African Journal of Inter/Multidisciplinary Studies 2022 | *Volume 4(1): 1-14* | *DOI:* https://doi.org/10.51415/ajims.v4i1.936

RESEARCH ARTICLE:

Building a Capable State: Unpacking Critical Skills Development Challenges in the Public Sector

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Abstract

Whilst the active repositioning of the role of South Africa's state-owned enterprises (SOEs) has beena key thrust of governments response to slow economic growth, not enough attention has been given to exploring the challenges of building the capability of public services. More specifically, there has been insufficient scholarly focus that critically unpacks the nature and extent of skills development and human resource challenges facing management in SOEs. In order to fill this gap, this paper reports on the findings of a study undertaken at Transnet Capital Projects (TCP), a former project execution wing of Transnet SOE. Data collected from 191 respondents, in a survey of TCP project management teams, revealed that whilst the technical service providers contracted to deliver on mega-projects possessed the requisite skills, experience, and expertise, Transnet project's personnel had limited experience and exposure to execute high value mega-projects. Moreover, the study highlighted low levels of management retention, with the high turn-over rates alluding to systemic internal challenges. These findings, nearly ten years since the implementation of the National Development Plan (NDP) intent on professionalising the public service, is worrisome and points to aneed for an urgent intervention if the vision of building a developmental state is to be realised.

Keywords: *capable state; skills development; state-owned enterprises; project management*

Introduction

There is consensus in the governance literature that one of the defining characteristics of a developmental state is state capacity (Thompson and Wissink, 2018). More specifically, it is suggested that strong state capacity and autonomy are necessary to implement and sustain what are termed "big push" programmes (Kim, 2009). Citing the cases of China, South Korea, Singapore, and the United Arab Emirates, Chang (2002), Kim (2009), and Thompson (2013) make a compelling case for the successful contribution of highly capacitated states towards building development economies. Against this background, and in a context of massive unemployment, poverty, and inequality, it isworrisome that in a recent global study, South Africa has been characterised as a country with rapid deterioration in state capability (Andrews et al., 2017). From both the literature and experience of developmental states, an essential component of state capability is individual capacity, understood simply as the competency of civil servants to deliver services (Koma, 2010). However, as Mulaudzi (2015) points out, this ability to deliver is highly dependent on having personnel with the necessary skills, knowledge, attitude, and behaviour that have been acquired not only through training but experience, networks, and values.

This paper brings attention to the importance of acknowledging the critical role of highly skilled, competent, and experienced human resources within the public service. It focuses on the arena of mega infrastructure projects, which have, in the last few decades, grown exponentially in both developed and developing nations. Despite this growth and technological advancements, executors of projects appear to continuously fall short of promised targets and face the onslaught of scathing criticism for not meeting schedules, overruns in cost, and quality concerns (APM, 2016). Parkin and King (1995) notes that in production endeavours, which includes infrastructure development, the three essential components are capital, equipment, and labour. The capital component consists of business case requirements and investor funding whilst the second component of equipment involves plant, technology, and energy. It is the third component of team resourcing, skills, competency, and attitudes, however, are often

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underemphasised. In the last two decades however, increased focus has been drawn to the issue of skills shortages across a range of market sectors (Anderson, 2008; Mulder, 2007; Rasool and Botha, 2011), with renewed attention on engineering and construction that has endured constraints on growth and effectiveness (Oke et al., 2017).

In recognising that the human resource and skills development challenge facing the public state is a complex one that requires a nuanced understanding that goes beyond anecdotal evidence, this paper reports on findings of empirical research in the field of megaprojects conducted by the lead author at Transnet Capital Projects (TCP), a former project execution wing of a State-Owned Enterprise (SOE) in the Republic of South Africa. The aim of the paper is to critically assess the human resource and skills challenges that impact TCP when achieving mega-project success. Based on an extensive quantitative survey of 191 respondents, the perceptions of employees were gathered to gain an in-depth analysis from insiders into the complex nature of the challenge. It is through these unique insights from public service employees themselves, complemented by the lead author's own experience working within the SOE, and the second author's knowledge management experience for more than 20 years within government, that a more complex picture of the nature of the skills and human resource challenge is painted. The paper begins with a brief overview of the key themes from contemporary literature that helps frame the capable state, probing into softer skills that are critical in ensuring success in megaproject execution. Having set the theoretical stage, more information is provided on the research methodology, before the findings from the study is presented together with a detailed analysis. The paper concludes by synthesising the main arguments and offering some thoughts on new directions for the rebuilding of the developmental state.

Key components for effective project execution within a capable state: Contemporary scholarly debates

Given the transdisciplinary nature of the research project in providing an overview of the relevant literature to help frame the paper, the authors draw on prevailing thinking in the field of project management around what constitutes as the critical ingredients for megaproject's success within the ambit of building a capable and developmental state. We begin by outlining the traditional factors for project success from management literature. Special attention is then paid to the often- neglected human aspects of managing projects. We consider the role of project teams and then the individual role of skilled and experienced personnel. We consciously have foregone a comprehensive literature survey on the nuances of a developmental state and the detailed analysis of project management literature. The authors justify this in terms of focussing the literature to help frame the key argument of the paper and interpret the results in the survey.

The multivariate factors determining project success

The vast literature on project management suggests numerous factors that contribute towards a project's success. Joslin and Muller (2016), for example, suggest that project success is determined by criteria and standards that must be achieved by the project manager for a clearly defined set of desirable outcomes. While Nguyen, Ogunlana, and Lan (2004: 408) support this notion, they add that "stakeholder satisfaction" must also be achieved. According to Saqib, Farooqui, and Lodi (2008), project success varies from one project to another, with the definition of success depending on a variety of factors including project size, scope, design complexity, technology, and the participants. Al-Tmeemy, Abdul-Rahman, and Harun (2011: 343) on the other hand, posits that overall project success is achieved when the "technical performance criteria" is achieved. Whilst there are numerous factors attributed towards project failure in project managementliterature, Merrow (2011: 2) distils seven reasons for project failure as "investment imbalances, compressed schedules, insufficient upfront detailed planning, insufficient funding for upfront planning, cost-cutting, passing risks onto contractors and dismissal or loss of key project personnel." Based on their study on international project development, Ika and Hodgeson (2014)concur with Merrow (2011), emphasising that project failure occurs when planned schedules, costs, scope, and quality required are not met. In narrowing this down further, Han, Yusof, Ismail, and Aun (2012: 94) assert that whilst the description of project success is difficult to frame, in the final analysis they note that project success is dependent on budget, schedule, and quality – or what is commonly known as the "iron triangle" of project management. This notion has become the

cornerstone in project management. At the same time, Dalcher (2012) maintains that success needs to be expanded from a view of planning and controlling to include views of clients, contractors, and stakeholders which are generally neglected. Pakseresht and Asgari (2012) also support the view of stakeholder importance and add that that the idea of project success is indeed an elusive area that is complicated and highly dependent on the views of internal and external stakeholders.

The underplayed role of the human element

Whilst the iron triangle of project management has held sway in project management literature, there is clearly a new shift in thinking towards the role of personal attributes, including skills, experience, and behaviour and its impacts on project success (Wells, 2012). We emphasise this acknowledgment as it is critical in interpreting the results of this study. This move to appreciate the role of the project team in achieving success has been in the spotlight in the last two decades. Graham and Englund (2004) explain that the project team - as a core team - consists of experienced dedicated specialist discipline-leads who are supported by various other team members for the execution of the various tasks. They further note that the main roles of these leads are to guide and supervise the team members whilst providing expert advice as and when required. In recognising the importance of the core team, Merrow (2011) advises that the core team must remain intact for project continuity and positive outcomes. The challenges in nurturing and preserving project teams, as Berg and Karlsen (2014) allude to, cannot be ignored, with high levels of work pressure, grey areas of responsibility, and conflict leading toburnout as well as high turnover in members of the team. This, we contend, is a critical assertion, which is highly relevant for the TCP study.

From project teams to individual personnel attributes

Whilst fully functioning project teams have been identified as a key factor for effective project execution, the issue of ensuring high levels of competent staff comes through strongly in the literature on building a capable state. To a large extent the economic success of Japan and other East Asian developmental states has been traced to technical competence of state personnel, many of whom had received advanced training abroad (Hughes, 1998). In unpacking the concept of competence, it is useful to note that IPMA (2006: 9) clarifies skills as an important subset of competency in which competency is a "collection of knowledge, personnel attitudes, skills and relevant experience" that required to "successfully carry out a function." IPMA expands this notion, suggesting that competencies operate at three distinctive levels namely contextual, technical, and behavioural. Arising from their investigations Langer, Slaughter, and Mukhopadhay (2008: 24) elaborate that 'hard skills' consisting of general and technical skills, and 'soft skills' consisting of non-technical and tacit skills are essential attributes for high performing project leaders and members. Langer et al., (2008) revealed through their study of the IT industry that technical skills improved cost management whilst soft skills had marked improvements in client management and deliverables acceptance.

In further exploring these 'soft skills', in a study of construction projects, Zhang and Fan (2013) found that there is a strong correlation between a project manager's emotional intelligence (EI) and project performance, where EI consists of organisational awareness, cultural awareness, empathy, and self-control. Issuing a cautionary note however, Shahtaheri, Haas and Salimi (2017) argue that organisations undertaking large complex projects require not only skilled and competent staff, but experienced personnel to achieve successful project outcomes. As a worrying corollary, Wallace, Keil and Rai (2004) point out the real dangers of not assembling and maintaining suitable team size consisting of the required skill sets, arguing that this can result in an imbalance of workload, inadequate time for training and professional development and generally poor team motivation, which ultimately leads to poor project team performance. Scholars have documented the factors associated with personnel risks well, ranging from "insufficient skilled personnel on the project team" (Keil, Matthiassen and Zeng, 2006: 156), "extended overtime due to high staff turnover and loss of intellectual knowledge" (Kim and Park, 2006: 412) and "job stress and burnout" (Enshassi, El-Rayyes and Alkilani, 2015: 170).

In closing, this brief review of the contemporary literature around building a capable state that is able to deliver on complex projects required for catalysing development economies, it becomes clear that many factors pay a decisive role. As Abtahi et al. (2014: 1830) succinctly put it, what isneeded is intellectual

capital consisting of knowledge, information, and experience in the public sector where there is a constant battle to find a balance between "acquiring, measuring, and managing intellectual capital." As will be shown in the TCP study, this ability to find that fine balance can be the final arbiter in determining the sustainability of its operations.

Methodology

As indicated earlier, this paper reports on findings drawn from a larger doctoral research projectthat examined the multi-faceted set of challenges facing the delivery of megaprojects in TCP (Chetty, 2018). In order to understand the complex nature of megaprojects skills and human resourcing in TCP, this study adopted quantitative research methods utilising a survey-based research design (Sekaran and Bougie, 2013). Concentrating on a cross-sectional survey sample, the study applied a descriptive paradigm using scientific methods for diligence, accuracy, and replicability (Sekaran and Bougie, 2013; Zhang and Fan, 2013). The target population for this study consisted of 324 personnel responsible for the execution of mega projects. All personnel including project directors, senior project managers, project managers, project control managers, engineers, quantity surveyors, environmental managers, quality managers, and procurement and contract managers employed for mega project execution were invited to participate in the survey. A five Point Likert-scale type questionnaire, using an ordinal scale, was utilised to collect primary data from TCP project personnel. There were two parts to the questionnaire with the first part seeking information on the respondents and the second part posing statements related to human resources and skills in TCP.

The questionnaire was securely uploaded onto the Survey Monkey platform and disseminated to participants in geographically remote offices. Completed questionnaires were received from 191 respondents thus meeting the requirements for achieving a confidence level of 95 per cent and 5 per cent according to scholastic guidelines (Krejcie and Morgan, 1970). Field data was analysed using the Statistical Package for Social Scientists for all multiple-choice questions. A pilot test was applied to test the validity of the questionnaire before its distributionto participants. The internal consistency of the main questionnaire produced a Cronbach alpha coefficient of 0,895 which was within the accepted range of 0,7 and 1,0 recommended by scholars.The Cronbach's alpha test demonstrated that the data collected was reliable for further analysis. In order to ascertain whether the data followed a normal distribution, a Normality Test was undertaken for the schedule management dimension before proceeding with any further analysis. Since the Kolmogorov-Smirnov test indicated that the overall scores for the dimension was not normally distributed, inferential testing using non-parametric tests was undertaken. Non-parametric testing, namely the Mann Whitney Test, was performed on the data whereby themedians of the two groups were compared to determine any significant relationships amongst the selected constructs.

Findings and Discussion

In eliciting the perceptions around the impact of human resources and skills on megaproject success in TCP, 191 participants perceptions on a set of 17 statements revealed interesting results. Asindicated in Table 1 below, which presents the statements and shows their distribution, most statements had a mean score of 3 or more.

Table 1: Distribution of statements regarding HR and skills on mega-projects

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Rating Average
Mega-projects have the correct skill sets	37	53	53	45	3	2.60
Owners have good experience in managing mega-project	40	68	45	29	9	2.47
EPCM teams work well with Transnet	20	51	60	52	8	2.88
EPCM's have the correct skill sets for delivering mega-projects	13	34	68	63	13	3.15
There is a massive gap in the experience levels required for mega-projects	4	24	41	77	45	3.71

There are too many personnel changes in the life of mega-project affecting smooth project delivery	2	13	35	79	62	3.97
Construction contractors have the right skill sets for delivery of mega-projects	7	34	59	85	6	3.26
Transnet, EPCM, and Construction teams are all chasing the same limited pool of skills	6	25	51	75	34	3.55
International experience in similar mega-projects are required.	5	26	42	72	46	3.67
Transnet has lots of resources, but experience and exposure is limiting	5	16	23	74	73	4.02
It is too long since TCP executed mega-projects hence the lack of skills	13	38	59	59	22	3.20
Suitable skills for resource hungry mega-projects are seldom available at the time of project execution	7	24	46	92	22	3.51
Owner and EPCM roles are clear	13	59	49	61	9	2.97
Local and expatriates' skills sets are required for mega-project execution	6	17	40	97	31	3.68
Transnet has trained its staff to deal with mega-projects	35	70	45	31	10	2.53
Mega-projects in TCP fail as a result of TCP not having the correct skill sets	10	33	30	75	43	3.57
Asset owners have good experience in managing mega-project	36	70	59	20	6	2.42

As shown in Table 2 below, the KMO and Bartlett's Test found that the data was adequate for factor analysis with regards to the HR and skills on mega-projects. In order to further interrogate the data, an eigenvalue distribution of all the statements was conducted (see Figure 1 below).

Table 2: KMO and Bartlett's Test for HR and skills on Mega-Projects

KMO and Bartlett's Test		
KMO Measure of Sampling Adequacy.		0.743
Bartlett's Test of Sphericity	Approx. Chi-Square	825.056
	df	136
	Sig.	0.000

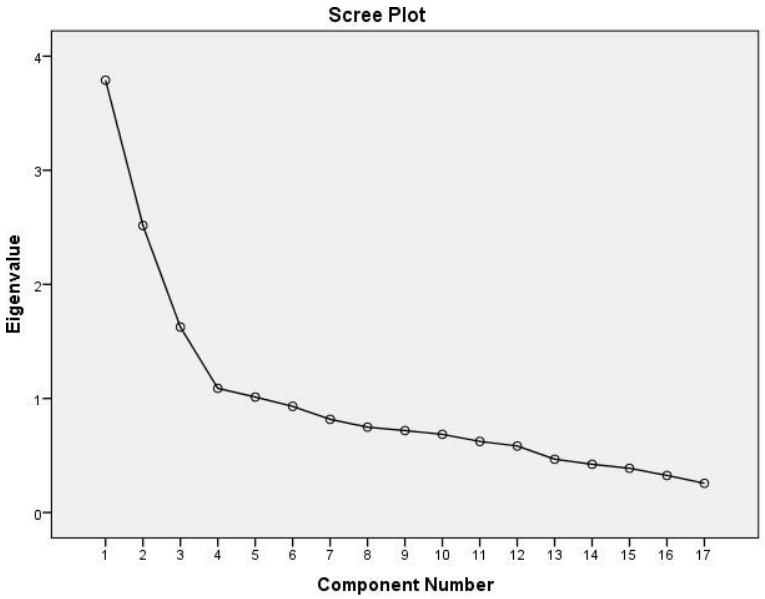

Figure 1: Distribution of eigenvalues for HR and skills on mega-projects

What is significant to note is that the study found that the five variables indicated in Table 3 below could account for nearly 60 per cent of the variability of all 17 dimensions.

Table 3: Total variance explained for HR and skills on mega-projects

Component	Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.790	22.293	22.293
2	2.516	14.798	37.092
3	1.626	9.563	45.655
4	1.089	5.404	53.058
5	1.013	5.956	59.015

Using Varimax with Kaiser Normalization (see Table 4 below), five variables are isolated which relate to the set of following key issues, each of which is unpacked in the analysis that follows:

i. The extent to which the correct skill set exists in the TCP
ii. The apparent lack of Transnet resources versus staff exposure and experience
iii. The impact of staff continuity and turnover in megaproject delivery
iv. The level of skill possessed by TCP contractors responsible for megaproject delivery
v. The need for a blend of local and expatriate skills to augment TCP capacity.

It is contended that these five factors provide important insight into understanding the nature of the human resource and skills challenges in TCP and may be relevant to other SOEs in South Africa.

Table 4: Rotated Component Matrix[a] for HR and skills on mega-projects

Rotated Component Matrix[a]	**Component**				
	1	**2**	**3**	**4**	**5**
Mega-projects have the correct skill sets	0.825	-0.136	0.075	0.047	-0.067
Owners have good experience in managing mega-project	.823	-.072	.037	.061	-.107
EPCM teams work well with Transnet	.485	.202	.471	.095	-.021
EPCM's have the correct skill sets for delivering mega-projects	.251	-.009	0.758	.056	.059
There is a massive gap in the experience levels required for mega-projects	-.194	.132	.013	.084	.788
There are too many personnel changes in the life of mega-project affecting smooth project delivery	-.080	.143	-.035	.088	.816
Construction contractors have the right skill sets for delivery of mega-projects	.018	-.100	.713	-.013	-.242
Transnet, EPCM, and Construction teams are all chasing the same limited pool of skills	-.102	.256	.557	-.093	.186
International experience in similar mega-projects is required	.064	.237	-.112	.771	.200
Transnet has lots of resources, but experience and exposure is limiting	-.196	.718	-.043	-.094	.075
It is too long since TCP executed mega-projects hence the lack of skills	.142	.711	.107	.164	.077
Suitable skills for resource hungry mega-projects are seldom available at the time of project execution	-.072	.566	.083	.359	.124
Owner and EPCM roles are clear	.458	-.191	.261	.317	-.080
Local and Expatriates skills sets are required for mega-project execution	.064	.013	.050	.824	.011
Transnet has trained its staff to deal with mega-projects	.569	-.165	.299	-.288	.068
Mega-projects in TCP fail as a result of TCP not having the correct skill sets	-.380	.600	-.004	.017	.147
Asset Owners have good experience in managing mega-projects	.737	-.039	-.077	.072	-.194
Extraction Method: Principal component analysis *Rotation Method: Varimax with Kaiser Normalisation*					
a. Rotation converged in six iterations					

Transnet TCP lacks the appropriate skills sets for mega-projects

Given the highly specialised nature of the sector and the strategic importance of Transnet, it would be reasonable to assume that the parastatal staff would have possessed the requisite skills and competence to execute mega projects timeously and successfully. The first important finding from the study that investigated this assumption revealed concerning results. The survey showed that nearly half (47%) of all respondents believed that TCP did not have the correct skill sets to manage mega projects. It was found that deficiencies in the skill sets related to scheduling, cost control, and quality. With cost, quality, and time commonly referred to as the 'iron triangle' of project management, as outlined in the literature review earlier, the finding clearly shows inadequacies in project management skills. This result is significant and confirms a government study raising the alarm on skill challenges in engineering and construction in South Africa with reference to professionals such as engineers, architects, and geotechnical specialists (JIPSA, 2016). The issue of a lack of appropriate skills sets has admittedly been on the radar for Transnet management. The annual stakeholder report (Transnet, 2015) for example, acknowledges the deficiencies in skills at both operational and technical levels. Importantly too, in its Integrated Report 2019, the parastatal flags the issue of skills, noting that 'people management' lies in the top ten risks, moving three places from number eight in 2018 to number five in 2019 (Transnet, 2019).

The shortage and lack of appropriate skilling of professionals within the construction sector, however, is not unique to South Africa, with a similar picture emerging in the southern African region, as reinforced by Kikwasi's (2011) assessment of skills shortages in Tanzania. The African trend itself mirrors a similar picture globally, as reaffirmed by the ILO Report (2015) which emphasised skilled labour deficiencies in both the developed and developing nations, suggesting that unless multiple concerted efforts are undertaken, the skills mismatch will continue. More specifically, the IPMA ICB 3.0 (2006) makes it very clear that performance on project execution will be impacted until competency (knowledge, skills, and attitude) levels are improved. The findings in TCP, whilst reflective of a global and African distress around skills mobilised on megaprojects, has major implications in terms of placing Transnet at risk of not meeting its objectives of delivering infrastructure at lower costs in time to meet market demand. This not only jeopardises the intent of building a capable state but has severe implications for South Africa's economic revival.

Having established the first important contributory factor of an inadequate skill set, it was important to unpack whether this was as a result of TCP having high vacancy rates and generally insufficient resources, or whether human resources were in fact in place but not adequately experienced. This issue is considered next.

Transnet has sufficient resources, but experience and exposure is limited

More than three quarters of all survey participants (77%) agreed that whilst Transnet has an adequate number of human resources, they are severely limited by experience as well as exposure to mega projects. This means that it is not about the number of personnel recruited, oreven about the level of education and training of personnel within the parastatal, but about ensuring that current staff are appropriately experienced and have exposure that will equip them to manage the challenges of implementing mega-projects. The findings at TCP reinforce Roe's (2014) argument that as an organisation's commitment to deliver successful large projects, both competent and experienced personnel must be appointed to ensure desirable outcomes. It is interesting to note how this survey's results compares with international best practices. Mckinsey (2010) suggests that based on industry best practices, almost 15 per cent of workers can be considered to lack the desired job competency requirements to achieve outcomes. The perceptions of personnel in TCP are therefore most worrying as this is more thanfive times the Mckinsey international benchmark.

In making sense of this result, we suggest that the perception of limited exposure and experience of personnel in TCP could be explained by the age analysis of respondents: 24 per cent of respondent were under the age of 30 whilst 58 per cent of respondents were under the age of 40. Given this age demographic, and the lived work experiences of these survey participants who may not yet have accumulated the relevant experience nor mentoring by more senior personnel, the results are understandable. The issue of training and exposure acquired through on the job practice and learning

from more experienced fellow workers are again reinforced by Kikwasi (2015). Furthermore, in his commentary around the shortage of experienced personnel in South Africa, Rasool (2011:4) notes that several socio-economic factors, such as the implementation of affirmative action and the emigration of skilled and experiences personal resulting in a 'brain drain', must be also considered as important contributory factors. The researchers acknowledge that the factors at play here are complex and challenging, given the urgent need to simultaneously achieve important transformation and developmental objectives. Reflecting critically on what this finding means for university graduate throughputs and industry take-up rates, the study reveals the inadequacy of a simple conceptualisation of SA's skills challenge as the inability to produce and place graduates. Rather the analysis suggests that the more critical issue is the unavailability of experienced personnel, in this instance within parastatals to manage complex megaprojects. This phenomenon is further unpacked in the next challenge.

High levels of staff turnover in the lifecycle of mega-projects

There is consensus in the literature that personnel change is a reality of project execution (Berg and Karlsen, 2014; Graham and Englund, 2019). Whilst this is accepted, it has also been recognised that organisations are beginning to face a crisis of knowledge management as they grapple to ensure that employees do not leave the organisation before transferring their experience (Stam, 2009). Urbancová and Linhartová (2011: 85) refer to this as a "knowledge preservation crisis" as the continuity of organisational knowledge is threatened. The results of the survey show that most respondents (73%) indicated that there were too many team-member changes in the life of mega-projects. What is of concern is that such a change occurs more often than not with subsequent negative impacts on the mega-project's execution profile. It is not clear where these changes occur in the mega-project organogram and the exact reasons for higher number of changes are also not evident. There is also no clarity as to whether TCP was aware of the frequency of changes and if TCP had resource contingency plans in place to effectively deal with this situation of resource changes that appear to have had an adverse effect on project delivery efforts.

In offering plausible explanations for this prevalent perception of survey participants, noting that nearly one quarter of the personnel are less than 30 years of age, one contributory factor could be the pursuit of better work opportunities. The detrimental effects of employee turnover from one company to another is well-documented in the international literature in terms of its impact on efficiency, productivity, profitability, and innovation. Public service departments within South Africa, however, have been grappling with the challenge of retaining skilled employees who are enticed to better paying corporate organisations in the private sector (Majola and Ogony, 2018). This trend has emerged as a key determinant in the local state, with young employees not remaining within adequate service to develop sufficient institutional knowledge and experience (LGSETA,2016). The implications of this exit include the possibility of dismantling of the core project team, leading not only to serious challenges around loss of institutional knowledge, but change management effects on the team, and productivity performance issues (Graham and Englund, 2004).

At a more critical level it is important to note that given the vulnerability of SOEs in South Africa to weak corporate governance and systems that have been characterised by corruption, recent studies have put the spotlight on the role of party and state politics and its negative influence in SOE environments (Mafukata and Musitha, 2018). Team personnel changes could therefore be a result of poor morale and high levels of stress (Sharma and Lutchman, 2006). Research done at the level of the local state in Durban for example, highlighted the negative influence of politics that affected technical decision-making, a compliance-driven legal framework, and a generally unsupportive institutional environment that disillusioned and marginalised planning professionals to the extent that two thirds of all the staff surveyed responded that given the opportunity, they would resign from the municipality (Moodley, 2019). The researchers therefore contend that this is an issue that deserves more attention and further research, as it could also be a key determinant in contributing to high staff turnover.

Skills challenge unique to the parastatal and not its contracted service providers

In making sense of the complex nature of the skills challenge, it is useful to disaggregate whether the capability challenges are unique to the state and the extent in which this has dogged the private sector. In order to test this, the responses from survey participants determining their perception of the skills

challenge as they relate to the external service providers (referred to as EPCMs) contracted-in by TCP for selected mega-projects is a useful proxy indicator. It should be noted that these contractors are responsible for the execution of detailed engineering designs, procurement, construction, as well as the management of mega-projects. The results from the survey are very interesting. Forty per cent of the respondents agree with the statement that EPCMs have the correct skill setsfor delivering mega-projects while thirty-six per cent of the respondents were unsure of the EPCMs' skill sets for mega-projects. Twenty-three per cent of respondents disagreed that the EPCMs have the correct skill sets for mega-projects. The results do therefore appear to suggest that the EPCMs have stronger competencies in their teams than TCP to successfully execute mega-projects.

EPCMs have access to both local and international resources in assembling project teams that are best suited in executing mega-projects. In the bidding for EPCM services, Transnet requires that CVs and experience levels of personnel, which must be included in bid documents, be submitted to TCP for evaluation purposes. At the same time though, the fact that nearly one in four respondents were not convinced that their contractors were suitably skilled is also worrisome and again raises the issue of the international skills challenges.

The need for a blend of local and expatriate skills to augment TCP capacity

The survey was able to investigate the prevalent perception amongst parastatal personnel where the requisite skills gap in TCP could be appropriately responded to. A statement testing the option of matching local skills with the possibility of expatriates was included amongst the list of seventeen statements. It may be useful for clarification purposes to note that the term "expatriates" refers to individuals who are transferred outside their native country to another country that is described as the "host" country, specifically for employment purposes (Edström and Galbraith, 1977 in Hocking, Brown and Harzing, 2004:570). It is interesting that two-thirds (67%) of all respondents agreed that local and expatriates are required for its teams to execute mega-projects. It is difficult to postulate with certainty, the reasons for the majority of respondents to favour this option as this area is not well researched. In fact, while very little research has been done conducted on knowledge transfer within the public sector (Syed and Rowland, 2004b), empirical studies investigating the role of expatriates in public sector knowledge transfer are almost non-existent (Ravu, 2014). The researchers suggest that this thinking could be based on the publication of reports by Transnet (2015) and JIPSA (2016) that acknowledge that several critical skills such as architects, engineers, and geotechnical specialists are in critical demand by organisations in South Africa. The ILO (2015) itself suggests that skills shortages in the short term can be compensated by the use of both local and foreign labour. However, Nersheim and Smith (2015) sound important cautionary notes, pointing out that the difference in education and training systems could prove problematic, and that high levels of maturity are needed, with respect and acceptance of differences and common project goals.

Conclusion

In concluding this paper, it must be noted that between the time that the research was conducted and the submission of this paper, Transnet TCP - as a specialist project execution unit - became a business casualty, was restructured, and then dissolved. The division was split, and all its project staff was absorbed into other major business units of Transnet such as Transnet National Ports Authority, Transnet Freight Rail, and Transnet Port Operations. At the time of writing therefore, TCP is non-existent with operating divisions now undertaking project execution using internal resources as well as external service providers. This decision is a stark and telling commentary on the state of project management expertise in South African parastatals. In this paper, by drawing attention to the perceptions of 191 personnel, the researchers have shown that the challenge in TCP was not a shortage of personnel due to inadequate funding or lack of professional posts within the public service; rather the researchers have framed the challenge of an inadequately experienced team, lacking significant exposure to deal with the complexity of managing megaproject execution. This is an extremely important distinction that we make between having qualified and trained personnel and those that are suitably experienced for complex execution. The researchers note here that the parastatal has made substantial investment of its budget on training (Transnet, 2019). Transnet also has a long and proud tradition of running its own training centres (e.g., Transnet School of Rail, Transnet School of Ports, etc.)

that focus on tailor-made specialist training requirements related to the maritime and railway trades (Transnet, 2015). Hence, the researchers argue that having trained staff in place, is a necessary but is certainly not a sufficient condition to ensure successful mega-project execution. The value of years of experience and tacit knowledge on how to execute mega-projects is inestimable.

Moreover, the researchers have uncovered the perception of extremely high personnel turnover and drawing on both authors' experience from working within public service and from contemporary literature, pointed to the complicated political-institutional factors that often contribute to high professional staff turnover. Interestingly, the researchers have also shown how staff viewed that challenge ofproject execution as more of an internal crisis of inexperienced full-time staff than one endemic to its contractors. Finally, the researchers have shown how the majority of those surveyed saw value in enhancing capability of the parastatal by matching much-needed local expertise with those of sought-off expatriate experience in the short term, whilst more longer-term solutions were being crafted. The researchers acknowledged that Transnet has recognised the human resource issue as a serious challenge and as an urgent mitigation measure intends to develop a 'strategic workforce plan' to determine temporary, intermediate, and long-term skills requirements (Transnet, 2015:16). The researchers also note the progress made by the Transnet divisions and businesses in implementing cooperation agreements with tertiary institutions to support tailor-made programs for its specialised requirements (Transnet, 2015). From the researchers experience within the public service, there are no quick fix solutions and that building sustainable capacity will take time. Whilst the researchers note that importing capability is not ideal, they suggest that as an urgent short-term measure, sourcing such experienced resources from local and international pools may have to be considered.

In the medium term, the expansion of Transnet's School of Excellence to cater for project management skills development would be required. More importantly however, given that the issue is less about skills and more about experience, exchange programmes for 'on-job training and exposure' both locally and internationally must be included in EPCMs' contracts. Other simple mechanisms such as contracting retired personnel with the relevant discipline experience for coaching and mentorship programmes also must be explored. Whilst these suggestions are important, the researchers contend that much more fundamental interventions are required, not just by Transnet, but by all SOEs. The insights offered by Turok (2010), more than a decade ago, on what it means to be a developmental state are more relevant than ever before now, as the researchers reflect on what it means to build the capability of the state. He suggested three important features that set apart truly developmental states. First, he argued that they are capable of planning ahead and making long-term strategic decisions beyond pragmatic responses to political pressures and problems as they emerge; second, he posited that to affect change boldness and concerted effort on the part of government was required; and third, he suggested that developmental states are democratic, in that the various actors and interests are brought together to craft a common purpose and direction.

In drawing from Turok's (2010) insights, the researchers suggest that what is required from Transnet senior management is urgent and bold decision-making. It requires crafting long-term plans that will ensure building pathways for staff development that prevent them from leaving the organisation. This is difficult and requires fundamental shifts in the organisational culture and creating the institutional and political environment that will ensure that skilled professional chose to remain within SOEs. It also means mobilising the energies from stakeholders from the academic sector, business, labour, and even civil society to partner for developing sustainable human resource development solutions. The researchers believe that the tide can be turned and realising the goals of National Development Plan is possible, but it will require visionary leadership and political will. The stake of building a capable South African state is too high for it to fail.

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