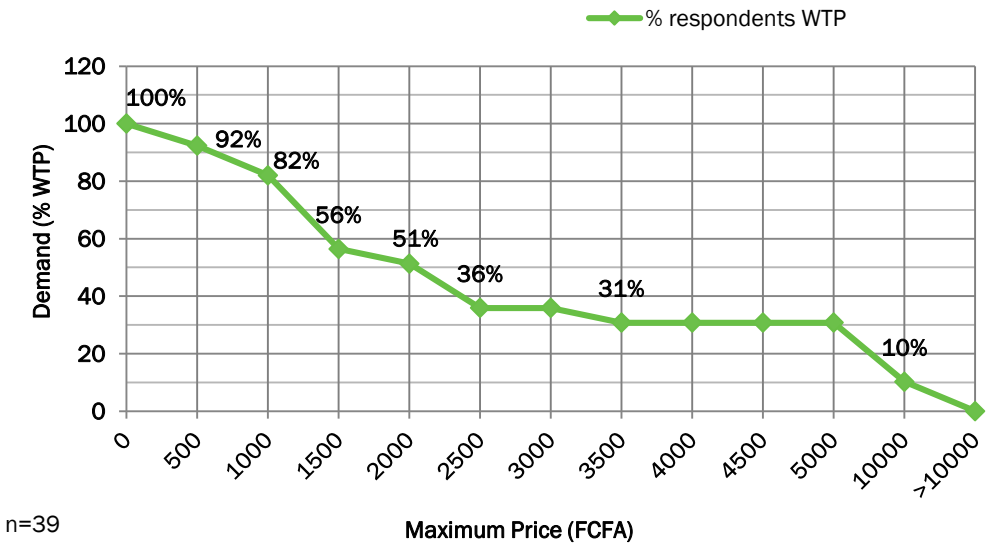
FIGURE 4 CONSUMER DEMAND CURVE FOR PVR—PRIVATE NONPROFIT SECTOR



n=47

Figure 4 indicates similar perspectives for private nonprofit sector respondents about their willingness to pay for the PVR. At a price point of 500 CFCA, PVR enjoys the maximum demand of 94%. Subsequently, the demand reduces to 60% as the price goes up to 1,000 FCFA and further declines to 15% when the price is higher than 4,000 FCFA.

FIGURE 5 CONSUMER DEMAND CURVE FOR PVR—PRIVATE COMMERCIAL SECTOR



n=39

A different scenario is observed in the private commercial sector. Figure 5 shows a higher percentage of women who expressed a willingness to pay for the PVR. The demand remains a high 82% even when the price is at 1,000 FCFA. Unlike the other sectors, half of the women (51%) expressed a desire to pay for the PVR even if the price rose to 2,000 FCFA. This clearly demonstrates the higher levels of "ability to pay" among consumers in this sector.

Sample Revenue Estimates by Sector

Based on these willingness to pay responses from potential consumers, we arrived at a model for assessing PVR sales revenue by sector. By looking at three different pricing scenarios—low (500 FCFA), medium (2,000 FCFA), and high (10,000 FCFA), we can estimate the annual revenue generated by the three sectors at different price levels of the PVR (Table 13). For four cycles of use per year, with the PVR at its low and high price points, the public sector can expect to generate annual revenues of US$988 (478,192 FCFA) and US$3,105 (1,502,820 FCFA), respectively. The private nonprofit and commercial sectors generate comparable revenues with almost identical demand levels at the low and high price points. For the medium price level, the commercial sector can bring up to US$329 (159,236 FCFA) while the nonprofit sector can gain about US$217 (105,028). These numbers are illustrative and representative of the study sample. This model can be further developed to study the revenue impact of users' willingness to pay on the overall demand for PVR in Senegal and enhance the role of the three sectors in providing this new method in Senegal.

TABLE 13 Estimated PVR annual revenue by sector based on WTP responses

Sector	Demand for PVR at low price point–500 FCFA (US$ 1.03)		Demand for PVR at medium price point–2,000 FCFA (US$ 4.13)		Demand for PVR at high price point–10,000 FCFA (US$ 20.66)	
	WTP (%)	Estimated annual revenue (US$)	WTP (%)	Estimated annual revenue (US$)	WTP (%)	Estimated annual revenue (US$)
Public (n=289)	83	988	28	1,337	13	3,105
Private nonprofit (n=47)	94	182	28	217	9	350
Private commercial (n=39)	92	1,095	51	329	10	322

FIGURE 6 REASONS FOR WTP FOR THE PVR—PUBLIC SECTOR

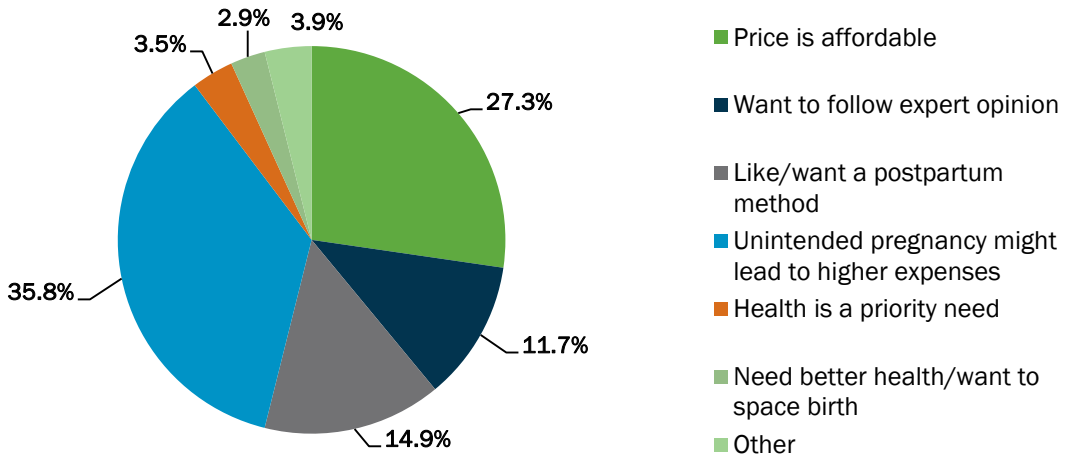


FIGURE 7 REASONS FOR WTP FOR THE PVR—PRIVATE NONPROFIT SECTOR

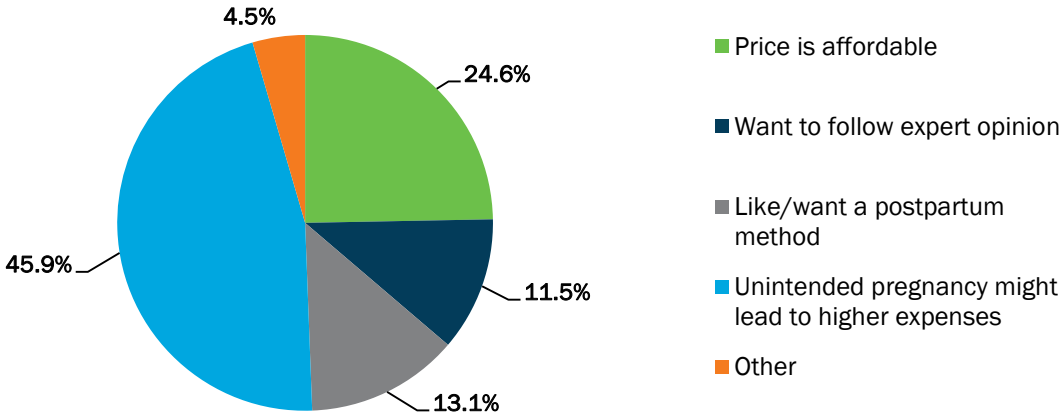
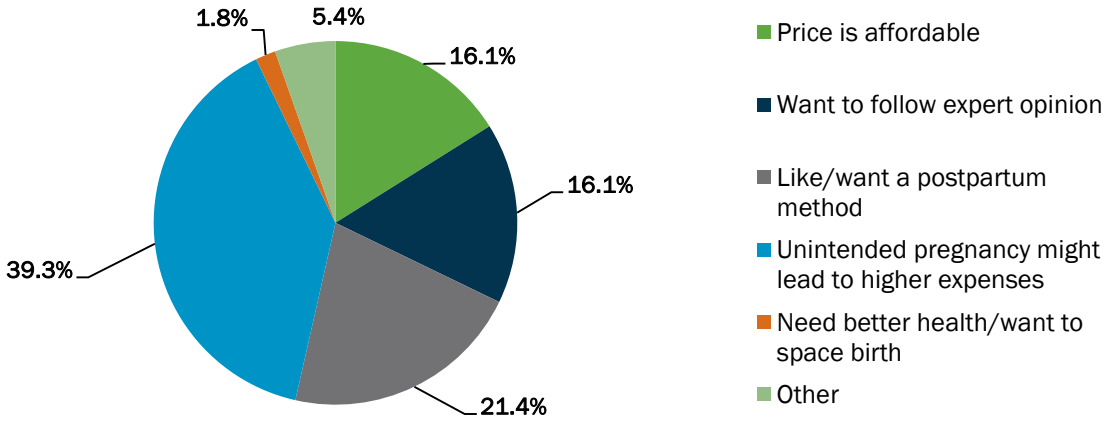


FIGURE 8 REASONS FOR WTP FOR THE PVR—PRIVATE COMMERCIAL SECTOR



As indicated in Figures 6, 7, and 8, uniformly across all three sectors women's willingness to pay for the PVR is mainly related to their desire to avoid unwanted pregnancies that will generate additional expenses. The affordability of the PVR also remains a common reason reported by women in all three sectors for their WTP. If the PVR were to be priced above what they deem affordable, the majority of public and private commercial sector respondents would still try to purchase it. The private nonprofit consumers indicated that they would look for affordable alternatives, while still expressing willingness to purchase the PVR as the first choice.

WTP for the One-Year Contraceptive Vaginal Ring by Level of Increments and Sector

When asked about a ring that could provide a year of contraceptive protection, consumers expressed great interest. The majority (74%) of the women interviewed reported that they would be interested in a future ring for nonbreastfeeding women (as shown in Table 14). A starter price for the future ring was fixed at US$3 (1,452 FCFA) for the public sector, US$7 (3,388 FCFA) for the private nonprofit sector, and US$10 (4,840 FCFA) for the private commercial sector. The starter price was also based on additional design and use benefits offered by this ring.

TABLE 14 WTP for the One-Year CVR by level of increments and sector

Variable	Public sector	Private nonprofit sector	Private commercial sector
	n	n	n
Starter price	286	44	37
10% increment	278	42	36
20% increment	274	39	34
Respondents interested in PVR	290	46	38

The women who expressed interest in the one-year ring participated in a bidding game. Over 85% expressed willingness to pay for the ring even if the price rose 20% over the starter price—95% (274 women) in the public, 85% (39 women) in the private nonprofit, and 90% (34 women) in the private commercial sector. Moreover, 91% of respondents interested in this method indicated that they would pay an additional 5% over their maximum price if required. This WTP amount, if adopted, could help widen FP access to women in low-resource settings.

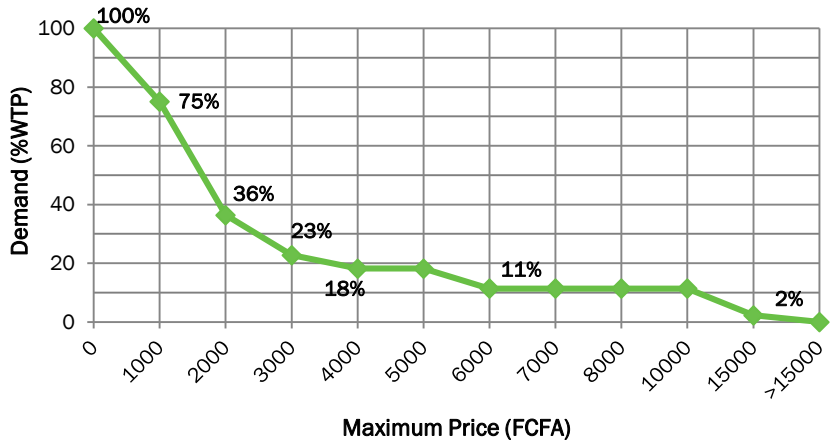
Figure 9 illustrates WTP for the one-year ring among public sector respondents. Nearly 75% of these respondents expressed their WTP if the price is at 1,000 FCFA. This percentage decreases to 41% when the price is at 2,000 FCFA, with 20% expressing a WTP when the price is at 4,000 FCFA.

FIGURE 9 CONSUMER DEMAND FOR ONE-YEAR CVR—PUBLIC SECTOR

n=289

As shown in Figure 10, the same scenario is observed for private nonprofit respondents. About 7 women in 10 are ready to pay for the one-year ring if the price is 1,000 FCFA (approx. US$2). Their interest in buying the product decreases when the price is higher. Only 36% reported WTP for the product at a price of 2,000 FCFA (approx. US$4). This percentage decreases (1 woman in 10) when the price is over 5,000 FCFA (approx. US$10).

FIGURE 10 CONSUMER DEMAND FOR ONE-YEAR CVR—PRIVATE NONPROFIT SECTOR



n=44

Private commercial sector respondents expressed WTP a higher price for the one-year ring. As shown in Figure 11, half of the respondents indicated their WTP for the one-year ring at a price between 3,000 FCFA (approx. US$6) and 4,000 FCFA (approx. US$8).

FIGURE 11 CONSUMER DEMAND FOR ONE-YEAR CVR–PRIVATE COMMERCIAL SECTOR

n=38

Consumer Comments on PVR and One-Year CVR

Consumers shared their opinions on the ring. Irrespective of the sector and the product (PVR versus one-year ring), consumers expressed similar opinions about these new technologies.

As shown in Table 15, consumers expressed positive opinions on both rings (PVR and one-year ring). Mainly, they described how this new method is easy-to-use, that it presents less risk for the mother and her baby, and that PVR is not a binding method compared with others, meaning that it can be discontinued by the user at will. Some women expressed negative opinions about the ring's big size and their fear of being exposed to risk of infection because the PVR is a vaginal method. Some reported that it is risky to ask women to insert the PVR themselves. Moreover, consumers formulated recommendations for PVR introduction. Women with positive opinions thought that PVR needs to be included in the method mix, that the duration of action should be extended, and that its size should be reduced.

TABLE 15 Consumer comments on PVR and One-Year CVR

Positive opinions	Negative opinions
• Ring is easy to use • PVR is a method that is not binding; it is a practical method • Ring presents less risk for mother and baby • Ring allows women to be autonomous • No need to visit the clinics every time for FP services • Ring is an interesting method and a good product • Ring is a discreet method, no risk to forget • Ring could fit for women who want to switch to another method • Ring enables a woman to better take care of herself and the baby	• It is a risk asking women to insert it themselves • Fear of introducing a foreign body in the vagina • I prefer my method • Risk of infection when using ring; ring size is too big

PROVIDER SURVEY

The providers' profile indicates that midwives are more represented among the respondents, irrespective of the sector and comprised of all respondents in the private nonprofit sector. The private commercial sector had a wider mix of provider cadres with 7% of the respondents being pharmacists. Most of them have a high level of education (secondary or university level).

Provider Cadre by Sector

In the public sector, most respondents were working in service delivery (66%), whereas 33% were working in the area of services management. For the private nonprofit sector, 8 providers in 10 were working in service delivery, whereas all respondents in the private commercial sector were involved in the service delivery area.

TABLE 16 Providers' profile by sector

	Sector (%)		
Provider profile	Public (n=87)	Private nonprofit (n=17)	Private commercial (n=30)
Gynecologist	8	0	6
Physician (generalist)	0	0	7
Midwife	78	100	50
Nurse	8	0	13
Nurse-assistant	4	0	3
Pharmacist	0	0	7
Medical representative	0	0	7
Counter agent	0	0	7
Other	2	0	0

Qualitative Comments by Sector

Results from the providers' survey indicate a positive attitude toward the PVR and the one-year ring. Irrespective of the sector, almost all providers approve of PVR introduction in the FP program and express willingness to provide this new technology. As shown in Table 17, they are also interested in the one-year ring and think that consumers will like the product. They justify their approval because the PVR is an easy-to-use method.

TABLE 17 Provider comments on the PVR and One-Year CVR by sector

Provider profile	Public (%)	Private nonprofit (%)	Private commercial (%)
Approve PVR introduction in FP program	98	100	97
Willingness to provide PVR	95	100	97
Consumer will be interested in one-year ring	94	88	97
Consumer will like the PVR	86	77	80
What I liked about the PVR?			
Size	14	0	17
Easy to use	76	94	60
Packaging	2	0	0
Flexibility (texture)	5	12	7
Other	3	0	0

Regarding PVR pricing, providers expressed an interest in pay based upon affordability. As indicated in Table 18, most providers suggested a price between 500 and 1,000 FCFA (approx. US$1-2) to allow the PVR to match the fixed price for other available methods.

TABLE 18 Providers' suggested price for PVR by sector

	Sector (%)		
Provider profile	Public (n=87)	Private nonprofit (n=17)	Private commercial (n=30)
Under 500 FCFA	17	30	20
500–1,000 FCFA	55	41	43
1,001–2,000 FCFA	14	29	17
2,001–5,000 FCFA	6	0	10
Other (does not know/no response)	8	0	10

PROCURER SURVEY

Procurer Profile by Sector

The procurers' profile by sector and areas covered is shown in Table 19. Thirteen institutions involved in the procurement system were visited, and 14 interviews were performed. Three institutions make up the public sector (DPM, DSRSE, and PNA), six make up the private nonprofit sector, two make up the private commercial sector, and the remaining two are the donors sector (UNFPA and USAID). Most of these institutions and initiatives support the national procurement system and include the methods that are approved by MOH policy and service guidelines.

TABLE 19 Procurers' profile by sector

Sector	Structure	Method procured/supported	Sector covered (type/region)	n
Public	DPM PNA DSRSE	All program methods: pills; injectables (DMPA, Sayana Press); male and female condoms; implants (Jadelle, Implanon); IUDs; Cycle Beads; EC pills; tubal ligation	Public; national coverage	3
Private nonprofit	ADEMAS	Pills; injectables (Sayana Press); male condoms	Public; national coverage	6
	Childfund	Pills; injectables (DMPA, Sayana Press), male condoms	Public; community level; national coverage	
	IntraHealth	Provides technical assistance to service-delivery sites in accordance with the priorities identified by the government; focuses on long-acting methods	Public; national coverage	
	IPM	All program methods: pills; injectables (DMPA, Sayana Press); condoms; implants (Jadelle, Implanon); IUDs; Cycle Beads; EC pills	Public; national coverage	
	MSI	All program methods: pills; injectables (DMPA, Sayana Press); condoms; implants (Jadelle, Implanon); IUDs; necklaces; EC pills	Public and private nonprofit	
	PATH	Provide technical assistance to the Sayana Press introduction process	Public, private nonprofit, and private commercial (Dakar, Thiès, Fatick et Saint- Louis)	
Private commercial	DIDDY	Condoms; pills; injectables; Securil Press	Private	2
	MERCK	Implants (Implanon)	Private	
Donors	UNFPA	Support priorities and initiatives identified by the government	Public and private nonprofit	2
	USAID	Support priorities and initiatives identified by the government	Public and private nonprofit	

UNFPA and USAID are the main agencies in charge of FP commodities procurement for the public sector, with over 99% of the supplies distributed every year in Senegal (Results in Health 2013). Both agencies procure through their own official channels. These two agencies work in coordination with DSRSE to prevent potential stockouts at the central level. National Pharmacy Supply (PNA) is in charge of supplying commodities to the regional and district levels. Recently DSRSE, with support from IntraHealth, initiated the Informed Push Model, to prevent recurrent FP products stockout at the facility level. This initiative is now scaled-up throughout the country and has contributed greatly to reductions in FP commodities stockouts.

Willingness to Procure by Sector

As reported above, across all three sectors, a majority of the procurers showed great interest in both contraceptive vaginal rings—the PVR and the one-year ring. Concerning PVR pricing, public sector respondents suggested that, for the public and the private nonprofit sectors, the price of the PVR should not exceed 500 FCFA (approx. US$1), which is the reference price for long-acting methods. Therefore, they suggested that, for the private commercial sector, this price can be fixed at 1,000 FCFA (approx. US$2) but not exceed this level.

The majority of respondents in the private nonprofit sector suggested that for the public sector it would be important to align the price of the product with prices already applied to other similar products in terms of their duration of action (e.g., three months for injectables). They proposed a price that varies between 200 and 500 FCFA. For the private nonprofit sector itself, the respondents from this sector suggested a price between 1,000 and 1,500 FCFA. For the private commercial sector, the price proposed is between 2,000 and 5,000 FCFA, arguing that women should be willing to pay that price if the method really suits them. As one respondent in the private nonprofit sector reported: *"If someone loves it and it's really convenient to her, she will be ready to pay much for the product than for another method less expensive but that not suit to her.''*

Only private commercial sector respondents did not suggest a price for the PVR. For them, price-setting will depend on the cost of product supply. At the donor's side, the PVR price should not exceeds 500 FCFA in the public sector. For private nonprofit and commercial sectors, they suggested a price between 1,000 (approx. US$2) and 1,500 FCFA (approx. US$3).

Procurer Priorities (Process, Quality Control, Logistics) by Sector

Table 20 describes the FP commodities procurement, pricing, and quality-control system by sector. The selection of contraceptive commodities to be purchased for the public sector is in accordance with the Essential Drug List as established by the MOH. Both UNFPA and USAID, as the main agencies supporting FP commodities supply, fully comply with it. The Essential Drug List in Senegal is reviewed every two years. In the public sector, DSRSE is responsible for the selection. In the public sector, forecasting and quantification for FP commodities is organized by a specific committee coordinated by DSRSE. It meets every six months and uses a tool called Contraception Procurement Tables (CPT). The quantification committee is composed of multisectoral stakeholders and includes government agencies as well as UNFPA and USAID. Following the CPTs exercise, DSRSE requests UNFPA and USAID to purchase the FP commodities. The government also procures some FP commodities through the Pharmacie National d'Approvisionnement (PNA) with its own funds. It is expected that these funds dedicated to procure FP commodities through PNA will increase in the coming years.

The private nonprofit sector purchases its products from the public sector (mainly at the district level) but sometimes requests procurement through UNFPA and USAID. The private commercial sector purchases its products through a network of distributors or wholesalers.

A national plan for commodity security of essential medicines for the survival of mothers and infants has been adopted. The objective of this last plan is to improve the availability of core products (including not only contraceptive commodities) throughout the supply chain and involves the same stakeholders. It is envisaged that coordination across the three sectors will minimize inefficiency, waste, and the over- and under-supply of commodities.

Private clinics are not allowed to dispense FP commodities, which can only be purchased through private pharmacies. This makes the process of providing contraceptives in the private clinics lengthy, expensive, and cumbersome. In the case of injectables, implants, or IUDs, the client needs to make an appointment at the clinic for counseling and a prescription, then visit the pharmacy for purchasing the contraceptive (which often needs to be ordered from a private wholesaler and picked up later by the client upon delivery), and then return to the clinic for administration of the contraceptive (Results in Health 2013). Products that work well in the private commercial sector are those that can be used autonomously, such as EC pills and condoms.

TABLE 20 Procurement, pricing, and quality-control system by sector

Sector	Public sector	Private nonprofit sector	Private commercial sector	Donors
Procurement process	• CPTs (Contraceptive Procurement Table) organized every six months • Setting the product list • Request to PNA, UNFPA, and USAID • Donations	• Consideration of the guidelines and priorities identified by the government • Planning the order with USAID according to their buying cycle • Free receipt of donations	• Priority to all products specified in the contract with partners • Meet standards of contract with partners	• Quantification of needs by the Ministry • Purchase products based on the amounts defined by the Ministry • Send requests to the Ministry's central purchasing
Price setting	• Policy that sets product prices • Small contribution of consumers • Price fixed by a tripartite committee (Ministries of Health, Finance, and Trade) • Taking margins into account • Price setting by circular	• Preliminary market analysis • Market segmentation • Development of marketing plan • Analysis on cost recovery every year; setting up a pricing policy	• Specific price-setting system taking into account the requirements of the DPM	• Price-setting policies • Donations
Quality control	• DPM requirements • Supervision • Pharmacovigilance	• DPM requirements • Supervision • Pharmacovigilance	• DPM requirements • Supervision • Pharmacovigilance	• DPM requirements • Supervision • Phamacovigilance

In the public sector, FP commodity price-setting is under the responsibility of the national authorities through a tripartite committee involving MOH, Ministry of Finance, and Ministry of Trade. A circular signed by MOH fixes the price to apply at each level of the health pyramid. At the facility level, a policy of cost recovering is applied to consumers. Private nonprofit and private commercial sectors have their own system of pricing, depending on the cost of product procurement. Taxes and margins are applied for FP products that can be found at the pharmacy level. The quality-control process is globally under the responsibility of the MOH (Laboratoire de Contrôle des Médicaments). FP product quality control is integrated in the routine supervision activities performed by the DSRSE with support from partners. Routine supervisions focus on product expiration, storage, and tools management.

Qualitative Comments by Sector

Procurers across all sectors were very favorable to the introduction of both contraceptive vaginal rings—the PVR and the one-year ring. Public-sector interviewees indicated that the PVR should be promoted because it expands FP options for postpartum women and can attract new users. Procurers reported that the PVR has an added value compared to other methods because it gives women autonomy.

Respondents suggested that promoting the PVR's acceptability among breastfeeding women has to be considered a priority, a major argument. As a respondent noted: *"Our program is mostly based on 'Moytou nef' [avoid short birth spacing interval]… We know that it is during this period when 'nef' often occurs because women think that as long as they are breastfeeding they will not become pregnant… So, this [the PVR] is an additional method that will allow women to protect themselves and help avoid frequent pregnancies."*

Another added: *"PVR is a good method that will allow us to broaden our range of method mix and to recruit more women who did not want to take tablets every day or getting insert IUDs or Jadelle, so it is a method that opens prospects in terms of research and I think we need to continue to work on that. It would be interesting for women who already use it to continue with it if they wish, instead of being forced to change the method after six months."*

Another attested: *"I think it gives real benefits and the additional aspect is that it is an auto-controlled method that is manipulated by nobody…there is no intervention of a third person (provider), so woman is autonomous to use it… So it has clear advantages as a contraceptive method."*

Respondents from the nonprofit sector reported a real interest and openness in collaborating with DSRSE in extending the range of method mix. One respondent said: *"We are very interested in extending the range of methods. We started discussions about it and are ready to accompany the process as we did with the process for Sayana Press regarding its acceptability. Yes, we are much opened and very interested."*

Another indicated: *"It is not us who decide to include it, but I think it's a good thing. If DSRSE request our opinion, it is sure that we will support the introduction of a new method, especially this one as, apparently, there are very few methods that fit for breastfeeding women. It would be a good thing and it is sure that we can support its introduction."*

From the perspective of the private commercial sector, this method should be popularized through the pharmacists' network because it presents an alternative solution to stockouts observed sometimes for other contraceptive methods for breastfeeding women (e.g., Microval).

Moreover, donors have also shown a willingness to support the PVR if they receive a request from DSRSE in this direction, as it allows expanding the range of methods. One representative indicated: *"I think it would be good to expand the range of methods so that every woman can find the method that fits to her. All the initiatives that could help women to space their births and prevent maternal deaths must be supported."*

Another added that: *"Our institution is not involved in the product-selection process… But, if DSRSE addresses a request for the ring, I would not see any major constraints to purchase it. However, it would be good to anticipate presenting the ring to our representative instead of waiting for the entire process is completed (before application)."*

As for the PVR, respondents from the three sectors confirmed the same interest for the one-year ring as one stated: *"This is a product that will participate in women's empowerment maybe that will have fewer side effects compared to other methods… I think it has a good future if there is sustained acceptability study and also a good promotion."*

Table 21 summarizes additional comments from procurers on the PVR and the one-year ring.

TABLE 21 Procurers' comments on the PVR and One-Year CVR by sector

Sector	Comments on PVR	Comments on One-Year CVR
Public	• Allows extension of range of methods • Contributes to increase in number of new users • Makes women autonomous	• It's a very interesting concept • Will help women to be autonomous • Fewer side effects • Opens perspectives for the future
Private nonprofit	• Increases capacity and possibilities for women's choice (expanding options for postpartum women) • Must be integrated into the program because it makes women autonomous • Responds to the needs of a particular group (breastfeeding women)	• Addresses needs for pharmacy consumers interested in long-acting method • Makes women autonomous • Method to be included in the method mix • Need to pay attention to the price • Auto-insertion represents added value compared to other methods. • Need to focus on training (providers and pharmacists) • Address FP services accessibility for rural women
Private commercial	• Involve pharmacies among service delivery channels when promoting/introducing product • It is an alternative to other methods for breastfeeding women	• Desire for additional information on the product • Interest related to the long duration of action
Donors	• Broadens the range • Must be supported	• Method to be included in the range of method mix • Increase women's choice

Conclusion

Contraceptive vaginal rings are an innovative category of products that have not been introduced into any sub-Saharan African country. As a result, there is little experience to guide the introductory pricing for the PVR and the one-year NES/EE CVR when it becomes available. The evidence generated by this consumer willingness to pay, and provider/procurer study has shed light on critical aspects of PVR introduction in Senegal, which are highlighted below. In general, the results generated here complement and reinforce findings from an acceptability study of the PVR and stakeholder discussions that have been occurring over the past three years. The results confirm that contraceptive vaginal rings, and in particular the PVR, are an acceptable method in Senegal with broad-based support for introduction utilizing a Total Market Model.

- Among potential consumers, who learned about the PVR for the first time, over 70% expressed interest in using it. This high level of "willingness to try" a new contraceptive method highlights the levels of unmet need and the opportunity for the PVR to create value in the lives of Senegalese women. Of those interested, over 85% reported a willingness to pay for the PVR even as the price rose. Respondents explained that their willingness to pay is based on their intention to avoid unintended pregnancy.

- Consumer demand curves generated by the study indicate a high elasticity of demand in the public and private nonprofit sectors. There is very little differentiation between consumers in the public and private nonprofit sectors. In contrast, as expected, the demand in the private sector is less elastic to price change indicating that a higher price for the PVR can be charged in the private sector. The estimated price range in the public and private nonprofit sectors is 500–1,000 FCFA (approx. US$1–2/ring).

- The level of discretionary spending by consumers also provides some guidance for benchmarking the price of new products. Expenses such as hair salon visits and mobile phone use provide guidance for tailoring affordable pricing strategies.

- Providers from all sectors were willing to provide the PVR and were supportive of its inclusion in the national family planning program. Over 70% of providers in the public and private nonprofit sectors supported a price of up to 1,000 FCFA (approx. US$2). Providers in the commercial private sector were willing to provide the product at a price higher than 1,000 FCFA.

- Procurers across all sectors were interested in and supportive of the introduction of the PVR. The price recommended for the public sector was 500 FCFA, with higher prices in the private nonprofit sector (US$2–3 or 1,000–1,500 FCFA) and in the private commercial sector (US$4–10 or 2,000–5,000 FCFA).

- Consumers, providers, and procurers expressed interest and support for the one-year ring.

- The active role of the three sectors in FP provision is indicative of a vibrant total market in Senegal that can be utilized for the introduction of the PVR to serve its customer segments based on their levels of willingness to pay.

- Provider interest in a user-initiated method indicates support for self-administered methods with minimal provider counseling to ease the burden on community health workers.

- Improvements in procurement systems with the IPM heralding a supply-chain revival for FP commodities in Senegal and other government initiatives indicate an efficient supply chain capable of handling new products with minimal stress on the existing health system.

The results generated will inform and guide the next steps in product introduction. Specifically, the findings of this study will be integrated with results from a market segmentation exercise conducted earlier to develop a pricing model for the PVR. The price will reflect not only the cost of goods and costs of product introduction (e.g., training, educational material, marketing and branding, demand creation) but also the benefits to the health system (e.g., limited need for infrastructure and equipment, potential for multiple service outlets and health cadres). The results will also be useful to refine PVR market segmentation and tailor specific strategies for product introduction including innovative financing approaches. Through this study we have gained better insight into the socioeconomic determinants of product use, including the consumer's willingness to pay and also the priorities that drive the important stakeholders—providers and procurers.

In summary, consumers expressed their willingness to pay for the PVR, providers to deliver it, and procurers to purchase it. Their unified voices will guide the introductory strategies for the PVR, including communication and promotional activities, integration with appropriate services such as Maternal and Child Health, and continued engagement with all the stakeholders including consumers.

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