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Knowledge Management: Fueling improvements in Petroleum Engineering handout

Excellence: Harnessing Knowledge for a Sustainable Future

Overview 2024

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Knowledge Fuels Improvements

The following study demonstrates that organizations in the oil and gas industry may increase performance by adopting knowledge sharing practices. These practices positively impact organizational performance through cost reduction, organization growth, and intangible benefits. Source

Agenda

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The Genie of Expertise: KM Unlocks Oman's Oil Wealth

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The Story:
Yousuf, a skilled Petroleum Engineer, saw a new geologist having trouble with modeling underground oil reservoirs. Yousuf had lots of knowledge from working in the desert but didn’t know how to share it. Making decisions was mostly guessing and learning from others quietly. This way of working was a hidden problem, slowing everything down.

Then Yousuf learned about KM, which is like a big digital Oasis, that keeps everyone’s knowledge and experience. At first, Yousuf wasn't sure about this new idea, but he tried it. Soon, quiet tips became loud with clear information and proven ways of doing things right. Yousuf and his team could now find the best places to drill very accurately.

KM changed everything for Yousuf's team. The new engineers could do their jobs much better because they had all of Yousuf's know-how. Everyone shared what they knew, making work safer and faster, and getting more oil from the ground easily. Yousuf, who used to work alone, now helped lead a team that was smarter and more successful together. KM opened up all the hidden knowledge and used it to make things better for everyone.

KM practices were found to be directly related to organizational performance which, in turn, was directly related to financial performance. Source

The Problem: Continuity Of Expertise

The Problem: Continuity Of Expertise," a relevant statistic is the significant job loss in the U.S. oil and gas industry, which can be indicative of a broader trend in the sector. In 2020, the U.S. O&G industry experienced a loss of approximately 120,000 jobs due to a downturn in oil demand and prices, and consequent downsizing of staffing levels. Such a substantial decline in workforce numbers highlights the challenges of maintaining continuity of expertise in the face of industry fluctuations and changing landscapes. Source

The Problem

In the Oil and Gas, critical knowledge is often trapped within the minds of a few experienced individuals, leading to silos that hinder innovation and efficiency. Without a system like Knowledge Management (KM), valuable insights remain untapped, and repeated mistakes slow down progress.

Why It Matters

Losing Knowledge is the department's most valuable asset. The loss or underutilization of this can result in costly operational errors, decreased productivity, and a failure to stay competitive. Effective KM ensures that the entire department benefits from collective experience, driving better decision-making and fostering a culture of continuous improvement.

What We Need to Do

We must establish a robust KM framework that captures, organizes, and disseminates knowledge across all levels of the department. This includes creating a centralized digital repository, encouraging a culture of knowledge sharing, and implementing training programs to ensure that knowledge is effectively passed on, especially as experienced engineers retire or move on..

Introduction to Knowledge Management

Knowledge Management, or KM, is all about how we handle information and expertise in a company. In the oil and gas industry, this is super important. Why? Because this industry is always changing and has a lot of complex stuff to deal with, like new technology, safety rules, and environmental care. KM helps everyone in the company to share what they know and learn from each other. Think of it as a pathway to Experts. This means people can make better decisions and work smarter, not harder. It's not just about keeping files and data; it's also about tapping into the valuable experiences and skills of the team.

For example, when our engineers share their experiences from one project, others can learn and avoid making the same mistakes. Or, if there's a new way to drill that's safer and more efficient, KM helps spread that knowledge quickly across the company. This way, we keep improving, stay safe, and protect the environment while we work on getting energy from the earth. KM is like the glue that holds all our knowledge and skills together, making sure we're always doing our best.

Knowledge sharing practices in the oil and gas industry significantly impact organizational performance, leading to cost reduction, growth, and intangible benefits," as found in a study published in the Journal of Knowledge Management. Source

Critical Knowledge Retention in Petroleum Engineering

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Knowledge retention activities are found to be inconsistent across the majority of oil and gas companies, with limited initiatives addressing the knowledge loss from retiring employees, influenced by fluctuating oil prices and workforce layoffs. The challenge is particularly acute in the upstream sector where the aging workforce is a significant concern. Source

Critical Knowledge Retention focuses on how we keep and use important knowledge in the Oil and Gas field. In PDO, there's a lot of special knowledge that comes from years of experience.

Think about it like this: when experienced workers retire or leave, they take their valuable know-how with them. We don't want to lose this treasure of information.

So, we use KM to capture this knowledge before it's gone. This could be through training sessions, writing down their methods, or even recording their advice. This way, new engineers can learn from those who've been in the field for years, keeping the company's know-how strong and up-to-date.

Lessons Learned: A Tool for Continuous Improvement

Another key part is learning from what we've done before, which we call "**Lessons Learned**." In **Petroleum Engineering**, every project teaches us something new. Maybe it's a smarter way to drill or a tip to keep things safe.

By collecting these lessons and sharing them, everyone can learn from past experiences. This helps us avoid making the same mistakes and do our jobs better next time. It's like having a guidebook that's always getting better with each project we finish.

This makes sure our work is safer, more efficient, and more successful, helping the company stay ahead in the competitive world of oil and gas.

Continuous improvement training at Bell Power Systems facilitated adjustments in their flow line, improving on-time delivery from 92% to 100% and increasing their efficiency tracking rate (hours) from 75% to 185% over a 17-month period. Source

Global Case Studies of KM in Action

A study of about 3,000 people published in the Journal of Epidemiology and Community Health suggested that working even one more year beyond retirement age was associated with a 9% to 11% lower risk of dying during the 18-year study period, regardless of health Source

Global Case Studies: KM Success Stories looks at real examples from around the world where Knowledge Management (KM) has really helped in the oil and gas industry.
BP, one of the biggest oil companies. They have a program called "Connect" that lets employees share their expertise and solutions to problems across the globe. This program has been a game-changer, making it easier for workers in different countries to learn from each other and solve issues faster. It's like having a global team working together, no matter where they are. This approach has improved BP's operations and safety standards significantly.

Another great example is from Schlumberger. They use KM to make sure their engineers and technicians are always up-to-date with the latest techniques and technologies. They have an online system where employees can access technical papers, training, and expert advice. This system helps their staff stay on top of new developments and apply them in their projects. It's like a huge online library mixed with a helpdesk, giving workers the information they need to do their jobs better. This has led to better project outcomes and more innovations in the company.

Source:
BP Connect KM Programme
What makes Schlumberger KM Excellent at KM

Optimizing Project Management & Operational Efficiency

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Optimizing Project Management and Operational Efficiency

Imagine a seasoned engineer tackling a tricky drilling challenge. Now picture that same expertise instantly shared with the entire team, instantly searchable in a database, and readily available to train new recruits. That's the power of knowledge management (KM) in petroleum engineering.

KM acts like a supercharger for operational efficiency. It captures the "know-how" of veteran Petroleum engineers and makes it accessible to everyone, anywhere, anytime.
This collective knowledge bank translates into smoother workflows, faster problem-solving, and smarter decision-making. Fewer hiccups in the field, less time spent reinventing the wheel, and better-trained individuals lead to a streamlined operation, ultimately pumping up your bottom line.

So, by turning "tribal knowledge" into a shared resource, KM unlocks a hidden wealth of experience and expertise. It's like having a team of seasoned veterans whispering advice in every engineer's ear – a powerful boost for optimal performance in the field.

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Risk Management and Safety Enhancement through KM

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Using Knowledge Management for risk management and safety is like having a smart guidebook in the oil and gas business. It helps companies keep track of what works and what doesn't.
If a team figures out a safer way to drill, KM makes sure this know-how is shared with all other teams.
This is important because it means everyone learns from each other's experiences and best practices, making the whole company safer.

KM also helps companies prepare for things that might go wrong. It's like looking at a map before starting a trip to avoid any problems along the way. If a company knows the risks ahead of time, they can plan better and keep their workers safe.
It's a way for companies to share what they've learned about dangers and how to avoid them. Think about it like this: when one team learns a lesson the hard way, they can tell everyone else so they don't make the same mistake. This way, the whole company gets smarter about safety.
KM also helps teams plan better for emergencies. It's like having a drill before the real thing happens. Everyone learns what to do if there's a big storm or an equipment problem. That means when something bad does happen, they're ready to handle it safely.

Conclusion and Questions

Sharing Insights: Your Thoughts, Our Future Directions

Questions? But first a question to you...

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Thank You!

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