

Impact of Retirement Age Policy on the Workforce of a Higher Education Institution in South Africa

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Several key sectors including higher education institutions have a skills shortage in South Africa. Combined with aging of its workforce, higher education institutions may find it increasingly difficult to maintain adequate numbers of skilled and experienced employees to fulfill their core functions. This study assesses the impact of mandatory retirement age on the workforce of a higher education institution in South Africa. The data were obtained from the Human Resources of the higher education institution and using an estimation model. The results indicate that a mandatory retirement age of 60 years has a negative impact on the future size of permanent academic staff in the short-to-medium term. However, a mandatory retirement age of 65 years or even higher has positive impact on the number of permanent academic staff in the institution.

Keywords: Retirement Age Policy, Higher Education, Sub-Saharan Africa, South Africa, Universities, Labor Policy, Labour Policy, Employment Policy, Labor Attrition, Labor Turnover, Population Aging, Academic Retirement.

Related Articles:

Herrick, Rebekah. 2004. "Gender Gap in Early Congressional Retirement." *Politics & Policy* 32 (3): 397-411.

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Muchos sectores claves de la economía, incluyendo la educación superior tienen un déficit de trabajadores calificados. Aunado a una fuerza laboral que está envejeciendo, es probable que sea difícil para las instituciones de educación superior mantener niveles adecuados de trabajadores con habilidades y experiencia para cumplir funciones esenciales. Este estudio muestra el impacto de la edad de retiro obligatorio en la fuerza laboral de una institución de educación superior en Sudáfrica. Los datos fueron obtenidos del área de recursos humanos de la instrucción superior y usando un modelo de estimación los resultados muestran que la edad obligatoria de retiro de 60 años tiene un impacto negativo en el tamaño de los trabajadores permanentes a corto y mediano plazo. Sin embargo, una edad de retiro obligatoria de 65 años tendría un impacto positivo en el número de trabajadores permanentes en la institución.

Daniels (2007) in a review noted that there is a shortage of skills in key high-level sectors in South Africa. The sectors include educators, academics, medical practitioners and nurses, engineers and technicians, biotechnologists, managers, and information and communication technology professionals. A challenge facing employers generally in South Africa and in higher education institutions is how to maintain an adequate skilled workforce to fulfill the core functions of their organizations.

Higher education institutions in South Africa employ a wide range of employees to enable them to fulfill their core mandate. In recognition of the general skills shortage in South Africa the Higher Education South Africa (HESA), among other strategies has developed a questionnaire for the collection of data to identify scarce and critical skills in higher education institutions and in South Africa in general (HESA 2009). Given the general shortage of skills in the country and aging of its workforce, higher education institutions may find it increasingly difficult to maintain adequate numbers of skilled and experienced employees in their various departments. One option for addressing this is to raise the mandatory retirement age. Higher education institutions in South Africa have different retirement age policies—while some

have lowered the age from 65 years to 60 years and then raised it again from 60 years to 65 years, others have maintained the same retirement age of 65 years. The impact of different mandatory retirement age on outflows from higher education institution's workforce in South Africa is unknown. Furthermore, the characteristics of such outflows from the workforce are unknown.

Strategic Objectives of Higher Education Institutions in South Africa

Population aging has become a feature of most developed and developing societies and will have socioeconomic implications for the income levels and employment activities of many households (Blake and Mayhew 2006; Doyle 2009; Mirrlees 1997; Royal Institute of International Affairs 2002). Governments have considered many initiatives to address the challenge of population aging. Without doubt, the solution may be found in a holistic environmental approach where all factors (e.g., economic, social, and political) are considered in developing a national workforce management plan.

South African higher education institutions are an integral part of the realities South Africa is faced with—high unemployment, low economic growth, lack of a skilled workforce, inequality, poor public facilities, poverty, and a poor schooling system. To address some of the challenges, the South African National Development Plan 2030 was created with the objective of eliminating poverty and reducing inequality by growing the economy, building capabilities, uniting and unleashing the energies of South Africans, and enhancing the capabilities of the state and leaders in the economy (National Planning Commission NPC 2011). The NPC plan provides a list of enabling milestones and critical actions to be taken to achieve the objectives. It is essential therefore for higher education institutions, when formulating their vision, mission, and strategies, to take cognisance of international and national trends that influence their role and purpose in society.

The demands made on higher education to provide higher quality services will increase in the future, not only in South Africa but also in Africa. School leavers will demand to be exposed to post-school education, but because of limited access opportunities, not everyone will be accommodated. For the South African economy to grow, more high-level skills will be required in all disciplines but particularly in science and agriculture. According to Andrews and others (2013, 11), without significant expansion in higher education that will produce more and better graduates and greater research outputs, Africa's future is at risk. Andrews and others also state that the pressure on higher education institutions to accommodate more students with fewer resources could hamper quality tuition, and if combined with deteriorating infrastructure, heavy workloads, lack of research opportunities, poor governance, and salaries, this could lead to an exodus of talented academics that are in short supply.

In a report, the Development Bank of Southern Africa (2010) listed various challenges facing higher education institutions in South Africa. These include

intractable tension between the number of values and goals of higher education; the need to redefine and clarify scope, structure, and landscape of a post-school system; the need to establish a national, coordinated, and differentiated higher education system; increased funding, academic freedom, institutional autonomy, and most importantly the creation of a new generation of academics and improved remuneration. The report emphasizes the importance of both representativeness and the availability of academics who possess the intellectual and academic capabilities required by universities.

HESA also reported that South African universities face a crisis when it comes to attracting and retaining academic staff. The report confirms the view that academia is not a particularly attractive career option in view of relatively low salaries, expanding student numbers, institutional culture, and heavy workloads (HESA 2011, 1). Despite these challenges, the South African education system is regarded as one of the best in Africa as most Southern African universities feature high in top ranking of African universities as well as ranking of world universities (Answers Africa 2013). This may partly be attributable to strong commitment to achieving their core mandate—excellent scholarship and research, quality tuition, and active community engagement (University of South Africa 2014) as well as strong political will in supporting South African universities in fulfilling their core mandate (HESA 2009).

A further aspect to address is the basis of the current retirement age of 65 years owing to the fact that in the next decade, over 27 percent of academics in South Africa will retire, and in particular over 50 percent of the best-qualified academics (professors and associate professors) will retire (Development Bank of Southern Africa 2010). It has been suggested that it is counterproductive to let academics retire at too early an age and that action is needed to retain knowledge in academia if universities are to serve the community in the face of an aging workforce (Dube and Ngulube 2013). Several studies (Bossidy, Charan, and Burck 2002; De Waal 2012; Ehlers *et al.* 2010; Kash and Calhoun 2010; Smit *et al.* 2007) have cautioned that the execution of strategy depends largely on the quality and effectiveness of the workforce. Any higher education institution which aspires to be competitive, to achieve excellence, and to fulfill its mandate cannot be successful without an adequate and efficient workforce.

Objectives and Research Questions

The overall aim of this study therefore is to assess the impact of mandatory retirement age on the workforce of a higher education institution in South Africa. Specifically, the study provides: (1) a review of skills shortages in South Africa as a context to: (2) an examination of the skills profile of a higher education institution workforce in South Africa; (3) a model to assess the impact of different mandatory retirement age (60 years, 65 years, and 75 years) on the future size of permanent academic employees in a higher education institution in South Africa. Thus the study seeks to answer the following

questions: (1) If the mandatory retirement age were 60 years, what would be the trend in the total number of permanent academic employees in the institution? (2) If the mandatory retirement age were raised from 60 years to 65 years or 75 years, what would be the trend in the total number of permanent academic employees in the institution? For confidentiality, the name of the institution is not disclosed in this article.

Mandatory Retirement Age Policies: A Review

Van Sluys (2005, cited in Templer and Armstrong-Stassen 2008, 605) defines mandatory retirement as the practice that requires an employee to retire from a particular organization or employment contract upon reaching a certain age. The present study adopts this definition. Debates about mandatory retirement ages often center on discrimination and human rights as well as economic and health issues. Proponents point to:

1. The deleterious effects of aging (International Debate Education Association 2014) and physical problems of older persons in the labor market (Clark *et al.* 2008).
2. The economic argument contends that mandatory retirement policies result in a predictable, regular flow of retirements, which, in turn, opens up new job opportunities for less senior workers. This, by extension, opens up new entry-level positions and creates new jobs while bringing fresh workers into the field (Hartman 2014; Shannon and Grierson 2004). Also, that older workers have higher health costs than younger workers (Michello and Ford 2006).
3. It is further argued that mandatory retirement reduces or eliminates plateaued workers when workers reach a level of pay or responsibility with no room for further advancement thus having little motivation to continue working hard (Hartman 2014).

Opponents argue that:

1. It can have the negative effect of creating an image of older workers as inept and unable to contribute to society (Hartman 2014).
2. It is a human rights issue—People who are willing to work and are able to work should not be forced out of the workplace because of their age (Docstoc 2014). It might be a violation of constitutional rights (Munro 2004).
3. Statistical evidence to justify an age limit for mandatory retirement is lacking (Docstoc 2014).
4. The evidence that mandatory retirement reduces unemployment is weak (Templer and Armstrong-Stassen 2008).

This study is situated in the broader domain of labor attrition (labor turnover) and population aging. Different theories attempt to explain labor turnover such as social exchange theory (Ekeh 1974), human capital theory (Bowles and Gintis 1975), organizational equilibrium theory (Younus Jafri and

Yunus Jafri 1993), and equity theory (Davidson 1984), while demographic transition theory is often used to explain population aging (Kirk 1996). Testing support or otherwise for any of these theories is beyond the scope of this study.

Retirement age policies differ across different countries. The amendments to the Age Discrimination in Employment Act in the United States of America raised the earliest age at which employers may legitimately require non-Federal employees to retire from 60 years to 65 years. The legislation eliminated any mandatory retirement age for federal employees (Ashenfelter and Card 2002).

Although mandatory retirement age is 65 years in Canada (Gundersen and Pesando 1980), it is banned in Quebec and Manitoba (Shannon and Grierson 2004). It is 65 years in Europe except in France (60 years) and Norway and Iceland (67 years) (Whitehouse 2007). In Asia, it is 60 years in Hong Kong, Singapore, India, and China (Asher 1999; China Daily 2009; Crossette 1999; Suen 1997). In Australia, it is 65 years (Rein and Turner 2001). In Latin America, it is 62 years in Columbia and 60 years in the Dominican Republic and Mexico (Whitehouse 2007). In Northern Africa, it is 60 years in Algeria, Egypt, and Tunisia. In West Africa, it is 60 years in the civil service and 65 years for academic and staff employed at tertiary institutions as well as for judges in Nigeria (Asuquo and Maliki 2007; Schwarz and Demirguc-Kunt 1999; Yehudah 2002). After a protracted strike by academics in Nigeria in 2010, the Federal Government of Nigeria raised the mandatory retirement age of professors and judges to 70 years (Nairaland Forum 2010).

Mandatory retirement is lower for women than men in some countries for example in Bulgaria, Turkey, China, India, Algeria, Chile, Argentina, Columbia, Mexico, Iran, Jordan, Libya, Morocco, Tunisia, and Yemen (Muller 2000; Whitehouse 2007). It has been observed that early retirement by congresswomen due to widowhood has an impact on the composition of the House of Congress in the United States as it widens gender gap in the House (Herrick 2004).

The reason for raising mandatory retirement age in some countries is increasing life expectancy at birth. Until the advent of the HIV/AIDS epidemic, life expectancy at birth increased in the general population of South Africa (Udjo 2006). Aside from increasing life expectancy at birth, mandatory retirement age policies need to be viewed within the context of availability of skills within specific contexts.

Skills Shortages in South Africa

As people age, employed persons retire from the workforce. Aging is a normal physiological process at individual level. At a macro level, the process of aging is related to the stage of the country's demographic transition—the transition from high fertility and mortality to low fertility and mortality. Globally, population aging is unprecedented since the 1950s as the proportion of older persons (persons aged 60 years and over) has been rising steadily (United Nations 2010). Aging of the general population has implications for its

institutions and organizations. As a response to aging, some countries set a mandatory retirement age so that persons who are considered too old exit the workforce and to facilitate new entrants into the workforce. Where there is a scarcity of skills, however, early mandatory retirement age may adversely affect an organization's ability to fulfill its core functions as the organization may find it problematic to maintain an adequate workforce.

South Africa is known to have a skills shortage. The Southern African Institute of Government Auditors (n.d.) has drawn attention to the former president of South Africa Thabo Mbeki's statement that shortage of skills is among the most critical issues facing South Africa that requires urgent attention. The Department of Labour (2003) noted that there are critical skills needs in South Africa at the managerial, professional, technician, and associate professional levels.

The Solidarity Research Institute (2008) has pointed out that the skills shortage is a real problem in South Africa and a constraint to economic growth. Citing a report, the Institute noted that as of June 2007, 81 percent of companies struggled to find appropriate staff, with 76 percent saying that finding employment equity candidates was a particular problem. They also noted that there is a particular shortage of chartered accountants, information technology (IT) specialists, sales and marketing personnel, and scientists in South Africa. Furthermore, South Africa is struggling with a lack of research capacity as well as a lack of skilled staff in the educational sphere.

In an address to South Africa's Parliament the Minister of Home Affairs—Naledi Pando (2013, 1)—made the following statements:

We have to compete in a global market place for skills. It is something we have not addressed as yet, but the National Development Plan has indicated that we need to do so. As part of our strategy to attract skills, we made 50,000 permits available for scarce skills but only 20,673 permits were issued in 2011. This means we have not filled our quota. It is generally acknowledged that South Africa suffers a shortage of high-level research skills, that is, individuals with doctoral degrees and several years' research experience. We are considering a system of four-to-five-year work permits for foreigners who graduate from our universities in critical skills areas, as a means of contributing to the development of our country.

It is against this background that this study was undertaken.

Data and Limitations

The data for this study were obtained from the Human Resources Department of the higher education institution. A dummy database in Excel format (Microsoft, Redmond, WA) and a code book were developed to aid the data capturing. The IT department of the institution, in collaboration with the

Human Resources Department, populated the database. The variables in the database were: employee numeric identity number, sex, population group, citizenship of employee, employment category (whether academic or student support or institutional staff employee), type of current employment (whether permanent or temporary employment), type of skill of employee (whether employee is currently providing scarce skills and also whether employee is providing a critical skill), field of current employment, highest educational qualification, date of birth, date assumed employment, current status of employee (whether still employed in the institution or no longer employed in the institution), reason no longer employed in the institution if no longer employed in the institution, date of exit from the institution if no longer employed in the institution. The variables reflect the estimation model developed for this study (see next section).

The database was exported to SPSS (IBM, Armonk, NY) for processing which entailed inclusion of value labels and value sets as these cannot be done in Excel. Processing of the data in SPSS also included certain data transformation as well as inclusion of derived variables. For example, age of employee was derived from date of birth and subsequently recoded in five-year and other broad age categories.

There were certain limitations in the database that need noting. First, the data for 2012 by default were incomplete since the study commenced before December 2012. Therefore the data pertaining to 2012 was truncated. In view of this, rates for 2012 were not computed in the study. Second, it was originally intended to examine the profile and size of employees providing scarce and critical skills in the institution. Information on scarce and critical skills was, however, not available in the administrative records.

Methods

Definition of Concepts

Workforce in this study is defined as the total number of employees currently employed in the higher education institution.

Estimation Model

The size of the workforce in a higher educational institution at a given point in time is determined by the initial size of the workforce, renewal into the workforce and attrition in the workforce. Attrition comprises mortality, resignation, dismissal, retrenchment, and retirement. Thus a model for projecting the size of the workforce at a given point in time may be expressed as

$$W_{(t+n)} = W_t + J_{(t,t+n)} - L_{(t,t+n)} - D_{(t,t+n)} - R_{(t,t+n)} \tag{1}$$

where $W_{(t+n)}$ is the total number or size of the workforce in the education institution at time $t + n$, that is, at some future date. W_t is the initial size of

workforce in the higher education institution at time t . $J_{(t,t+n)}$ is the number of employees joining the workforce in the higher education institution during the period $t, t + n$. $L_{(t,t+n)}$ is the number of employees leaving (resigning, dismissed from) the workforce in the higher education institution during the period $t, t + n$. $D_{(t,t+n)}$ is the number of employees in the workforce dying during the period $t, t + n$. $R(t, t + n)$ is the number of employees retiring from the workforce during the period $t, t + n$.

$L_{(t,t+n)} - D_{(t,t+n)} - R_{(t,t+n)}$ are the attrition components, while $J_{(t,t+n)}$ is the renewal component. By setting R at 60 years or 65 years or 70 years, the model can be used to assess the impact of R (or retirement age policies) on $W_{(t+n)}$ over a time span in the higher education institution. The model can be decomposed to estimate $W_{(t+n)}$ for various categories of the workforce (such as permanent academic staff, student support staff, and institutional support), in which case the model may be rewritten as

$$W_{(t+n)}^c = W_t^c + J_{(t,t+n)}^c - L_{(t,t+n)}^c - D_{(t,t+n)}^c - R_{(t,t+n)}^c \quad (2)$$

where c is a specific category in the workforce.

This is a deterministic model to the extent that it is the variables on the right side of equations 1 and 2 that directly determine the size of the workforce at a given point in time. However, other variables such as the role of the Ministry of Higher Education, different funding streams for universities, sluggish staff promotion protocols, bureaucracy, and bottlenecks, resource allocation could impact indirectly on one or more of the attrition variables. The indirect impact of the extraneous variables on the magnitudes of the direct determinants in the above model specification is beyond the scope of this study.

Computing the Number of Employees before the Current Period, W_{t-n}

To compute renewal and attrition rates in the model specification for any given period, the numbers of employees for each year prior to the current period need to be computed. Thus for each year prior to 2012,

$$W_{t-n} = W_{t-1} - (J_{t-1} + E_{t-1}) \quad (3)$$

where W_{t-n} is the total number of employees in the workforce in the higher education institution for a specific year. W_{t-1} is the number of employees in the workforce in the education institution in the initial period prior to 2012. Since this would normally be the number of employees at mid-year, and since this information was not available in the database, it was estimated as the average number of employees in each of the two adjacent years prior to 2012 in the higher education institution. J_{t-1} is the number of new employees in the workforce in a specific year prior to 2012 in the higher education institution. E_{t-1}

is the number of employees who exited the workforce in a specific year prior to 2012 in the higher education institution.

Renewal Rate, J_{t-1}

For a specific year prior to 2012, the renewal rate (or recruitment rate) was computed as

$$Rr_{t-1} = (J_{t-1}/W_{t-1}) * 1,000 \quad (4)$$

where Rr is the recruitment rate in a specific year, that is, the number of new employees per thousand workforce in a specific year in the higher education institution.

Crude Attrition Rate, Car_{t-1}

This was computed as

$$Car_{t-1} = (E_{t-1}/W_{t-1}) * 1,000 \quad (5)$$

where Car_{t-1} is the crude attrition rate in a specific year, that is, the number of employees who exited per thousand workforce in a specific year in the higher education institution irrespective of the reason for exit. This formula was also used to compute the crude exit rate in the higher education institution due to a particular reason in a specific year.

For policy purposes, one may want to explore the reasons for attrition but will not alter the outcome of attrition in the application of the above model. Although the data used in this study included all categories of employees (permanent and temporary workers), the projections in the current study focused only on permanent academic employees because maintaining adequate numbers of permanent academic employees appears to pose a greater challenge than other categories of staff to the education institution.

Assumptions and Scenarios

The assumptions underlying the projections were based on the analysis of trends in recruitment and attrition among the permanent academic staff for the period 2006-11. This is because prior to this period many higher education institutions in South Africa went through a phase of merger with other higher education institutions in the country. The assumptions were as follows:

Projecting number of academic employees joining the higher education institution, $J^c_{(t,t+n)}$

1. The rate of new academic employees joining the higher education institution will increase according to the trend in 2008-11.
2. The number of academic employees in the higher education institution due to retire is closed (i.e., these persons will not resign during the projection period and new academic appointments will not be made of persons aged 55 years and over).

Projecting number of academic employees resigning or dismissed from the higher education institution, $L^c_{(t,t+n)}$

1. The trend in the rate of exit from the higher education institution resulting from resignation or dismissal during the period 2012-15 will be similar to the trend in 2006-11. The rate will stabilize as from 2016 to the end of the projection period at the level in 2015. A stabilization point in the rate was set to avoid negative numbers of resignation or dismissal rates.

Projecting number of academic employees dying in the higher education institution, $D^c_{(t,t+n)}$

1. The trend in crude death rate during the projection period will be similar to the trend in 2006-11 as aging will fuel increase in the crude death rate.

Projecting number of academic employees retiring in the higher education institution, $R^c_{(t,t+n)}$

1. The proportions aged 55-59 or 60-64 due to retire during the projection period will be similar to the proportions in those age groups that were due to retire in 2011.

Projection Scenarios

In addition to the above, the following assumptions were included as scenarios. In scenario 1 (Model 1), it was assumed that the mandatory retirement age is 60 years. In scenario 2 (Model 2), it was assumed that the mandatory retirement age is 65 years, and in scenario 3 (Model 3), it was assumed that the mandatory retirement age is 70 years.

Base and Terminal Year of the Projections

The base year of the projections is 2011, and the terminal year is 2026.

Results

Profile of the General Workforce

The results presented below reflect the analysis of the empirical data from the higher education institution, while the statistics for the general population

presented were based on analysis of the 2011 South Africa census. The profile of the general workforce of the higher education institution is shown in Table 1 and indicates that over one-half of the workforce is in the age group 30-49, as expected the distribution is different from that in the general population of South Africa. This is because while the workforce in the institution (as would be in other higher education institutions) is selective of people with certain educational qualifications, this is not the case in the general population. Consequently, the median age of persons aged 20 years and above in the institution is 42.8 years, while it is 37 years for persons aged 20 years and over in the general population. The table also indicates that a high percentage of persons (29 percent) in the current workforce are due to retire either mandatorily or voluntarily in the next 15 years (voluntary retirement age policy in the institution is 55 years). About 56 percent of the current workforce in the institution are women, and the percentage is higher than the percentage of women aged 20 years and over in the general population (53 percent).

Table 1 indicates that Black people and colored people are underrepresented in the institution's workforce. White people are markedly overrepresented with people from India being marginally overrepresented in comparison with the population distribution of persons aged 20 years and over in the general population.

It is important to outline educational profile briefly here. This is because the size of the workforce in a higher education institution is partly dependent on the availability of people with the appropriate educational qualifications in the general population. This is in turn influenced by the quality of education provided by the educational system. The current skills shortage in South Africa and hence the size of the workforce in higher education institutions may be attributable partly to the legacy of apartheid. The Bantu (i.e., non-White people) Education Act (No 47) of 1953 widened the gaps in educational opportunities for different racial groups. The concept of racial "purity" during apartheid and in the context of the Bantu Education Act was meant to keep Blacks educationally inferior (U.S. Library of Congress 2014). The impact of Bantu Education can still be seen by examining the educational profile of workforce by population group. Overall, being an academic institution, 60 percent of the workforce has at least a Bachelor's degree with over a third of the workforce having a Master's or doctoral degree. However, whereas the percentages of people from India and White people having lower than bachelor's degree qualifications are 32 percent and 35 percent, respectively, the corresponding figures for Black people and colored people are 50 percent and 64 percent, respectively. Furthermore, while about 35 percent and 37 percent of people from India and White people, respectively have a master's or doctoral degree, the corresponding percentages for Black people and colored people are 22 percent and 23 percent, respectively. It may be argued that mandatory retirement age may be an opportunity to address this skew. But the question arises, where would be the source of recruitment for the disadvantaged groups?

Table 1. Profile of the Higher Education Institution Workforce

Profile	<i>N</i> = 6,002 Workforce percent in group	South African population aged 20 years and over* percent in group
Broad age distribution (yrs)		
20-29	12.8	32.9
30-39	28.4	23.7
40-49	28.2	17.6
50-59	23.0	12.7
60-64	6.4	4.4
65+	1.2	8.7
Total	100.0	100.0
Median age (yrs)	42.8	37.0
Sex		
Male	44.3	47.5
Female	55.7	52.5
Total	100.0	100.0
Population group		
Black	58.2	76.7
Colored	3.7	9.1
Indian	3.6	3.1
White	34.6	11.2
Total	100.0	100.0
Educational qualification		
Lower than Bachelor's degree	43.5	95.4
Bachelor's degree	17.1	2.8
Honors degree	10.3	1.0
Higher degree: Master's, PhD	29.0	.7
Total	100.0	100.0
Black		
Lower than Bachelor's	50.4	97.4
Bachelor's	19.6	1.7
Honors	8.6	.6
Master's, PhD	21.5	.3
Total	100.0	100.0
Colored		
Lower than Bachelor's	64.1	97.7
Bachelor's	6.8	1.5
Honors	6.0	.5
Master's, PhD	23.0	.3
Total	100.0	100.0
Indian		
Lower than bachelor's	32.1	88.8
Bachelor's	22.3	7.1
Honors	10.7	2.3
Master's, PhD	34.9	1.8
Total	100.0	100.0

Table 1. Continued

Profile	<i>N</i> = 6,002 Workforce percent in group	South African population aged 20 years and over* percent in group
White		
Lower than bachelor's	35.3	83.5
Bachelor's	14.9	9.6
Honors	12.5	3.8
Master's, PhD	37.3	3.1
Total	100.0	100.0
Citizenship		
South African born	95.8	95.4
Foreign born	4.2	4.6
Total	100.0	100.0
Foreign-born employees within population group		
Black	5.8	
Colored	2.0	
Indian	5.0	
White	4.2	
Type of current employment		
Permanent	86.7	
Temporary	13.3	
Total	100.0	
Employee category		
Academic Staff	34.4	
Student support staff	48.2	
Institutional support staff	17.4	
Total	100.0	

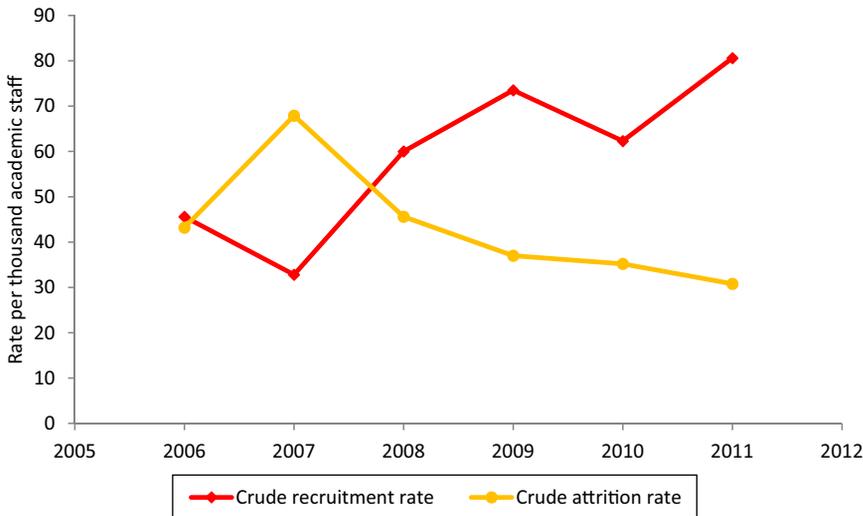
Source: * Authors' computation from the 2011 South Africa Census.

Less than 3 percent of Black people aged 20 years and over had a bachelor's degree or higher in the general population as of 2011.

Profile of Permanent Academic Staff in the Workforce

The median age of the permanent academic staff in the higher education institution's workforce is 44.3 years in comparison with student support staff, 41.7 years and institutional support staff, 43.8 years. The differences are statistically significant ($p < .000$). About 35 percent of the permanent academic staff are due to retire either mandatorily or voluntarily within the next 15 years. Relative to the population group composition in the general population aged 20 years and above, Black people and colored people are heavily underrepresented in comparison with White people in the institution's permanent academic staff.

Figure 1.
Crude Recruitment and Attrition Rates among Permanent Academic Staff



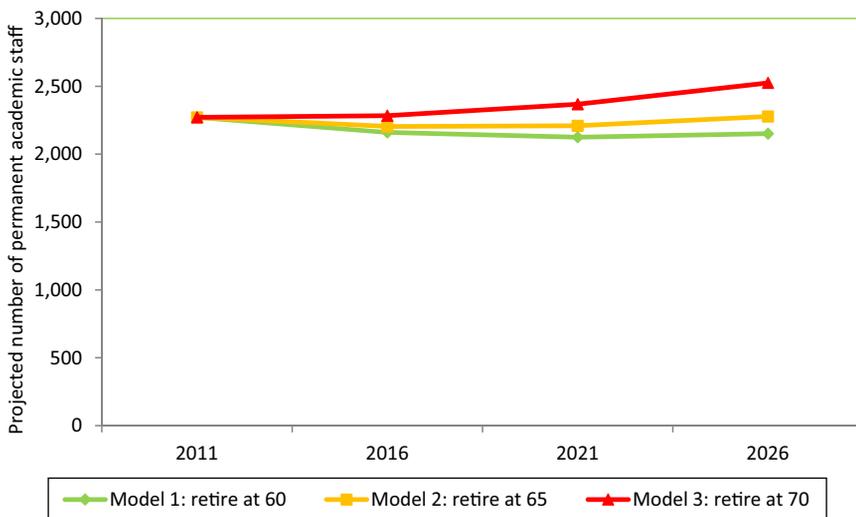
Source: Authors' computation from the Institution's database.

Trends in Renewal and Attrition among Permanently Employed Academic Staff in the Higher Education Institution

Recruitment is one form of renewal into the workforce. The trend in the number of permanently employed academic staff in the institution showed a slight increase during the period 2006 to 2008 but declined during the period 2008-11. The number increased from 2,432 in 2006 to 2,498 in 2008 but declined to 2,271 in 2011 due to the combined effects of the numbers of newly appointed academic staff that took up appointment (renewal), resignations, death, dismissal, or aging (attrition) in the workforce. The number that took up appointment decreased from 111 in 2006 to 81 in 2007 but increased to 183 in 2011. In absolute terms, the total attrition among the permanent academic staff declined from 168 in 2007 to 70 in 2011. The total number of exits was lower than the total number that took up appointment during the period 2006 and 2011 except in 2007. The reason for the pattern in 2007 is not clear.

Using absolute numbers in examining trends can sometimes be misleading as this does not take into account differences in the size of the workforce in different years. For this reason, crude recruitment and attrition rates per thousand permanent academic staff in the institution are presented in Figure 1. As seen in the graph, the trends are in opposite directions. In 2007, for every 1,000 permanently employed academic staff, there were 33 permanent academic staff that took up appointment that year. This increased to 81 per 1,000

Figure 2.
Projected Number of Permanent Academic Staff



Source: Authors’ computation from the Institution’s database.

permanently employed academic staff in 2011. Regarding attrition, for every 1,000 permanently employed academic staff in 2007, there were 68 permanently employed academic employees that left the higher education institution for one reason or the other. This declined to 31 in 2011.

About one-third of newly appointed permanent academic staff who took up appointment during the period 2006-11 were in the age group 20-34, and less than 5 percent were in the age group 60-64. The focus on younger age groups in appointments should be favorable to succession planning in the institution.

Impact of Aging on the Future Size of the Permanent Academic Staff in the Higher Education Institution

The projected figures presented in the following section were derived from the analysis of empirical data from the higher education institution and assumptions about future trends. Figure 2 indicates that if the assumptions hold and mandatory retirement age remained 60 years (Model 1), the number of permanent academic staff in the institution would drop from 2,271 in 2011 to about 2,160 by 2016, an overall projected decline of 4.9 percent during the period 2011-16. If mandatory retirement age were 65 years however, the projected number of permanent academic staff in the institution would be about 2,204 by 2016, an overall decline of about 3.0 percent during the period 2011-16 (Model 2). Since the assumptions regarding recruitment of new staff, resignation, and

dismissal were the same in the three models, the projected decline during the period 2011-16, with a mandatory retirement age of 65 years, is partly due to the negative impact of the previous mandatory retirement age of 60 years in the higher education institution. There is a time lag before the negative impact of lower mandatory retirement age of previous years disappears. Assuming that the mandatory retirement age were 70 years, the projected number of permanent academic staff in the institution could be 2,283, an overall increase of about .5 percent during the period 2011-16 (Model 3).

It can be seen from Figure 2 that with a mandatory retirement age of 60 years, the projected number of permanent academic staff in the institution would continue to decline until about 2021, whereas with a mandatory retirement age of 65 years and 70 years, the projected number of permanent academic staff would increase during the period 2016-26.

There may be other attenuating factors for the decline in the number of permanent academic staff during the periods shown in Figure 2. One of such factors is a trend away from permanent appointments to temporary appointments by the institution. The data indicate that the number of permanently employed academic staff in the institution increased during the period 2006-08 but declined during the period 2008-11 (graph not shown). High attrition of permanent staff in earlier periods (see Figure 1) for various reasons internal and external to the institution could also be a contributory factor. Introduction of new policies in the institution at certain periods (e.g., abolition of flexi time) may have led to the flight of some permanent academic staff from the institution. Salaries are generally better in the public sector than in higher education institutions in South Africa. In recent years (since 2013), however, there have been major salary adjustments for academics in the higher education institution in this study that makes its salaries as competitive as in the public sector. The poor salaries in the past relative to public sector may have contributed to the declining number of permanent academic staff seen in Figure 2.

Summary and Policy Recommendations

Evidence regarding the impact of removal of mandatory retirement or extension of working ages on skills shortages in other contexts in South Africa is lacking and inconclusive in other contexts. Burkhauser and Quinn (1983, cited in Doeringer 1990), have argued that eliminating mandatory retirement age would have raised the labor force participation rates of 64-65-year-olds in the United States in the 1970s. Shannon and Grierson's (2004) study suggests that eliminating mandatory retirement age would have little effect on the size of the older workforce. With regard to the medical profession, it has been suggested that managed care and other related changes in the United States may contribute to early retirement and in turn produce adverse effects on the availability of medical care (Bahrami, Elder, and Jacobson 2002). Phillips (2004) argued that

postponing the retirement of current workers is a contributory factor as to why small business owners in the United States are unlikely to face future labor shortages. The impact of eliminating mandatory retirement age or extension of working age on skills shortages and on the achievement of the mandate of higher education institutions in different contexts needs further research.

The results of this study indicate that all other things being the same, mandatory retirement age of 60 years has a negative impact on the future number of permanent academic staff in the short-to-medium term in the institution, while mandatory retirement age of 65 years slows down the growth in the number of permanent academic staff in the short run due to the negative impact of lower mandatory retirement age in previous years. In the long run, mandatory retirement age of 65 years or even higher has a positive impact on the number of permanent academic staff in the higher education institution.

Addressing the skills shortage among permanent academic staff poses challenges to management of higher education institutions in South Africa. The challenges include implementing employment equity (i.e., priority to Black people to reflect the population group distribution of the country) in the context of high-level skills in the general population especially among Black people partly due to the legacy of Bantu education instituted by the apartheid region. One other challenge often not considered, is the lack of competitiveness in salaries of academics in South Africa. Salaries are generally higher in the civil service sector compared to those of higher education institutions with the exception of a few. The reverse is the case in some African universities (e.g., Nigeria).

Mentorship programs of junior staff already in place to address skills shortage in higher education institutions need to be accelerated. Other strategies that may be considered include:

1. Accelerated promotion of junior staff that are performing exceptionally well;
2. Provision of full scholarships (to meet full cost of study) to junior academic staff to undertake master's and PhD studies locally or abroad while receiving their full salaries while on study;
3. Mandatory requirement for permanent junior academics to obtain higher degrees within a specified period of time as part of their condition of employment.

Students' population in higher education institutions in South Africa has grown over the years and is probably the case in many other countries worldwide. If such growth is not accompanied by an increasing academic workforce, maintaining standards would increasingly become difficult and might impinge on the ability of higher education institutions to achieve their mandate. Population aging and shortage of requisite human resources are becoming a global phenomenon. In addressing these, some states in the more developed countries have either eliminated or raised mandatory retirement age. South Africa can take a leaf from such strategies.

Although the present study focused on one higher education institution in South Africa, the model presented is of wider of application. The model can be applied in other higher education institutions within or outside South Africa that have concerns and about mandatory retirement age and want to assess its impact on the future size of the workforce. With minor adjustments (with regard to category of staff), the model can also be applied to noneducational organizations. All organizations should have all the elements in the model equations although the magnitude of each element will vary from one organization to the other. For example, the mortality element might be heavier in a mining organization compared with a higher education institution. The information required to apply the model would usually be available in the human resources department of any organization although in practice, access to such information may be restricted.

It should however be noted that although the estimation model presented in this study focused on variables that directly determine the future size of the workforce, there are other indirect factors but these must operate through one or more of the direct variables in the model. One of these indirect factors is productivity and the extent to which it is an asset to the organization (Dalton, Krackhardt, and Porter 1981; Morrell, Loan-Clarke, and Wilkinson 2001). Mandatory retirement age may lead to an organization losing workers that are still productive. But it could also benefit an organization as mandatory retirement age permits workers who may no longer be productive to exit the organization. Other indirect influences include job satisfaction, organizational commitment, job insecurity, and external opportunities. These can have impact on resignation (an attrition variable). These indirect influences were beyond the scope of this study but are important for further research.

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