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Assessing The Impact Of Technical Internships On Mining Operations In Zambia's North-Western Province

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Abstract
Background: *Technical internships play a crucial role in bridging the gap between academic training and industrial practice. In the North-Western Province, where copper mining is booming, getting practical experience is key. Technical internships help students and young professionals learn by doing rather than just reading about it in school. This study examines how these internship programs affect mining operations. It aims to determine whether they really help workers become more competent, whether they make it easier for companies to use new technology, and if they make mining operations more efficient. By reviewing what has already been written about this topic, the study aims to understand the connection between internship training and how well mining companies can work.*
Materials and Methods: *The study employed a structured literature review method using academic databases, including Google Scholar, Scopus-indexed journals, and institutional reports published between 2005 and 2024. We looked for information about internships, training for mining workers, skills sharing, and how to make mining more productive in Zambia. We used special words to guide our search, like "technical internships", "mining workforce development", "skills transfer", and "mining productivity in Zambia". We found approximately 35 useful sources and selected 22 because they were the most relevant to our study.*
Results: *Studies have shown that internships in the tech field can really help people learn practical skills, and they also make it easier for schools and companies to share knowledge. This can even lead to better safety and more efficient operations. But, there are still some problems - not having enough people to supervise, not having enough spots for interns, and schools and companies not working together as well as they could.*
Conclusion: *This study suggests a new way of thinking about how internships can improve productivity and performance in the workforce. The results show that making internship programs stronger is crucial for developing the mining industry in a sustainable way and for building a skilled workforce in Zambia.*
Keywords: *Technical Internships, Mining Operations, Workforce Development, Skills Transfer, Mining Productivity in Zambia*

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I. Introduction

The mining sector remains one of the most important drivers of economic growth in Zambia, contributing significantly to national revenue, employment creation, and industrial development. The North-Western Province has seen a lot of activity in this area over the past 20 years, with many large-scale mining operations setting up shop in districts like Solwezi and Kalumbila. This has brought in investment from both within Zambia and from other countries. As these mining operations keep growing, there's a increasing need for workers with specialized technical skills.

The province has become a hub for copper mining, with many major operations extracting this valuable resource. The growth of the mining sector has not only boosted the local economy but also created jobs and stimulated industrial development. However, it's also important to consider the potential environmental and social impacts of this expansion and to ensure that the benefits of mining are shared fairly among local communities. With the right approach, mining can continue to play a key role in Zambia's economic development while also protecting the environment and supporting the well-being of local people.

Technical education institutions play a critical role in preparing graduates for employment in specialized sectors such as mining engineering, geology, mechanical engineering, and mineral processing. However, many graduates face challenges transitioning from academic learning to practical industry environments. This challenge has led to increased emphasis on technical internship programs, which allow students to gain hands-on experience in real industrial settings before entering full-time employment. Internships are a great way to connect what you learn in school to the real world. They help students get the skills and experience they need to succeed in their careers.

In the mining industry, internships are especially useful. They give students a chance to work with the latest technology, learn about safety rules, and see how mines are run. This hands-on experience makes students more attractive to employers and helps them do their jobs better. By working in a real mine, students can learn from experienced professionals and get a feel for what the job is really like. This can be a big advantage when they're looking for a job after graduation. Around the world, internships have become a crucial part of what students learn in engineering and technical fields.

Research shows that doing internships really helps graduates get ready for jobs and deal with complicated work situations. This is especially true in industries like mining, where technology is very complex. Just learning theory isn't enough to prepare students for the real-world challenges they'll face. In these fields, hands-on experience is key. By doing internships, students can gain the practical skills they need to succeed in their careers. This approach to learning is vital in mining and other technical industries, where things are always changing and improving. In Zambia, universities and colleges are teaming up with mining companies to give students hands-on experience.

The University of Zambia, Copperbelt University, and other technical schools are sending students to work with mining companies as part of their studies. This on-the-job training is meant to teach students the ins and outs of mining, from drilling and blasting to processing minerals and keeping equipment running safely. By working closely with mining companies, students get to see firsthand how things are done, and they can learn from experienced professionals in the field. This kind of training is invaluable, as it helps students develop the skills they need to succeed in the mining industry. Not much is known about how internships affect mining in Zambia's North-Western Province.

Most studies have looked at how well mines work, the harm they cause to the environment, and investment trends. But they haven't really explored how technical training programs help mines work better and use new technology. This is a big gap, because internships are really important for developing a skilled workforce in the mining industry. By looking at how internships impact mining operations, we can better understand how to support the growth of the industry in Zambia. This can help mines in the North-Western Province work more efficiently and use new technology to improve their operations. It's time to pay more attention to the role of technical training programs in the mining industry. It's crucial to recognize the role internship programs play in mining operations for a few key reasons. Mining companies need a steady stream of workers who are skilled in using complex equipment and maintaining high safety standards. Also, well-run internship programs can help bridge the gap between what students learn in school and what they need to know to succeed in the industry. This is important because it ensures that what is being taught in classrooms is relevant to the changing needs of the industry.

Furthermore, internships can help narrow the gap between what students learn in university andwhat is expected of them in the workplace, which is a common problem. By providing hands-on experience, internships can give students the practical skills they need to hit the ground running when they enter the workforce. This not only benefits the students but also the mining companies, which can use internships as a way to find and train the next generation of workers. Overall, internship programs are an essential part of the mining industry's efforts to develop a skilled and competent workforce. This research looks at how internships affect mining in Zambia's North-Western Province. It checks what has already been written to see how these programs help workers learn new skills, make mining operations better, and introduce new technology to companies. The goal is to understand how internships make a difference in the mining industry. By looking at what has already been studied, we can see how internships help mining companies work more efficiently and use new technology. This can lead to better results and more skilled workers.

The study wants to find out how internships contribute to the growth and development of mining operations in the area. The study is guided by the following objectives:

i. To examine the role of technical internships in developing practical skills for mining operations.
ii. To analyze the contribution of internship programs to workforce productivity and operational efficiency.
iii. To identify challenges that affect the effectiveness of internship programs in the mining sector.
iv. To propose a conceptual framework linking internship training to mining operational performance. The remainder of the article is structured as follows.

The next section explains the methodology used for reviewing the literature. This is followed by a thematic analysis of existing studies on internships and workforce development in the mining sector. The paper then provides a critical analysis of the literature, presents a conceptual framework, and discusses key implications for mining companies, policymakers, and educational institutions. Finally, the article concludes by highlighting key findings and suggesting directions for future research.

II. Method For Reviewing Literature

This study adopts a structured literature review approach to analyze scholarly work related to technical internships and mining workforce development. Databases Used The literature search was conducted using several academic databases, including:

i. Google Scholar
ii. Scopus indexed journals
iii. ResearchGate

Institutional reports from mining and education authorities Search terms: To find the right information, certain keywords were used to search for relevant literature. 1

1. Technical internships
2. Industrial training in mining
3. Workforce development in mining
4. Mining productivity and skills development
5. Internship programs in engineering education
6. Mining operations in Zambia Inclusion criteria

The following criteria were used to select relevant studies: published between 2005 and 2024 in peer-reviewed journal articles, books, and institutional reports; studies related to internships, technical training, or workforce development, and focused on the mining or engineering sectors. Exclusion Criteria: Studies were excluded if they had

i. Nothing to do with teaching new skills or helping people get jobs.
ii. Lacked academic credibility.
iii. Focused on unrelated industries without transferable findings

Screening process

About 35 studies were found at first, but after looking at the titles, summaries, and how relevant they were, 22 of them were chosen for closer examination.

III. Thematic Review Of The Literature

Theme 1: Theoretical Foundations of Internship Training

Experiential learning theory emphasizes the importance of practical experience in enhancing knowledge acquisition. Kolb (1984) argues that learning occurs through the transformation of experience into knowledge. Internship programs embody this principle by providing students with opportunities to apply classroom knowledge in real-world settings.

In engineering education, internships are widely recognized as essential for developing technical competence and professional skills. Students exposed to industrial environments gain a better understanding of operational processes, safety requirements, and workplace expectations.

Theme 2: Skills Development and Workforce Competence

Several studies highlight the importance of internships in improving technical competencies among graduates. Binder et al. (2015) found that students who participated in internship programs demonstrated stronger analytical and problem-solving skills compared with those without practical experience. In the mining sector, internship training enables students to develop skills in:

1. Equipment operation
2. Geological analysis
3. Mineral processing
4. Safety Management:

Having the right skills is really important for keeping mining operations running smoothly and safely.

Theme 3: Internships and Mining Operational Efficiency

Research indicates that well-structured internship programs can contribute to improved operational performance in industrial organizations. Interns often assist with technical tasks, data collection, and operational monitoring, thereby supporting productivity. Companies like Kansanshi Mine PLC and Barack Gold Mine find internship programs really helpful. They get to spot talented people who could work for them in the future, and it also saves them money on recruitment and training. This way, they can find the right people for the job and train them from the start, which is a win-win for everyone.

Theme 4: Challenges Affecting Internship Programs

Despite their benefits, internship programs face several challenges, including:

i. Limited placement opportunities

ii. Inadequate supervision
iii. Lack of structured training programs
iv. Weak collaboration between universities and industry
These problems make it harder for students to get the most out of their internships.

Theme 5: Future Opportunities for Internship Development

The mining sector is increasingly adopting advanced technologies such as automation, artificial intelligence, and digital monitoring systems. Internship programs can play an important role in preparing students to work with these technologies. Strengthening university-industry partnerships could significantly improve internship quality and relevance.

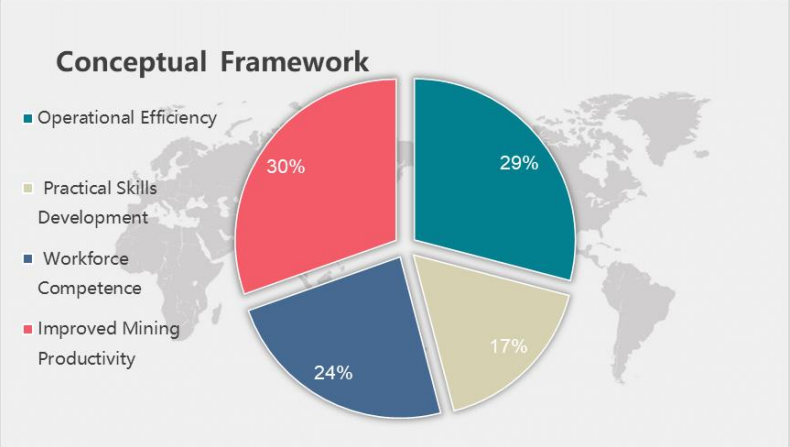
Critical Analysis

There are still some missing pieces in the research on internships, even though many studies show how important they are. There are a few issues with the way things are done now. For one, most research looks at engineering education in general, rather than focusing on the mining industry. Another problem is that there isn't much concrete evidence about how internship programs affect the day-to-day operations of mines. And to make matters worse, many internship programs don't have a clear way to measure how well they're working, which makes it hard to know if they're really making a difference. To fix these problems, we need to work together more closely - schools, mining companies, and the people who make the rules.

Theme: Conceptual Framework

Conceptual Framework Conceptual relationship proposed in this study:

The framework suggests that internships enhance practical skills, which improve workforce competence and ultimately contribute to improved mining operations.



The framework suggests that internships enhance practical skills, which improve workforce competence and ultimately contribute to improved mining operations.

IV. Results

Table 1.1

SN	Name of Institution	GRADE	LEVEL	PHYSICAL ADDRESS
1	First Quantum Minerals Mechanical Training Centre	Two	Trade	Kansanshi Mining Site, Mining Division, P. O. Box 110286, Solwezi NWP
2	Kalumbila Twikenu Mana Technical Training Centre	One	Trade	Kalumbila Mineral Resources Limited, P. O. Box 230022, Kalumbila NWP
3	Kansanshi Training and Development Centre	One	Craft	Kansanshi Mine Solwezi P.O. Box 110385, Solwezi North Western
4	KwashaMukwenu Vocational Training Centre	Three	Trade	Plot No. 1845, Off Chingola Road, Weighbridge Area Solwezi, Zambia
5	Lumwana Mining Company Training School	Two	Craft	Lumwana Mine, Along Mwinilunga Road, P. 0. Box 110199, Solwezi NWP
6	Manyinga Youth Skills Training Centre	Three	Trade	M8 Mufumbwe P.O. Box 34, Manyinga NWP
7	Mufumbwe Youth Resource Centre	Three	Trade	Mufumbwe District Industrial Area P.O. Box 130024, Mufumbwe NWP

8	Mwinilunga Trades Training Institute	Two	Craft	Mwinilunga Boma P.O. Box 160049, Mwinilunga NWP
9	Mwinilunga Youth Resource Centre,	Three	Trade	Kanongesha Village, P.O. Box 160012 Mwinilunga -NWP
10	Solwezi Skills Training Institute,	Three	Trade	Along Tumviananai Road P.O. Box 110276, Solwezi NWP
11	Solwezi Trades Training Institute	Three	Craft	Independence Road, P.O. Box 110293, Solwezi
12	Zambezi Youth Resource Centre	Three	Trade	Opposite Zesco Power House, P O Box 150098, Zambezi - NWP
13	FQM Trident Limited	Two	Craft	Along Mwinilunga Road, P. 0. Box 110199, Solwezi NWP
14	Blessings College of Health Sciences	Three	Trade	Weighbridge along China geo, Solwezi
15	Kwambula Trades Training Institute	Three	Craft	Behind Solwezi Trades

According to Teveta (2024), training institutions in the province consistently produce qualified graduates who complete their studies successfully; however, many of these candidates still struggle to secure effective internships for employment afterward. Interviews with these graduates reveal that being qualified is often not enough to guarantee job placement. Several reasons were commonly mentioned.

i. First, many candidates pointed to the hiring of people from outside the province, leaving local graduates jobless.
ii. Second, some respondents highlighted a lack of practical experience beyond the internship period. While internships provide valuable exposure, employers sometimes prefer candidates with longer or more diverse hands-on experience, making it difficult for fresh graduates to compete.
iii. Third, issues related to weak recruitment transparency were raised. Some candidates felt that hiring processes were not always fully open or merit-based, with opportunities occasionally influenced by internal referrals or prior connections within the company.
iv. Additionally, a number of graduates mentioned insufficient feedback after interviews, leaving them uncertain about why they were not selected and unable to improve for future opportunities.

Finally, there were concerns about skills mismatch, where the training received during internships did not fully align with the specific technical requirements or technologies used by certain mining companies.

Overall, these findings suggest that while internship programs are effective in preparing students academically and technically, there are still structural and institutional barriers that limit their transition into full employment.

V. Discussion

The research shows that internships are really important for helping the mining industry develop its workforce and run more efficiently. When students get to work on real mining projects and see how things are done, they learn a lot of practical skills and are better prepared for jobs after they graduate. This hands-on experience makes a big difference in their ability to contribute to the industry right away. In Zambia's North-Western Province, where mining operations continue to expand, the demand for technically skilled workers is expected to increase further. Strengthening internship programs can help address this demand by ensuring that graduates possess the necessary skills to contribute effectively to mining operations.

VI. Conclusion

Technical internships represent a critical mechanism for bridging the gap between academic education and industrial practice in the mining sector. The literature reviewed in this study demonstrates that internship programs contribute significantly to skills development, workforce competence, and operational efficiency in mining operations.

To make internship programs work effectively, schools and mining companies need to team up and work together closely. If they can fix some of the current problems, such as not having enough spots for students and not supervising them well enough, they can make the most of these training programs. This way, students can get the best possible experience and be better prepared for jobs in the mining industry. We need to take a closer look at how internship programs are working in Zambia's mining sector. By studying these programs, we can get a better understanding of how they affect the way mines operate. This will help us figure out what's working and what's not, and make improvements to these programs.

References (APA 7th)

[1]. Binder, J., Baguley, T., Crook, C., & Miller, F. (2015). The Academic Value Of Internships. *Active Learning In Higher Education*, 16(2), 129–144.
[2]. Kolb, D. (1984). *Experiential Learning: Experience As The Source Of Learning And Development.* Prentice Hall.
[3]. Lungu, J. (2008). Copper Mining Agreements In Zambia. *Review Of African Political Economy*, 35(117), 403–415.
[4]. Mwanza, B. (2017). Skills Development And Mining Sector Productivity In Zambia. *Journal Of African Development Studies*, 9(2), 45–60.
[5]. World Bank. (2020). *The Role Of Mining In Economic Development In Zambia.* World Bank Publications.
[6]. TEVET Act No. 13 Of 1998, 2024 List Of Registered Institutions, Retrieved From
[7]. Https://Www.Teveta.Org.Zm/Archive/Downloads/1718622516.Pdf#:~:Text=Be%20informed%20that%20the%20List,Cancelled%20while%20others%20may%20be