LEADING SAFETY ON THE EDGE OF CHAOS: CREATING A REPOSITORY OF KNOWLEGDE IN THE ERA OF DWINDLING CRITICAL RAILWAY SKILLS

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SUMMARY

"If you plan for one year, plant *rice. If you plan for ten years, plant trees, If you plan for 100 years, educate mankind"* – Chinese Proverb

It would be remiss of anyone to suggest that the above Chinese proverb was coined by a plausible dreamer; this is an aphorism that should be accepted by the entire railway industry if we do not want to become extinct like dinosaurs. Simply put, the future of any society depends upon the citizenry that is excellently equipped with skills. It would be impossible for any country to be expected to churn out skills at the whim without educating her citizenry. Had the rail industry in South Africa focused on the education of mankind or to be more accurate, human growth (the Railway Institute in Durban in 1855 was a perfect example of skills development) in their planning processes; we would not be talking about the dwindling critical railway skills in the industry hitherto.

It would be impossible to plan for one or ten years and still expect to reap the same results as the one who had planned for hundred years. Benjamin Franklin shed some light on the consequences of poor planning: *"If you fail to plan; you are planning to fail".* Read together with the above Chinese aphorism, a short-sighted approach to planning would subject us to a perpetual skills shortage problem; and if this situation goes unbridled this will become an industry mantra.

This paper will shed light on the following aspects: how history lessons could propel our future, how to retain the best talented employees, how to create knowledge (as opposed to consuming it), how to keep knowledge in your organisation, how to measure wisdom in your organisation when skills are at the premium, as well as voluntary versus involuntary retirement.

1. INTRODUCTION

"How many South Africans know that Railways were the first to provide technical education in South Africa and that in several cities the technical training centres of the Railways developed into some of our present technical colleges? How many know that in the early days Railways provided education for its staff in certain academic subjects, built Railway Schools for the children of their personnel, provided the teachers and made free rail travel available to the scholars including the children of farmers and other citizens" [9]

The South African Railways became the centre of empowerment when the rest of the African continent was still groping in darkness as far as human growth was concerned. It is regrettable that today's continent trail blazers are battling with the shortage of skills in the industry. The skills shortage debate in South Africa has enjoyed extensive media coverage in recent times, but this is not a new phenomenon; the country faced the same problem when railways were still at a fledgling stage. The media covered the issue under different headlines including "brain drain", "critical skills shortages" and "black drain" – meaning black executives who drop out of the corporate world prematurely to start their own businesses. The National Planning Commission's (NPC) Diagnostic Report has also noted the shortage of skills as a threat towards the smooth running of society [20].

There is currently an acknowledged <u>shortage</u> of key skills as well as a lack of <u>depth of skills</u> in critical areas within the South African railway industry. For the industry to meet the expanded mandate of supporting government's socio-economic and transport objectives in both urban and rural contexts, the organisations will need a focused approach to human capital development and the progressive training of a strong base of the key skills that will lay the foundation for sustaining freight and rail passenger transport sectors.

The Railway Safety Regulator (RSR) is the single national safety railway safety authority mandated with the safety oversight of above surface railway operations in South Africa. The RSR is therefore concerned about the apparent lack of sufficient skills and experienced staff throughout the railway network. RSR's investigations continue to highlight errors and violations by operational staff as primary causes – with shortfalls in actions by more senior staff (such as safety related decisions, high vacancy levels in the safety critical roles, lack of assurance and monitoring, etc) also as a contributing factor. There is evidence that repetitive sub-standard acts are not being corrected. Skills are a pivot on which any railway network rotates. Executive, front line operational and engineering roles are of vital importance in delivering railway safety performance. The RSR has noted that key skills required for modern approaches to railway safety management (such as strategic safety management, risk assessment, auditing and accident investigation) are at the premium to manage human factor related risks.

It is against this backdrop that the Rail Safety Regulator is concerned about the current skill shortage in the South African Rail Industry.

2. RAILWAY SKILLS IN SOUTH AFRICA – 1860 - 2014

The advent of railways in South Africa in the 1860s was a so-called 'killer application', as it altered the way society functioned. With the coming of the railways, people were restricted to travel only between fixed points on the same track, based on a dictated timetable [10]. It is important to note that the primary role of railways in South Africa was for the country's economic development, and that the majority of the freeways and bridges were also constructed by the railways. This was deemed necessary by then for the railways to embark on the developmental route since the private sector could not afford it.

This killer application required a new set of railway skills which were not available during the formative years. In a nutshell, the country had to start building up skills from a zero base.   The lack of skilled workers during the early years was a serious setback and an urgent plan had to be carved out to address the gap as Lyell [9] eloquently argues: *"For many years after the inception of railways in South Africa, the various railway companies, and after them the Government, had to recruit from overseas all staff who required specialised knowledge and experience of many facets of railway service. This applied equally to the engineering and graded technical personnel who had to plan, survey, build and maintain railway lines, maintain and repair rolling stock..."* It is, therefore, the

railways in South Africa who were the trail blazers in the provision of technical education. The antidote to skills shortage was the recruitment of staff from overseas drawn from no fewer than 27 countries (railways were forced to deal with diversity management), the majority from Holland. Another important intervention was the introduction of technical education in several cities in the country.

The programme of recruiting qualified overseas staff, the provision of technical training as well as railway discipline was not futile exercises as it paid some wonderful dividends in the long run. South Africa will forever be grateful of the achievements of William Thackeray whose record as a train driver was beyond blemish. In 1924 a lad of 16, William Keet Thackeray, joined the South African Railways as a labourer in Braamfontein, and stayed there for his entire working life. As a stoker, he fired to driver Ashworth, known in Braamfontein as 'Hellfire Jack'. In 1934, William Thackeray at age 27 passed his driver's examination. In 1950 he was promoted to Driver Special Class, driving mostly passenger trains like White and Blue Trains. Thackeray was the first driver at Braamfontein to be awarded a Gold lapel badge for an unblemished record of service in 1960. The badge required at least 15 years accident free, among other qualifications, like favourable reports from a Locomotive Superintendent, Locomotive Foreman and Locomotive Inspectors. The reports covered <u>reliability</u>, <u>co-operation</u>, <u>courtesy</u>, and <u>efficiency</u> – values not even remotely reflected in what most train drivers are paid for. Due to retire in 1962, he opted for an additional three years, logging 41 unblemished years of service.

2.1 The conservative world view about racial matters

When the railway started in the 1860s in South Africa, the view or to be more precise; the perception of the world of black people was generally negative. America was still struggling with slaves who had just been emancipated; and blacks were still the ewers of wood and drawers of water and not necessary enacting important roles in the railways. For the people who have been enslaved, colonised and oppressed by their fellowmen; Thomas Jefferson's Solomonic wisdom served as nectar to their ears: *"We hold these truths to be self-evident: That all men are created equal; that they are endowed by the Creator with certain unalienable rights; that among these are life, liberty and the pursuit of happiness".* These wise words were uttered by the Third President of the United States of America and the First Secretary of State, who is best, remembered as the principle author of the Declaration of Independence. Sadly, when these words were said they did not take into account the black race which was relegated to the slavery periphery.

A number of people would be shocked to gather that both these American presidents did not believe in the coexistence of black and white people. Taylor [19] succinctly drove this point home: "...Many great American leaders – Abraham Lincoln, Thomas Jefferson, James Madison, John Marshall, Henry Clay, and Daniel Webster, to name just a few did not believe that black and white could live peacefully in the same society". Jefferson who firmly believed that "...all men were created equally", did not believe that a white person and a black person were created equally. What a paradox! He was convinced that slavery was wrong, but he did not believe in racial equality. Jefferson and Lincoln were not wrong. I blame their scripting or socialisation. Those who are familiar with *Imagel* by Kenneth Bouldin will fully comprehend Jefferson and Lincoln's perspectives. Bouldin's thesis was simple yet contains very deep thoughts and learnings. We each organise our knowledge into a personal image of the world, which serves as a kind of road map in guiding our behaviour. To understand behaviour, understand the image. To change behaviour, change the image. The prevailing perceptions contributed to a large extent to the low levels of development of black people, which in turn contributed towards the shortage of skills in the railway industry in South Africa.

2.2. The De Villiers Commission

The question that come flooding back is: how did we end up in this conundrum when we were once excellently equipped with skills? The South African Transport Services (SATS) Act 1981 (Act 65 of 1981) provided for SATS to be managed according to business principles [14]. The Commission found that the application of the then strategy of SATS entailed, among other things, the cross subsidisation and subsidisation of services as well as the lack of the norm of return on capital and profitability which was inconsistent with the utilisation investment and

application of capital. It should be noted that South Africa did not invest in its railway system for a period bordering on 38 years after the de Villiers Commission advised the then government not to invest in railways. When the government disinvested in railways, they unwittingly stopped the training and development of the personnel. The unintended consequences of the De Villiers Commission were the current poor infrastructure and the skills gap. The rail assets have depreciated and are very costly to maintain. The importance of infrastructure investment was endorsed by the National Planning Commission report, which states: "*Successful countries generally invest at high rates and are continually modernising public infrastructure to suit their economic settlement and trade patterns. But South Africa has effectively missed a generation of infrastructure modernisation...*" *[*20*]*. The South African poor infrastructure was also lamented by The National Freight Logistic Strategy [13] that noted that our infrastructure is inadequate for the development of this country and "*needs to be revamped*".

The old infrastructure makes it increasingly difficult for the railway to deliver a proper service to their customers. The inventories of trains need to be upgraded at the time when the business's cost structure is too high relative to revenues. This is a dilemma as the railway industry must also address the question of customer centricity, where the customer is a focal point. This is a thorny issue for the industry since they traditionally have had a monopoly in the market and it is difficult for them to change their paradigm. Put another way, the current railway transport is not sustainable. The question of poor equipment does not only affect rail; ports are no exception, the equipment used at most of the container terminals is old and generally in poor condition. The government's multibillion Rand investment in infrastructure projects and rolling stock would definitely stem the tide of these lamentable poor railway assets, but could hit rock bottom due to inexperienced engineers, architects and quantity surveyors (these are the critical skills required to roll out any infrastructure programme).

2.3. The democratic South Africa

When South Africa was democratised twenty years ago, political power was transferred from the white minority to the black majority, but the economic power remained in the hands of the minority groups. Professor Ali Mazuriwi captured it perfectly when he said that blacks were given the crown, but the white minority maintained the jewel by virtue of their skills. Simply put, blacks did not have the wherewithal to participate fully in the economy, and rail transport was no exception. Perhaps it would be appropriate if we recalled the wise words of former United States President, Lyndon Barnes Johnson. He spoke these words on the 4th of June 1965 at Howard University:

"Freedom is the right to share fully and equally in American society, to vote to hold a job, to enter a public place, to go to school...but freedom is not enough. You do not wipe away the scars of centuries by saying now you're free to go where you want and do as you desire and choose the leaders you please. You do not take a person who for years has been hobbled by chains and liberate him, bring him up to the starting line of a race and then say, you are free to compete with all others. Negroes are trapped, as many whites are trapped. In inherited, gateless poverty. They lack training and skill ..."[19].

Johnson's speech may be some years to come declared the equal of Lincoln's Emancipation Proclamation. In the South African context, Johnson's speech may be declared equal of FW de Klerk's February 2, 1990 speech, which formerly marked the end of racial discrimination (Apartheid) in South Africa. According to Makakane [10], today's black workforce largely represents the direct recipient of poor quality education of the apartheid era, while most have, against odds, managed to acquire technical and academic qualifications, they have not been provided with opportunities to work in positions that are commensurate with their qualifications due to the legacy of the past. Low positions have also not awarded them additional skills that they need to perform adequately in those positions. As a result of that, there are performance gaps, which lead to blacks being labelled as "lazy "or "lacking foresight

In South Africa, many organisations established affirmative action programmes to help identify qualified and qualifiable blacks and to ensure equal employment opportunities. Affirmative action is an ambitious attempt to redress the long history of racial and sexual discrimination as it seeks to create a fully diverse society. Institutions with affirmative action policies generally set goals and timetables for increased diversity and use recruitment, as

ways of achieving those goals. But these days affirmative action seems to incite rather than ease the nation's internal divisions [4].

Before the dawn of democracy in South Africa, blacks principally were relegated to the segregated professions as preachers, physicians, dentists, lawyers, embalmers, and proprietors of small retail and personal service businesses. This narrow range of opportunity was augmented somewhat by black employment within the public sector as teachers, social workers, and employees of other public funded social service agencies. In the railways, black people performed low-status clerical and administrative support functions.

When it comes to affirmative action; the difference between South Africa and the United States of America (USA) is that the black people in South Africa are the majority whilst they are the minority in the USA. There were also perceived unfair application in the implementation of affirmative action in South Africa which caused some of the skilled white people to be become disgruntled, some resigned and opted for self-employment as consultants, whilst a significant number opted to migrate to other countries. On the other side of the coin, some black people embarked on so-called „job hopping "because of their high demand in the market. In addition, there was also the 'black drain'– blacks who resign from the corporate world to start their own businesses.

Little notice was given to the 1991 statement by Floyd Dickens and Jacqueline Dickens (4): "*Affirmative action is almost a dead issue. This is the age of diversity. We must become less concerned with the packaging of the resource and more concerned with the contents of the package*". They came up with a concept called **added value,** *which is defined* as those additional assets that individuals acquire as a result of belonging to a group and apply to some task or some environment. These additional assets are the group's unique experiences, values, behaviour, skills, and talents that have been learned and traditionally handed down from generation to generation. Dickens and Dickens argue that different groups need to be treated in ways that pull the best from them, not the worst. They dismissed the melting pot concept as misleading and counterproductive to diversity management because people are told to assimilate. Forced integration in their view, does not work well. "In a melting pot, flavours lose their identity; the strongest flavour prevails".

The lack of planning by the apartheid government seems to continue in the post-apartheid government, as the area of skills planning remains a critical issue. Ackoff's [5] typology of planning provides a provocative and useful way of understanding the planning process and why it often is difficult for organisations to understand their own needs for transformation. He suggests that there are four different approaches to planning:

- *Reactive*, or planning through the rear-view mirror;
- *Inactive*, or "going with the flow:;
- *Preactive*, or preparing for the future; and;
- *Proactive*, or designing the future and making it happen.

Reactive planning occurs in historically static environments such as the railways where well-established, conservative, traditional organisations have long history of success behind them. They tend to focus on the past, rather than the future, resisting and resenting the demands of the new, dynamic environment. Ackoff [5] launched damaging criticism on the railways for their reactive approach: *"American railroads, by and large, offer a good example of such an approach. For more than two-thirds of a century, they have resisted the changes in the pattern of surface transportation in the United States of America, especially the development of the trucking industry."*

The reactive planning process resembles the mental modes for thinking in the 1950s. In the 1950's workers were not expected to disrupt stability, as the workforce was highly controlled. The events were not reasoned and messages were also managed. One way top down communication was the name of the game. People were deeply engrossed in activities, not in processes and strategies. In addition, the pyramid structure was commonplace followed by the box approach. Troubleshooting became a norm; end-of-the-pipe thinking involved an emphasis on accident investigation. This type of mind-set also entailed an emphasis on regulatory

compliance. More resources were expended on accident investigation and not on accident prevention. Those who violated the rules were severely punished by management. Dennis [3] observed that increased supervision and heavy discipline do not improve safety at all. Coercive power cannot improve safety performance. Our paradigm has to shift from a machine-based "clockwork" conception of the universe to a complex adaptive system perspective. The employment of the systems approach is vital in reducing entropy in safety management.

The fixed railway mind-set chimed well in the 1950`s. Our major problem today in the railways is value shift.  The value has shifted from trains, trucks, and planes to Integrated Logistic.  The mental models of the 1950`s are therefore no longer relevant. The value shift in the railway industry compels us to look at safety from a new perspective. The fixed railway mentality is not a solution to our problems. Workers are injured, liabilities grow, assets are destroyed, and the morale is at low ebb and profits decline. This situation warrants the attention of all railways to change their paradigms on how to attract new skills to the industry.

South Africa is desperately seeking railway skills in the face of global competition. This quagmire would need our paradigms to change. Traditionally everything in the railways was fixed. The fixed plans, fixed rail, fixed stations and the fixed time schedule created a fixed mind-set among railway employees and management. Mathebula [11] observed that railroads created a monolithic organisation, with no room for manoeuvrability. The railway industry in South Africa has to come up with creative ways to retain skilled employees. The questions that keep flooding back are the following: Since the railways were the first to introduce technical training in 1920 what happened to those technical colleges? More than 27 countries provided their expertise to South Africa, what happened to those skills? Why are we now where we were in 1860 when the railways started? What kinds of skills are now available in South Africa? Where did we go wrong as a country?

2. ENTROPY: THINGS FALL APART

We are at the cusp of an entropic era; where everything seems to fall apart. Entropy is defined in the second law of thermodynamics, as a universal law of nature, as a measure of disorder or randomness in a system [3]. Simply put, entropy means chaos: the tendency for things to fall apart when the centre could no longer hold. This laws says that while there is the conservation of mass and energy, the atoms that make up the mass and energy tend towards disorder, break down into chaos so that the longer the universe exist the more chaotic it tends to become. Breaking down of order into disorder, breaking down of structure into chaos. It is the law of increasing disorder.

Ralf Dahrendorf, one of the outstanding German Sociologists once observed that social change was something ubiquitous (seeming to be everywhere). To build on the words of from Dahrendorf, one could safely say that rail reform; like social change is also ubiquitous. Railways around the world are 'hauling' themselves out of the decline phase into the valley of railway 'renaissance'. This transition is tumultuous since the 'baby boomers', armed with critical safety skills are gradually exiting the corporate scene either to retire or to start their own businesses (some even die) and making room for Generation X and the Millennial Generation. To add salt to the wound, a global 'war' on talent has been declared. It is a known fact that employers are looking for talent and your talented employees are likely to accept attractive job offers with a lot of trimmings within or outside the railway industry. This phenomenon is further exacerbated by the new employment contract which makes sheltered employment obsolete, if not archaic.

This crisis could only be turned into an opportunity if we changed our thinking. Age brings wisdom, so goes the adage. The 'baby boomers' were the 'warehouse' of railway safety knowledge and their departure from the corporate world would certainly leave a big void in the industry. If this situation goes unbridled, the rail industry will sadly stew in its own juice.

It has become almost platitudinous to state that we are now leading safety on the edge of chaos due to the acute scarcity of skills. Admittedly, we are living in a scary era of dwindling skills in both the natural arena and human resources arena. These resources are at a premium. The United Nations Secretary General Ban Ki-Moon ruefully

noted: "*...the consequences for humanity are grave. Water scarcity threatens economic and social gains and is a potent fuel for wars and conflict...Water is central to the well-being of people and the planet, we must work together to protect and carefully manage this fragile, finite resource*". [11] Our experienced railway human resources, like water resources, have also to be carefully managed by virtue of their fragility and rarity. As our number increases, we need ever more skilled people to enact their proper roles in society.

The strategies that are used in the fierce completion over water resources are also used over the completion over skills. What the UN calls 'land grabbing' I call 'skill grabbing'. According to Nkosi [11] 'Land grabbing' is increasingly becoming a common trend. Saudi Arabia, for example one of the Middle East's largest cereal growers, announced it would cut cereal production by 12% a year to reduce the unsustainable use of its groundwater. To protect its water and food security, the Saudi government has issued incentives to lease large tracks of land in Africa for agricultural production. The United Kingdom and Australia are aggressively recruiting railway engineers from Commonwealth countries such a South Africa and Zimbabwe. It would be a titanic labour to stem the tide of 'skill grabbing'. A number of Western countries are aggressively recruiting railway engineers from Commonwealth countries such as Zimbabwe and South Africa. Skill grabbing is not a steam, but a river and a tide.

3. PUTTING SKILLS SHORTAGE INTO PRESPECTIVE

Skills shortage defined as is a genuine lack of adequate skilled individuals available in the accessible labour market with the *type* of skill being sought and which leads to a difficulty in recruitment (National Skills Task Force). A skill shortage characterises the situation where employers are unable to recruit staff with the skills they are looking for at the going rate of pay (European employment Observatory). This could result from a basic lack of people (when unemployment levels are very low), significant geographical imbalances in supply (sufficient skilled people in the labour market but not easily accessible to available jobs), or a genuine shortfall in the number of appropriately skilled occupations [16]. The term, therefore, refers to both qualitative and quantitative shortages of skills.

`Skills gaps` is used to describe the *qualitative* mismatch between the supply or availability of human resources and the requirements of the labour market. `According to Graham [2009] Skills gaps` exist where employers feel that their existing workforce have inadequate skills types/levels to meet their business objectives; or where new entrance to the market are apparently trained and qualified for occupations but still lacks a variety of the skills required. In a nutshell, a skill gap relates to a deficiency in the skills of existing employees.

Managing skills shortage is a titanic labour and the managers with an old railway paradigm, would find it increasingly difficult to cope. For example, most of the Silent Generation, born between 1925 and 1942, missed out on combat in the Second World War and they were children of war and of the Great Depression. They grew up during hard times and they tended to be risk averse. Today's young executive should have the following competencies to deal with any railway challenge and skills shortage is no exception [16]:

Collaboration: Ability to help others find consensus on issues or disagreements.

Diagnosis: Ability to research, reveal, and understand the root causes of organization, process, or team problems.

Feedback: Communicating and insuring authentic two-way communication.

Self –Awareness: knowing one's internal states, preferences, resources, and intuitions

Self-Regulation: Managing one's internal states, impulses, and resources.

Motivation: Emotional tendencies that guide or facilitate reaching goals.

Empathy: Awareness of others' feelings, needs, and concerns.

Social Skills: Adeptness at inducing desirable responses in others

Questioning or cross examination skills: Objectively gathering information by various questioning methods to stimulate creativity and learning.

Relationship Skills: Successful application of verbal and nonverbal communication skills.

Intervention: Ability to objectively diagnose a situation and know what action is appropriate to take.

Group process: Understanding of group development processes.

In addition to these competencies, managers have to embrace the five elements of wise reasoning proposed by Grossman cited in Southey [17]

(a) Willingness to seek opportunities to resolve conflict;

(b) Willingness to search for a compromise;

(c) Recognition of the limits of personal knowledge;

(d) Awareness that more than one perspective on a problem can exist; and

(e) Appreciation that things may get worse before they get better.

3.1 Typology for classifying skill shortages

Richardson [13] provides a useful typology for classifying skill shortages and associated recruitment difficulties:

Level 1 shortage: there are few people who have the essential technical skills who are not already using them and there is a long training time to develop the skills.

Level 2 shortage: there are few people who have the essential technical skills who are not already using them but there is a short training time to develop the skills.

Skills mismatch: there are sufficient people who have the essential technical skills who are not already using them, but they are not willing to apply for the vacancies under current conditions.

3.2. Causes of Skill Shortages

The subject of skill shortages is multifaceted; there are both macroeconomic and well as microeconomic factors associated with skill shortages.
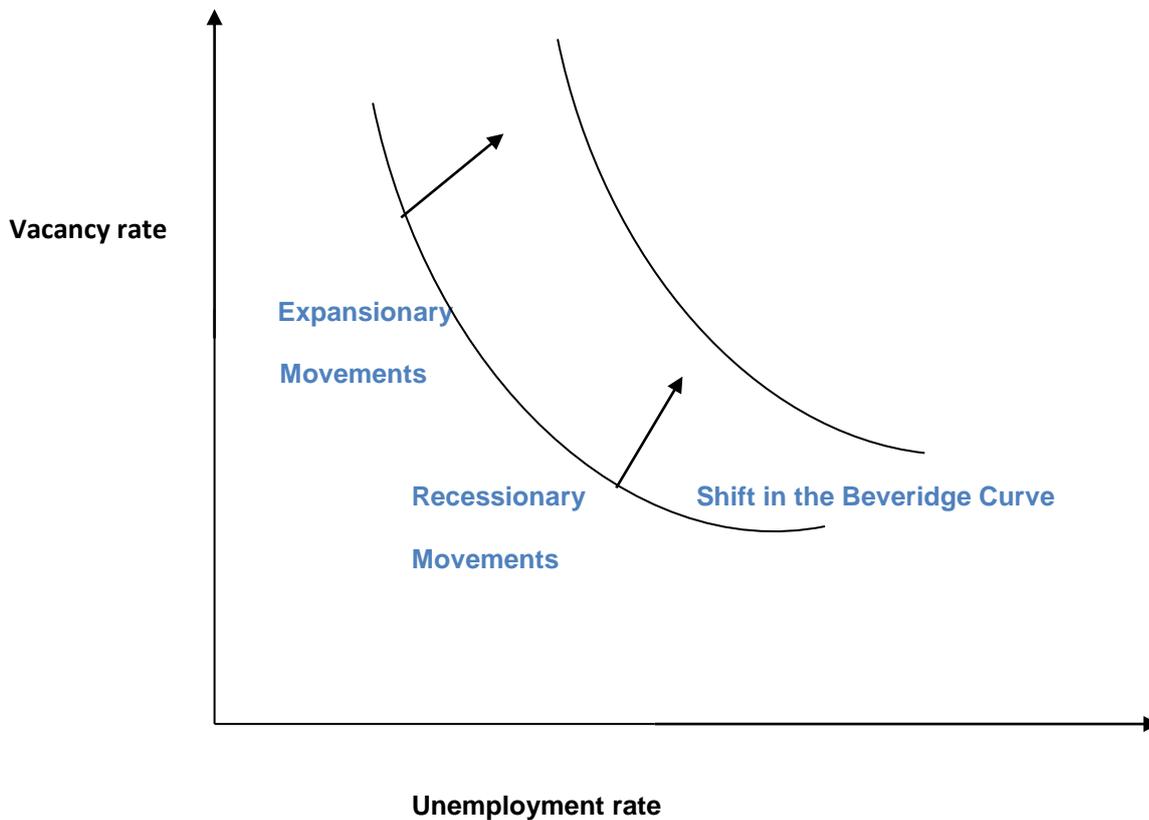
3.2.1   Macroeconomic causes of skill shortages

The Beveridge Curve is a graphical representation of the relationship between unemployment and the job vacancy rate (the number of unfilled jobs expressed as a proportion of the labour force). The core proposition of the curve is that when a large number of people are employed due to economic growth, employers are unable to fill the opportunities that they are offering. On the other side of the coin, during the recessionary times when a number of people are unemployed, employers are likely to be able to fill most of their positions because there will be plentiful candidates, and so there will be few skills shortages [6].

It is also interesting to note that Britain is presently in an interesting position, where the number of part-time workers has risen, economic growth is non-existent and employment is at an all-time high. This just raises the issue of full-versus part-time employment.

The figure below illustrates the Beveridge Curve:

Figure 1: Beveridge Curve

Vacancy rate

Expansionary

Movements

Recessionary

Movements

Shift in the Beveridge Curve

Unemployment rate

3.2.2 Microeconomic causes of skill shortages

Research has shown that there are various microeconomic causes of skills shortages [18]

3.2.2.1 The ageing workforce

The rail industry internationally is threatened by an ageing workforce. Corporate knowledge and industry experience are projected to disappear as a large group of long-term employees reach retirement over a short timeframe. To add salt to the wound, the legacy of apartheid that discriminated the majority of the people in favour of the minority has contributed to the ageing workforce debacle, as the majority of the knowledge soon to be lost, has not been transferred from the minority to the majority. Australia faced the same problem and it is for this reason that they have embarked on the Indigenous Employment Strategy in the Australian Rail Industry [14].

3.2.2.2 Health requirements

It is a fact that rail workers are exposed to health hazards on a daily basis. Rail workers are prone to hearing loss as well eyesight related problems. Failing hearing and eyesight resulted in staff undertaking different duties. Many are unable to perform their trade and are moved into roles where they are 'off the tools'.

3.2.2.3 Industry structure

The rail industry expended more effort on downsizing and increasing focus on improvements to industry cost control, productivity and consequent short-term operational goals. The rail reforms moved the industry from a government sector, where adequate engineers were trained as public employees, to a commercial and corporate

sector where an environment geared towards graduate training and continuing professional development did not exist. Previous graduate recruitment programmes were ended, and it took five years before the larger companies realised they needed to reinstate them. Training opportunities in niche rail specialisation disappeared as well as graduate training position in the public sector. These were not replaced by the private sector. They were not replaced by the public sector either.

3.2.2.4 Education and training system factors

Rail-specific training options at higher education sectors are relatively limited, while student demand and other courses associated with critical roles is typically low. Even with such qualifications, new entrants to the industry require substantial lead times to attain a full understanding of their role.

3.2.2.5 HIV and AIDS

Our major problem relating to a sustainable labour force in Africa is the scourge of HIV and AIDS. This epidemic has claimed thousands of lives irrespective of the training and development the country had invested in individuals.

3.2.2.6 Global Competition

A global war on talent has been declared. The 'brain magnet 'effect is exacerbated by the new employment contract formats that make sheltered employment obsolete. 'Skill grabbing' is now commonplace because of globalisation.

3.2.2.7 Failure to recruit young people

Young people today don't think about railways and careers in the same sentence – unless they are children of current rail workers. It is important to note that young people are not drawn to the rail industry for several reasons. The following are reasons cited by Sample:

(a) Traditionally, rail promoted people based on seniority rather than merit and performance.

(b) The rail sector is known for rigid salary schedules with ceilings instead of basing salaries on accomplishment and potential.

4. RECOMMENDATIONS

In a global competitive world, the 'war' on talent will never relent; it would be a perpetual war. Brooding or firing broadside against our competitors in other industries such as construction and mining over the shortage of critical skills in the railway industry would not help us at all. What is required is a strategy similar to the chess board game. Chess is representative of strategy, persistence, cunning, and the ability to look further into the future than an opponent. It is about mental toughness and sacrifice. The following are the recommendations or suggested solutions to the skills shortage debacle in the South African:

(a) We have to acknowledge the fact that today's world has dramatically changed since 1860, it would, therefore, be impossible to recruit experienced railway men from 27 countries to come to South Africa as we did during the formative years. Every country regardless of the level of development strives to retain the skills on home soil. However, one of the options to be considered would be to recruit retired former railway employees with the view to transferring their accumulated skills to young employees. This is a viable option given the fact that after the inception of railways in South Africa, the railways had to recruit from overseas all staff that required specialised knowledge and experience of the many facets of railway service. The current knowledge within the South African rail industry are amongst those who have left the railway service due to retirement or natural attrition, so it is incumbent upon the industry to tap on their knowledge and experience. Care should however be taken to ensure

that the new trends and the technological developments in the rail industry is fully understood by the retirees, and that new ideas which might be in conflict with their experiences are also relevant and applicable.

(b) The mandatory retirement age in South Africa is 65 years, but this mandatory retirement age robs the country of vital human capital, especially in the area of academia and mentors. It is important for any country not to put human capital to waste. It is a tremendous waste of South African's talents to force people past 65 to go, because who will mentor the leaders of tomorrow? Universities in South Africa also suffer brain drain as professors retire en masse. The Department of Higher Education is encouraging universities to extend academics' exit age to 80 years. The rail industry should also consider extending the retirement age at least to 70 years, to retain the exiting body of knowledge, experience through the appointment of mentors and coaches.

(c) The Arab Spring coupled with 'Occupy Wall Street Movement' tells us about the importance of integrating the youth in the economic mainstream. As far back as 1893 in South Africa, boys between the ages of fifteen and sixteen were admissible for courses in Train Working rules and after passing the examination were eligible for appointment. William Thackeray joined the railways at the age of 16 and he was in the service for 41 years and became the best train driver in South Africa with an unblemished record. It is a good argument to extend the retirement age, given the lacuna of technical skills, but it would also be important to "grow our own timber" by hiring young blood. The General Manager wrote in 1898 (9): "I have the satisfaction to report the continued service rendered by the Training Office in qualifying South African born youth and men for railway service and the increasing disposition that is being manifested in seeking and remaining in Railway employ". Efforts should focus on promoting rail as a career amongst schools, even at the age of 15, when scholars are faced with the issue of making a career choice. This could be strengthened by bursaries and internships for top maths and science students, to attract them to the rail industry.

(d) The whole question of apprenticeship, and the training of engineers are of the most vital importance to any nation. In 1903, there was a general shortage of technical staff caused by the fast growing mining industry in Transvaal, and secondly due to the comparative failure of recruiting suitable artisans in sufficient numbers from overseas. Sir W.W Hoy, Chief Traffic Manager, and who was appointed General Manager in 1910, was firmly of the opinion that apprentices who showed no interest or lacked ability, should not be tolerated and should make way for better material. The same approach should apply today; mediocre should not be tolerated when it comes to the question of apprenticeship. The mentorship programmes should clearly state that those who lack ability and interest should be forthrightly removed from the system.

(e) New employees should go on what Dickens and Dickens call "Information-gathering tour". This tour will assist in understanding what is needed for success in the organisation. An information-gathering tour is defined as a number of meetings with individuals in and outside the organisation. If properly executed, a data-gathering tour becomes an opportunity to learn from both the technical and nontechnical experiences of others.

(f) It is vital to ensure that new employees understand their responsibilities in relation to the strategic objectives of the organisation. Employees who are able to align their personal values with organisational values are more likely to be loyal, hardworking and dedicated to making the organisation succeed in the long run.

(g) Provide job growth opportunities for new employees. The process used to select people for these opportunities needs to be closely monitored to ensure fairness for all the employees. It is imperative that all employees are informed of what is expected of them.

(h) Many researchers often forget that mere identification of the problem does not, by itself introduce changes or take the problem away. We need to go beyond identification of skill needs to actual recognition of the problem by all relevant actors in the rail industry, where the dissemination role on national networks and of a possible International Union of Railways (UIC) is essential.

(i) Attracting talent is one thing. Of equal importance is the retention of employees as your best assets. You retain talent by keeping people engaged and motivated. Today's employees need to be involved in decisions that affect them by asking for their input and allowing them to refute the merits of one another's ideas and assumptions. Employees value procedural justice (the extent to which the individual worker perceives fairness in the supervisor's decision-making process) as well as leadership credibility (a perception of the employee that what the organisation says is consistent with what management does). In addition, organisations need to strike a balance between work-life balance. Trends are changing. Many of the younger men and women are less willing to sacrifice family gatherings, children's birthdays, and school plays to the corporate job. Young people today need a job that does not interfere with their personal or family as shown by Dickens and Dickens [4].

(j) Leaders need to embrace Grossman's [5] measure of wisdom by accepting that things may get worse before they get better. If we accepted that we cannot fix something this minute, this week, this month, this year, this decade, we would be drawn into a wiser frame of mind. We would be better positioned to build solutions bit by bit, painstakingly making sure that each piece is the right piece and in the right place. It should be acknowledged that skills shortage is not only confined to the rail sector; all the sectors are affected. Simply put, skills shortage is an international problem which warrants the application of wisdom.

(k) Management consultants as well as management gurus often discourage people from thinking in silos; but one would venture into saying that we need to create silos of knowledge for the collective good of the rail industry. Silos are meant for storage and therefore, railway knowledge has to be 'siloed'. Most of the railway knowledge is oustide the railway industry because railway heritage has been relegated to the background. In South Africa few people know that technial education started with the railways and the skills shortage was mitigated by establishing these technical colleges. Railways need to maintain an Electronic Data Management Sytems to ensure that individuals do not take the organisational information away and come and sell the information back to railway companies. The information should be used for human growth and not for personal gains. Professionals should be employed to ensure that there is information for all railway disciplines. For example, perway, OHTE, rolling stock and signalling ect. This we allow us to hand down information from generation to generation.

5. CONCLUSION

The shortage of skills in the industry is an area of acute need and if this situation goes unbridled, all our great expectation will turn into poor dreams. There is much work to be done collectively by our industry. There is now an urgent need to create a National Training Academy. This will require all stakeholders who are competitors with seemingly different objectives and philosophies to be prepared to share information and to develop national strategies for the attraction, recruitment and retention of future employees for the common benefit of the industry. It is vital to avoid the mistakes from the past, and to build on the successes of those who have built the rail industry into what is today. On the eve of the largest industry expansion program in the history of the Democratic South Africa, the development and effective utilisation of all available skills will be the backbone on which our country will build its future. It will require collaboration, vision and dedication, but in the words of the great Nelson Mandela, "It always seems impossible until it's done."

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