

## **Determinants of Availability of HIV/AIDS Programmes in Botswana's Workplaces: A Multinomial Logistic Analysis**

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**Abstract:** This study uses data from the Central Statistics Office of the Ministry of Finance to examine the extent to which 416 organizations country wide have responded to the HIV/AIDS pandemic through programme formulations within the workplace. Multinomial logistic regression is used to analyze and determine associations between programmes and organizational attributes such as size, locations, types of economic activity, institutions and management. It is notable that large organizations, organizations with HIV/AIDS policy and those within government are leading the onslaught against HIV/AIDS through a variety of programmes. The programmes are also complimentary as per the results of pair-wise correlations.

**Key words:** HIV/AIDS, economy, regression, correlations, workplace, complimentary

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### **INTRODUCTION**

HIV/AIDS is a threat not only to worldly populations but also to wealth creation mechanisms as it affects directly the very resource that is necessary for establishing and maintaining economic systems. The protection of the human resource is a challenge and calls for organizations using labour to find means to mitigate the undesirable effects of the HIV/AIDS pandemic.

Botswana, a country so severely hit by the HIV/AIDS pandemic has had a government which has sprung into action and fought the scourge from all dimensions. The government has noted with great concern, the effect the pandemic has had on productivity in a country in which low productivity is already a national concern (DPSM, 2001). The government has come up with policy documents to address issues related to HIV/AIDS in the workplace. The free provision of Antiretroviral (ARV) therapy by the government to those infected within the country is on going.

It is now common knowledge that HIV/AIDS goes far beyond the frontiers of health and affects every dimension of society. Different enterprises worldwide have noted the impact of the epidemic either through absenteeism, death of employees, reduced productivity, decline in households income and gross national products (UNAIDS, 1998).

The fact that every segment of society is affected has necessitated partnerships between different players within and between nations. Within nations the employers and employees need to develop some understanding of how to incorporate HIV/AIDS within their areas of operation. This will go a long way in

benefiting the two parties, their dependents, their institutions, economy and the world. To this end, an investigation of the role played by organizations in fighting the scourge is carried out.

Botswana's economic advancement since independence is under threat because of the HIV/AIDS epidemic. The economic gains and potential economic advancements are likely to be reversed by the diversion of resources from conventional investment and productive projects, the decline in productivity due to morbidity and the ultimate loss of the economically productive and vibrant labour force due to mortality. The fight to minimize these effects requires a concerted effort from all stakeholders, a position that the government has endorsed through the multi-sectoral approach in fighting the pandemic. It is upon the recognition of the need for an all-inclusive approach that this study seeks to investigate the roles played by different organizations in fighting the HIV/AIDS scourge within the workplace. This study therefore aims at establishing if there are HIV/AIDS interventions in the workplace within the broader economy by way of HIV/AIDS programmes.

The need to understand the roles played by different organizations in fighting the HIV/AIDS scourge in the workplace is important in understanding how the fight against the pandemic is ongoing. This is important in that it will facilitate the evaluation of the multi-sectoral strategy that has been adopted to fight the HIV/AIDS within the country. It is expected that the results will be useful in helping guide and evaluate the strategy by identifying gaps and strengths in order to improve the strategy.

**Why HIV/AIDS policies and programmes in the workplace?** There is a need for a better understanding of HIV/AIDS as a disease and its relationship with the economy by both the workers and the employers. This requires the dispensation of information related to the epidemic. Strategies should be put in place to help prevention of infection among workers and employers as well as to ensure the rights of those already infected particularly in light of the lack of awareness about the economic implications of HIV/AIDS (Transatlantic Partners Against AIDS, 2005).

HIV/AIDS programmes are crucial investments that should be integrated into workplace health and safety programmes. Such corporate HIV/AIDS programmes have great advantages amongst which are: protected productivity levels, improved staff morale, higher quality of human resources, positive effects on staff retention, equal employment opportunities and protected occupational safety and health (UNAIDS, 2003).

Developing company HIV/AIDS policies and programmes require commitment at the highest level, involvement of workers throughout the process, consistency with national laws, promotion of non-discrimination, gender equality, confidentiality, assessment of existing and potential impact to the company and its workers, a budget line, full dissemination of policy, regular monitoring and a fully representative committee (UNAIDS, 2003). However, policies may be replete with controversies as decisions may have to be made regarding whether expensive antiretroviral drugs should be targeted to the economically productive (Dixon *et al.*, 2002).

Corporate response to the epidemic leads them to a good public image. Such undertakings are perceived as a reflection of corporate citizenship and social responsibility. This is largely because their success is dependent upon the goodwill of customers and communities from which they get their labour (UNAIDS, 1998).

Many businesses are faced with the task of seeking ways to protect their workforce against HIV infection and to help those who are HIV positive to remain healthy and productive for many years. Companies can protect their employees from social and economic effects of HIV/AIDS by undertaking three measures namely HIV/AIDS workplace policy, Education/Prevention Programmes and care and support measures (Asian Business Coalition on AIDS, 2002). While HIV/AIDS policy is an expression of organizations view and intent in dealing with HIV/AIDS, the subsequent two measures should form an integral part of policy even though they could be undertaken without policy. Organizations without policy can still implement

such measures even though they do not have a documented commitment as to how they incorporate HIV/AIDS within their places of work. Whereas it may be thought of that policies will automatically be accompanied by programmes, this does not necessarily have to be the case always.

The presence of HIV/AIDS policies do not in any way guarantee that other programmes aimed at education, prevention, care and support will of necessity follow, neither does the absence of policy impede organizations from engaging in any programmes aimed at educating the workforce and employers about prevention, care and whereas it is worthy to note that policies are an indication of organizations commitment to the fight against HIV/AIDS in the workplace, it does not mean that organizations without policies cannot wage a war upon the epidemic. It would normally be the expectation that firms with policies would be more likely to be in the forefront in the fight against HIV/AIDS. In this study an attempt is undertaken in addition to policies to look at measures taken by organizations in general and those with and without policies in particular in fighting this national disaster through the establishment of diverse programmes.

The business sector should be motivated to undertake HIV/AIDS programmes. Corporate action in the fight against HIV/AIDS is driven among others by avoidance of legal problems, concern about the welfare of workers and the protection of corporate investment in staff and training. There are costs associated with inactivity in the fight against HIV/AIDS such as erosion of profits due to lost productivity resulting from absenteeism and loss of human resource amongst other factors. Investing in prevention and care can also erode profits of business and lead to loss in competitive advantage of enterprises as money is diverted to preventive efforts.

**International response to HIV/AIDS:** A study conducted in Russia (Transatlantic Partners Against AIDS, 2005) discovered that there was an absence of urgency and lack of understanding about the implications of the epidemic. A total of 137 Russian and International companies human resource managers were interviewed over telephones representing a greater number of industries. In this study roughly 30% of all companies were located either in Moscow or within its vicinity whereas the rest were in areas outside the capital. Even though 93% of the respondents acknowledged their awareness of the problems created by the epidemic, only 43% of them were conversant with high HIV prevalent regions and with the population groups that are at high risk. It was however, a

mere 6% of respondents, who thought the epidemic was having a modestly negative effect on the profits of their companies whereas about 80% thought it had no effect at all. It was 32% of respondents who thought HIV/AIDS will have some moderate effect on their profits over the next 10 years and only 10% thought it would have a strong effect.

In spite of all the above statistics which portrays HIV/AIDS as being of little consequences to companies interviewed, we observe that the majority of companies were concerned about the reduction in the size of the workforce, discrimination against those infected and disruption caused by the fear of those working with the infected. A lot of misinformation on modes of HIV transmission and misunderstandings about legalities related to confidentiality and non-discrimination was rampant.

In this study 44% of respondents thought HIV can be transmitted through coughing or sneezing, 70% thought there is a risk in working with an HIV positive worker in the same office and 74% thought it was possible to contract HIV through mosquito and any other blood sucking insects. It was stated by 14% of respondents that an employer could refuse to employ an HIV positive applicant even though she/he qualified and 45% believed that workers should be informed about the HIV positive status of a core worker to ensure personal safety. These statistics are very worrisome more so because it is acquired from human resource managers who should be more knowledgeable than the ordinary workforce. This problem is compounded by the discovery that of the 137 companies interviewed only one company had a policy related to HIV-infected employees but 68 and 46% of them had policies on alcohol and drug abuse respectively (Transatlantic Partners Against AIDS, 2005).

In South Africa there had been a slow corporate response to the epidemic due to deficient political will as government failed to lead a national response to HIV/AIDS. President Mbeki was skeptical about the link between HIV and AIDS and there was a misunderstanding by managers as to how vulnerable their companies were to HIV/AIDS. This slow response of corporate South Africa was on the wrong premise by managers that HIV/AIDS affected the low skill and easy to replace black workers, who could be easily picked from trees like apricots (Dickson, 2004).

**Botswana's response to HIV/AIDS:** The Peer Education HIV/AIDS Prevention Programme (PEHAPP) in the workplace was launched in Botswana within the business community in 1991 by Ministry of Health. It was further introduced into the parastatal and government sectors and is now established in a variety of workplaces (Hope, 2003). The aims of the programme were to change sexual

behavior through a reduction of sexual partners, increased knowledge about HIV/AIDS and condom use, promote a positive attitude towards those infected and to educate on prevention of HIV infection. This approach has long been in existence and has been used in different target areas such as smoking, drugs, spousal abuse and teenage pregnancy amongst others. It is however, in the area of HIV/AIDS that it has spread rapidly and has become one of the most effective intervention methods (Hope, 2003).

This programme has proved successful as noted by the positive impact on the improvement of knowledge, attitudes and practices in matters of sexual behaviour. Equally note the improvement in awareness, staff health and behaviour resulting from the Peer Education initiative. There is however, room for improvement and the translation of this success into reduced rates of infection will have to be awaited (Hope, 2003).

A study conducted amongst 300 companies in Botswana noted that 41% of company managers reported that they have programmes in place which is far above the 18% reported in the same study for policy availability. Large companies were more likely to report the availability of programmes than small ones. Just like in the case of policies the initiation for workplace programmes was from management and the exclusion of employees at this level may fail to bring a sense of ownership on the latter's side. In spite of this lack of participation at the initial stages, employees reported that they were using these programmes even though management desired a higher utilization of such programmes than is currently the case. A number of problems impeding the availability of programmes were lack of skills to undertake programs, particularly for small enterprises, lack of funds, low staff participation, lack of interest, high staff turnover and the thinking that investment on these programmes was a loss. In this study, managers across companies were found to be uninformed about HIV and were not conversant with HIV prevalence rate within the region. This deficiency the study concludes could undermine the planning and focus of programmes.

Studies in countries alluded to in the literature review namely Russia, South Africa and Botswana have pointed to some lack of appropriate and relevant information with regard to HIV/AIDS. The striking thing about this revelation is that this lack of knowledge is attributable to managers who could be said to be enjoying a relatively high level of education as some of them were human resource managers and part of management. It could be expected that ordinary employees may be worse than their bosses and if so then the need to provide educational programmes is paramount.

**MATERIALS AND METHODS**

The analysis is based on data collected by the Central Statistics Office, an organ of the Ministry of Finance of the Botswana government. The study was the first of its kind to be conducted by government as a way of establishing the extent to which the war against HIV/AIDS is being waged in the workplace. A total of 416 organizations from different geographical areas, institutions and industries were interviewed. This was a way of according a broader coverage that could be nationally representative. The results of this current study are based on the data that was collected. The questions in the survey sought to establish if the organizations had policies and programmes and to identify the type of programmes in place.

Logistic and Multinomial logistic regressions are used to analyze data and to establish the relationship between programmes and their determinants. To establish the relationship between programmes in terms of substitutability or complementarity, pair wise correlations are used. The regression is of the form:

$$\text{prob}(\omega = 1|x) = \Lambda \left( \sum_{i=1}^n \beta_i x_i \right)$$

Where:

- $\omega$  = The binary independent variable regarding the existence of HIV/AIDS programmes
- $\Lambda$  = The logistic probability function
- $\beta$  = A vector of coefficients to be estimated while
- $x$  = A matrix of explanatory variables including the area of the firm, the size of the firm, the gender of employees, the sector in which the firm resides, the occupation of the respondent, attrition rate and the HIV/AIDS policy

**RESULTS AND DISCUSSION**

Based on frequencies researchers realize that 16.83% of organizations did not have any of the 4 measures in place and 22.36% had all the measures in place. At least 50% of all the organizations had at least 3 of the 4 programmes that give the standard programme package and 83.17% have at least one programme.

**Determinants of individual programmes:** The Table 1 shows us a summary of individual programmes and their determinants. A logit regression is run on the 4 programmes individually and the same predictor variables are used.

The results in Table 1 show that being a government institution and having an HIV/AIDS policy is likely to lead to the presence of all of these programmes individually. Enterprises which are located in urban centers are most likely to have peer educators at 5% level of significance whereas there is no significantly observable relationship between location and any of the three other programmes. Establishments which had a professional responding to the questionnaires were likely to have condoms and coordinators within their setups at 10 and 1%, respectively.

**Multinomial logistic results:** Whereas the Table 1 furnishes us with information on individual programmes, the Table 2 is based on an analysis designed to capture programme intensity within organisations. To capture the appropriateness of programmes in place an index (ProgIndex) was created which sought to capture all the necessary ingredients of a standard HIV/AIDS comprehensive programme which should be put in place within the workplace. The program as per the Botswana

Table 1: Logistic results for individual programmes

Predictor variables	Dependent variables			
	Condoms	Peer educators	Coordinators	Education
	-----Coefficients (p-value)-----			
Urban	-0.1756072 (0.773)	-.5533021 (0.049**)	-0.2853062 (0.450)	-4078726 (0.194)
Total employees	0.0011638 (0.280)	-.0001348 (0.752)	0.00008 (0.841)	-0.0002019 (0.575)
Small firm omitted	-	-	-	-
Medium firm	0.3090282 (0.295)	-0.0196477 (0.950)	0.8349771 (0.044)	0.496727 (0.150)
Large firm	0.5719141 (0.104)	-0.0600523 (0.860)	0.7117558 (0.114)	1.160483 (0.005)***
Gender	-0.0533426 (0.077)*	0.0183851 (0.538)	0.0263065 (0.663)	-0.0179994 (0.614)
Government	0.5129045 (0.094)*	1.109596 (0.000)***	2.161312 (0.000)***	1.484226 (0.000)***
Occupation	-0.5751058 (0.059)*	0.1207609 (0.688)	1.143475 (0.003)***	0.3528582 (0.310)
Attrition	0.041925 (0.860)	0.3748404 (0.129)	0.0417618 (0.902)	0.2016843 (0.482)
Policy	0.915882 (0.000)***	1.166652 (0.000)***	2.187702 (0.000)***	1.23174 (0.000)***
Constant	-0.2257777 (0.389)	-2.056099 (0.000)***	-2.482636 (0.000)***	-1.005001 (0.001)***
Observations	342	342	342	342
LR chi2 (9)	39.29	62.86	205.22	104.36
Prob>chi2	0.0000	0.0000	0.0000	0.0000
Pseudo R2	0.0860	0.1381	0.4684	0.02514

**Table 2: Multinomial logistic estimates for determinants of availability of programmes**

Predictor variables	Coefficients (p-value)			
	ProgIndex1	ProgIndex2	ProgIndex3	ProgIndex4
Urban	-0.4265442 (0.367)	-0.622847 (0.226)	-1.2156110 (0.016)**	-0.7385388 (0.156)
Total employees	0.0001234 (0.864)	-0.0009776 (0.489)	0.0000403 (0.958)	0.0000194 (0.981)
Small firm (base)	-	-	-	-
Medium firm	-0.1821921 (0.743)	0.7314592 (0.199)	0.9149456 (0.098)*	0.6483970 (0.267)
Large firm	0.8075751 (0.253)	1.682995 (0.025)**	1.9801040 (0.006)***	1.7768670 (0.017)**
Gender	-0.0305755 (0.661)	0.0031541 (0.960)	-0.0488284 (0.452)	-0.0295181 (0.643)
Government	0.668776 (0.268)	1.83562 (0.003)***	2.3828380 (0.000)***	2.9333200 (0.000)***
Occupation	0.3384376 (0.550)	0.4064453 (0.408)	0.4959878 (0.390)	0.3940408 (0.511)
Attrition	-2761818 (0.530)	-4387946 (0.359)	0.0249302 (0.957)	0.1706288 (0.724)
Policy	2.065135 (0.002)***	2.658452 (0.001)***	3.2395410 (0.000)***	3.8684080 (0.000)***
Constant	-0.2540948 (0.499)	-1.456802 (0.001)***	-1.7336100 (0.000)***	-2.9005310 (0.000)***

Ministry of Health required that there should be an HIV coordinator, peer educators, educational initiatives and preventive measures. The value 1 was assigned to each of this initiatives and the index ranged from 0 if there was no initiative at all, to 4 if all the above measures were put in place. This is perceived to be a better measure since it analyzed all the initiatives at a glance.

To find out the determinants of the intensity of programmes, the multinomial logistic model is used. This model uses the very same explanatory variables as the logit model above and adds the policy variable as a predictor.

The multinomial logistic results in Table 2 have organizations with no programmes at all (ProgIndex0) as the base or control outcome in the analysis. The results indicate that large organizations were more likely to have at least two programmes in place than small firms without a programme. It is also notable that being in an urban area was likely to increase the firms probability of having three programmes than a firm in the rural area and without a programme. The government institutions were also likely to increase the probability of having at least two programmes than private/parastatal organizations without a single programme. Organizations with policies had a higher likelihood of having at least one programme than organizations without policy and without a programme.

**Complimentarity and substitutability of programmes:**

The relationship between the different programmes was established by running pair wise correlations for all the programmes. The results in Table 3 shows that the programmes are complimentary. The degree of complimentarity varies between programmes and it was smallest for condoms and peer educators and highest for education and coordinators.

The results from this analysis indicate that some attempts are being put in place to deal with the HIV/AIDS pandemic. That steps are taken through programme implementations in the workplace provides us with a good start to address the epidemic. For a first study of this type to produce such results is indeed promising. The attempts are likely to bare positive results for the economy as the problem is addressed head-on in workplaces. The likely

effects of these measures on the economy would require a break down of the economy into economic and institutional types of organizations, a task ventured into in the following paragraph.

From the institutional level, the government, organizations with poicies and large organizations have to a large extent been in the forefront in putting programmes in place. It is also very important to note that HIV/AIDS affects the economy through the human resource which will in this case include labour and entrepreneurs. The government of Botswana as the major employer at 40.63% of total formal employment as at 2005 has taken necessary measures to mitigate the effects of HIV/AIDS. This sector is also the second largest after mining in its contribution to GDP.

By accepting the epidemic and bringing, it to the core of its business the government is likely to reap benefits through increased productivity due to the rapport generated between workers themselves and between workers and management which is an integral component of management-organizational structure. The good relations which are likely to accrue are important as an internal aspect required for organizational success (Andrikopoulos and Prodromidis, 2001).

The commendable performance of government with regard to policy and programmes should be understood within the rightful context that decisions are made at a central point and dispersed through out the entire civil service.

The private/parastatal sector contributes 84.4% to total output in the economy and 60.4% to total formal employment (Bank of Botswana, 2006). A collapse of this sector will have disastrous effects on the economy and the welfare of the population.

Breaking this sector further into individual economic activities also sheds some light into the nature of the Botswana economy and how greatly dependent it is on a single sector, mining. Mining alone accounts for 43.2% of total output and only 3.1% of total formal employment as at 2005.

Table 3: Pairwise correlations for individual programmes

Programme	Condoms	Education	Coordinator	Peer educators
-----Coefficients (p-value)-----				
Condoms	1.0000	-	-	-
Education	0.3415 (0.0000)	1.0000	-	-
Coordinator	0.2982 (0.0000)	0.5830 (0.0000)	1.0000	-
Peer educators	0.1772 (0.0003)	0.3822 (0.0000)	0.4466 (0.0000)	1.000

The government has made diversification from mining into manufacturing and tourism one of its priority areas. Even though manufacturing accounts for 3% of total output, it is the second largest employer within the private/parastatal sector after commerce (which contribute 9.1% to GDP) and the third largest when government is included. A majority of firms from the manufacturing sector, 84% to be precise did not have policies in place whereas the percentage for wholesale/retail trade which falls under commerce was 79.4%. That manufacturing does not have policies is worrisome given that the sector besides being earmarked for diversification purposes is a high risk sector along with mining (Transatlantic Partners Against AIDS, 2005). The government is committed to making the private sector an engine of economic growth and this scenario has the potential to undermine such a commitment. The wholesale/retail trade and manufacturing sectors which fall within the private sector are driven by profit motives. The investment in HIV/AIDS related initiatives is likely to be perceived as a cost to the firm, with the potential of undermining their profitability. This is more likely to be the case if the costs for labour replacement are thought to be low.

The observation that there is no significant relationship between employee turn over and policy need a cautious interpretation, since there might be some other factors which may be perceived to be influential in the degree of attrition besides the HIV/AIDS related ones. If such factors exist then there is no justification for expecting a positive relationship. Classifying attrition in terms of being high or low also needs a bit of qualification since what is high in the perception of one individual may be low in the perception of the other. It might be possible that the line drawn between the two measures/levels is very thin. The more serious shortcoming was the lack of explanation to the high attrition rate where such prevailed because of an almost zero response to the question seeking such explanation.

The observation that medium and large firms are more likely to have policies in place relative to small firms is likely influenced by resource availability. Medium and large organizations are most likely capacitated to formulate policies. However, we note that it is the large firms only and not small or medium ones which are likely to have at least two programmes in place. This is most likely a result of the resource power which large firms have, since programmes unlike policies have costs which have to be borne on a continuous basis.

Being a government institution is positively related to availability of HIV policy and intensity of HIV programmes. This reflects government commitment and leadership in the fight against HIV/AIDS. This may also reflect the government commitment to welfare enhancement of the nation as well as her resource capacity.

### CONCLUSION

It is necessary to educate management about the HIV/AIDS related issues for them to recognize the epidemic's relevance to work and production. This is so because of the positive correlation observed between policy formulation and occupation even though it was insignificant. It has also been noted that firm size is important in influencing policy. However, firms can not be advised to expand so as to engage intervention mechanisms within their workplaces. The firm size is largely dependent upon business conditions and could therefore not be influenced by board room decisions which do not alter such business environment.

The programmes within the government sector should be implemented through out the entire civil service to ensure equity amongst the whole public service. Ways should be sought to speed up implementation of such measures which the government has embarked upon, since failure to do so amounts to double standards.

The economic sectors that are lagging behind in terms of having programmes in place need to be followed up and assisted. Partnerships with small size organizations by other stake holders in this fight need to be sought in order to help them to put programmes in place. The majority (43.75%) of organizations were small and if they cannot be assisted at their places of work, then the fight against HIV/AIDS might be lost. This is more paramount in view of the fact that there are many small organizations relative to the medium and large organizations.

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