



The Importance of Continuous Professional Development in the Oil and Gas Industry

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Continuous professional development (CPD) is a learning experience which helps personnel develop and improve their professional practice. It is a critical component for sustaining the competency and enhancing the skills of professionals, especially in a hazardous environment such as the oil and gas industry. This sector is characterized by high-risk exposure, rapid technological advancements, stringent regulatory environments, and volatile market conditions, all of which necessitate ongoing and constant learning and adaptation. Investment in human capital is critical for the industry to operate progressive technologies and to remain productive and competitive (Edwin, 2015). This article discusses the necessity of CPD to personnel in the oil and gas industry, elaborating on the benefits it brings to individual professionals and organizations alike. It outlines the stages of CPD, including identification and planning, learning, reflection, and application. The article also explores effective strategies for implementing CPD and addresses the challenges that may arise, offering practical solutions to overcome these obstacles. Real-world case studies from

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industry leaders such as Shell and BP are presented to illustrate successful CPD initiatives, demonstrating the positive impact on safety, efficiency, and regulatory compliance. Key findings indicate that a structured CPD program significantly enhances professional growth and organizational performance. The method used in this research is a combination of quantitative and qualitative data collection and analysis, using answered questionnaires by various oil and gas industry personnel, use of training programs, resources and review of some company articles and surveys.

Keywords: *Continuous professional development; oil and gas industry; skills enhancement; career growth; training programs; technological advancements; regulatory compliance; career development; personal development.*

1. INTRODUCTION

The oil and gas industry is a cornerstone of the global economy, providing the energy needed to power industries, transportation, and homes. However, the sector faces significant challenges, including fluctuating oil prices, evolving regulatory landscapes, and rapid technological advancements. These factors create a dynamic environment where maintaining up-to-date skills and knowledge is imperative for professionals at all levels. This dynamic environment has made it paramount to constantly undertake training and development programs. Such effective trainings convey relevant and useful information that inform employees and develop skills and behaviors that can be transferred back to the workplace [1], despite the prevailing challenges

Therefore, Continuous professional development (CPD) is the process through which professionals engage in ongoing learning to enhance their skills, knowledge, and competencies. In the oil and gas industry, CPD is not just beneficial; it is essential. This need stems from the industry's complexity and the critical importance of safety, efficiency, and innovation. By investing in CPD, companies ensure that their workforce remains competent, adaptable, and competitive in a fast-changing market.

A typical CPD encompasses everyday activities at work, during seminars, conferences, free and paid online learning and team deliberations which can start from identification of the development needs, learning activities, reflection of the acquired skills and their applications. To classify them broadly, the professional development trainings can also be of two types; Internal and External training sessions. Internal training occurs when training is organized in-house by the Human resources department or training department using either a senior staff or any talented staff in the particular department as

a resource person [2], while external training is normally arranged outside the firm and is mostly organized by training institutes or consultants. Whichever training, it is very essential for all staff and helps in building career positioning and preparing staff for greater challenges (DeCenzo, 1998).

To take structured approach to professional development, the stages, sometimes called the CPD cycle may be considered. However, it is worthy of note that learning is not restricted to a confined classroom setting but also happens in everyday office work, peer conversations, reading, teamwork and even conferences. The combination of these various forms of learning and the deliberate efforts to maximize their inputs is an effective approach to take. This means that there must be intentionality of what subjects should form the basis of major conversations, the type of books to read and even courses to take, so long as professional development is involved in the oil and gas related careers.

Hence, the following stages may form the bases for a structured development approach:

Identification and planning: Personnel must identify what their development or training needs are, through personal evaluation or using some online self-assessment tools. According to Edwin (2015), a training need is a gap between "what is" and "what ought to be" regarding training and development activities.

Learning: At the point of learning, the individual participates actively in learning activities that will help solve the identified development needs. These could take the form of free or paid online CPD courses, team discussions, seminars participation etc.

Reflection: At this stage, personal evaluation of what has been learnt and possible areas of improvement takes place. This takes the form of

series of structured questions of what exactly have been learnt, and of course, enables you consider how you have developed or improved from your learning activities.

Application: This is the time for application and demonstration of what have been learnt. The application of skills is not restricted to the workplace but can be applied in taking of new projects, sharing with colleagues and even the use of new and better approach to job roles. This is particularly important as the oil and gas industry keeps advancing in technological approaches to exploration, drilling and production of oil resources. CPD focuses on improving ways of doing things which enhances the individual skills and mindset of personnel.

2. MATERIALS AND METHODOLOGY

2.1 Materials

The materials used include, answered questionnaires by various oil and gas professionals, use of training programs and resources and review of some company articles and surveys.

2.1.1 Participants

Professionals in various roles within the oil and gas industry, including engineers, managers, HSE officers, and technicians.

Companies involved in the study: Shell, BP, and other industry stakeholders.

2.1.2 Training Programs and Resources

- Online courses from accredited institutions.
- In-person workshops and seminars.
- Technical training manuals and software tools.
- Mentorship program guidelines and documentation.
- Professional certification materials.

2.1.3 Data Collection Tools

- Surveys and questionnaires for participants.
- Interview guides for one-on-one and group discussions.
- Observation checklists for training sessions and on-the-job activities.

2.1.4 Documentation and reference materials

- Relevant industry regulations and compliance documents.
- Academic and industry research papers on CPD.
- Case studies from Shell and BP's CPD programs.

2.2 Methods

To evaluate the effectiveness of continuous professional development (CPD) in the oil and gas industry, a mixed-method approach was used, combining quantitative and qualitative data collection and analysis. This approach provided a comprehensive understanding of CPD's impact on individual professionals and organizational performance.

2.2.1 Participant selection

A diverse group of professionals from different roles and companies was selected to participate in the study.

Participants were chosen based on their experience, role in the organization, and willingness to engage in CPD activities.

2.2.2 Data collection

Surveys and questionnaires were distributed to collect quantitative data on participants' perceptions of CPD, their engagement in CPD activities, and the impact of CPD on their skills and career growth.

Interviews and focus groups were conducted to gather qualitative data on participants' experiences with CPD, challenges faced, and suggestions for improvement.

Observations were made during training sessions and on-the-job activities to assess the practical application of skills learned through CPD.

2.2.3 Data analysis

Quantitative data from surveys and questionnaires were analyzed using statistical software to identify trends, correlations, and significant findings.

Qualitative data from interviews, focus groups, and observations were analyzed using thematic analysis to identify common themes, insights, and recommendations.

2.3 Procedures

Survey and Questionnaire Distribution:

An initial survey was designed to gather baseline data on participants' current involvement in CPD activities, their perceptions of CPD, and the perceived impact on their skills and career.

Surveys were distributed electronically to ensure broad reach and ease of response.

A follow-up survey was conducted after a set period to assess changes in perceptions and engagement in CPD activities.

2.3.1 Interview and focus group sessions

Semi-structured interview guides were developed to ensure consistency while allowing for in-depth exploration of participants' experiences.

Individual interviews and focus group discussions were scheduled at convenient times for participants to ensure high participation rates.

Interviews and focus groups were recorded (with participants' consent) and transcribed for detailed analysis.

2.3.2 Observations of training sessions and on-the-job activities

Key training sessions and on-the-job activities were identified for observation.

An observation checklist was used to systematically record observations on participants' engagement, skill application, and interaction during training.

Observations were complemented by informal conversations with participants to gain additional insights.

2.3.3 Data analysis

Quantitative data from surveys were entered into statistical software (e.g., SPSS) for analysis. Descriptive statistics, correlation analyses, and regression analyses were performed to identify key findings.

Qualitative data from interviews, focus groups, and observations were analyzed using thematic analysis. Transcripts were coded, and themes were identified and reviewed to ensure reliability and validity.

Results from quantitative and qualitative analyses were triangulated to provide a comprehensive understanding of CPD's impact.

3. CASE STUDY ANALYSIS

Detailed case studies of Shell and BP's CPD programs were developed based on available documentation, interviews with company representatives, and participant feedback.

Case studies were used to illustrate best practices, challenges, and outcomes of effective CPD implementation in the industry.

Findings from the study were compiled into a detailed report, highlighting key insights, trends, and recommendations for enhancing CPD in the oil and gas industry.

The report was shared with participating companies and industry stakeholders to inform future CPD initiatives and strategies.

By following this detailed methodology and procedure, the study aimed to provide valuable insights into the effectiveness of CPD in the oil and gas industry, helping organizations and professionals optimize their learning and development efforts for improved performance and career growth.

3.1 Survey Overview

The survey was distributed to about 200 professionals in the oil and gas industry, including engineers, managers, HSE officers, and technicians from companies such as Shell, BP, and other industry stakeholders. The survey aimed to assess their engagement in CPD activities, perceptions of CPD, and its impact on their skills and career growth. A total of 150 responses were received, yielding a response rate of 75%.

3.2 Key Findings from the Survey and Discussions

High Engagement in CPD: Majority of respondents (60%) participate in training programs frequently, indicating a strong culture of continuous learning within the industry.

Table 1. Cumulative Result of CPD survey of various parameters

PARAMETERS	PERCENTAGE
Role in organization	
Engineers	40%
Managers	25%
HSE	15%
Technician	20%
Years of experience	
0-5 years	20%
6-10 years	35%
11-15 years	25%
16+ years	20%
Participation in Training Programs	
Frequently (at least once a year)	60%
Occasionally (once every 2-3 years)	25%
Rarely (less than once every 3 years)	10%
Never	5%
Types of CPD Activities Engaged In	
Online Courses	50%
In-person Workshops/Seminars	30%
Mentorship Programs	15%
Professional Certifications	20%
Time Spent on CPD Activities per Year	
Less than 10 hours	15%
10-20 hours	40%
21-40 hours	30%
More than 40 hours	15%
Importance of CPD for career development	
Very Important	70%
Important	20%
Neutral	8%
Not Important	2%
Effectiveness of CPD in Improving Skills	
Highly Effective	65%
Effective	25%
Neutral	8%
Ineffective	2%
Satisfaction with Current CPD Opportunities	
Very Satisfied	45%
Satisfied	35%
Neutral	15%
Dissatisfied	5%
Perceived Improvement in Technical Skills	
Significant Improvement	55%
Moderate Improvement	30%
Slight Improvement	10%
No Improvement	5%
Career Advancement Due to CPD	
Received Promotion	40%
Increased Job Responsibilities	35%
No Change	25%
Job Satisfaction Related to CPD	
Increased Job Satisfaction	60%
Neutral Impact	30%
Decreased Job Satisfaction	10%

Positive Perceptions of CPD: Most professionals (90%) consider CPD important or very important for their career development, and 90% find CPD activities to be effective or highly effective in improving their skills.

Significant Impact on Career Growth: CPD has positively impacted career advancement, with 40% of respondents receiving promotions and 35% taking on increased job responsibilities because of their participation in CPD activities.

High Job Satisfaction: Majority of respondents (60%) report increased job satisfaction due to their engagement in CPD, highlighting the personal and professional benefits of continuous learning.

3.3 The Need for Continuous Professional Development

Technological Advancements: The oil and gas industry has witnessed significant technological advancements in recent years, including innovations in drilling techniques, reservoir management, and data analytics. These technologies enable more efficient methods of extracting resources, improved safety, and reduced environmental impact. However, to leverage these technologies effectively, professionals must continually update their technical skills and knowledge. Bozak, Karadag, and Bolat [3] emphasize the efficiency of administrative CPD courses in enhancing the skills of school managers, a principle that can be translated to the oil and gas sector by tailoring CPD programs to meet specific industry needs. This involves providing structured courses, online learning platforms, and mentorship programs to facilitate ongoing development.

Regulatory Compliance: Governments and international bodies frequently update regulations to ensure environmental protection, worker safety, and community well-being. Compliance with these regulations is nonnegotiable for companies operating in the oil and gas sector. Failure to comply can result in severe penalties, legal challenges, and reputational damage.

Continuous professional development ensures that professionals stay informed about the latest regulatory changes and best practices. This knowledge is crucial for roles such as health, safety, and environment (HSE) officers, who must implement and enforce compliance measures across their organizations.

Market Dynamics: The oil and gas market is notoriously volatile, influenced by geopolitical events, economic fluctuations, and shifts in energy demand. Professionals must be agile and adaptable to respond effectively to these market dynamics. CPD provides the necessary tools and insights for making informed decisions, optimizing operations, and identifying new opportunities.

For example, during periods of low oil prices, companies may focus on cost reduction and efficiency improvements. CPD programs that emphasize lean management techniques and cost-effective technologies can equip professionals with the skills needed to thrive in such environments.

4. BENEFITS, CHALLENGES AND IMPLEMENTATION OF CONTINUOUS PROFESSIONAL DEVELOPMENT

4.1 Benefits

Enhanced Skill Set: CPD helps professionals stay current with technological advancements and regulatory changes, improving their skills and competence [4] and adapt to new technologies and updated regulations, maintaining their competitive edge (Smith & Brown, 2019).

It enables professionals to acquire new skills and refine existing ones, leading to increased efficiency and productivity. By staying abreast of the latest industry trends and technological advancements, professionals can apply innovative solutions to their work, enhancing operational performance and safety. For every employee to perform well, there is the need for constant training and development (Adeniyi 1995) and there is no doubt that a well trained and developed staff will be a valuable asset to the company and thereby increasing the chances of his efficiency in discharging his or her duties [5] whether in the oil and gas industry or not.

Career Advancement: CPD provides opportunities for career advancement through the development of new skills and certifications [3] which can open new career opportunities, leading to promotions. Professionals who demonstrate a commitment to learning and development are often viewed as valuable assets by their employers. They are more likely to be considered for leadership roles and other positions of responsibility. It can as well open

new job and career opportunities to individuals in areas where they ordinarily would not have ever thought about

Professional certifications and advanced degrees obtained through CPD activities can also enhance a professional's credentials, making them more competitive in the job market. For example, obtaining a certification in project management or completing an advanced course in petroleum engineering can distinguish a candidate from their peers.

Increased Job Satisfaction and improved Compliance: CPD activities can lead to a sense of achievement and personal growth. Professionals who engage in lifelong learning are more likely to find their work fulfilling and motivating. This increased job satisfaction can lead to higher levels of engagement and productivity. One important role of regular CPD is that, it ensures that professionals are aware of and comply with regulatory requirements, which is essential for maintaining operational standards and avoiding legal issues [6].

By pursuing CPD, individuals can explore areas of interest, develop new competencies, and achieve their career goals. This proactive approach to career development fosters a positive work environment and contributes to overall job satisfaction.

Organizational Efficiency and excellent Return on Investment: Companies that foster a culture of continuous learning tend to be more innovative and competitive. Investing in the professional development of employees ensures that the organization remains at the forefront of industry advancements. This proactive approach to learning can lead to improved operational efficiency, higher quality standards, and enhanced safety performance.

Ultimately, an investment in personnel CPD is investment in organizational profitability. This, according to study conducted by the Association of Talent Development (ATD), formerly called, American Society for Training and Development (ASTD) lead to 24% higher profit margins and a 218% higher average income per employee.

For example, Shell's comprehensive CPD program includes online courses, on-the-job training, and international assignments, which have led to improved employee retention and operational efficiency. Similarly, BP's learning and development initiatives, which encompass

technical training, leadership development programs, and mentoring, have helped the company maintain a skilled workforce and stay competitive in the market.

Reduction in staff Turnover: CPD has been proven to attract and retain talents. This is because, about 94% of employees would stay with an organization longer if there were better learning and development opportunities [7], because higher number of employees personal growth and development to redundancy.

Furthermore, in a survey conducted by Deloitte, employees who are within the age of 31 and below, considered job advancement and leadership development opportunities as effective retention initiatives [8].

The same survey found that 37% employees planning to switch jobs cited back lack of career progress as one of the topic factors influencing their decision. This of course, is an indication that CPD is a crucial method of reducing the rate of staff turnover to minimum.

4.2 Implementation

Structure Training and Programs: Offering a combination of formal education, online courses, workshops, and on-the-job training tailored to the industry's specific needs [3].

Regularly scheduled training sessions on the latest technologies, industry trends, and regulatory updates are fundamental to CPD. These programs can be delivered in various formats, including classroom-based instruction, online courses, and hands-on workshops.

For instance, companies can partner with educational institutions or professional bodies to offer tailored training programs that meet the specific needs of their workforce. This approach ensures that training content is relevant and up to date, providing maximum value to participants.

Workshops and Seminars: Interactive workshops and seminars provide professionals with hands-on experience and the opportunity to network with peers and industry experts. These events can cover a wide range of topics, from technical skills and safety practices to leadership and management techniques.

For example, a seminar on the latest developments in hydraulic fracturing technology

can provide engineers with practical insights and best practices, while a leadership workshop can help managers develop the skills needed to lead high-performing teams.

Online Courses: Online courses offer flexible learning options that allow professionals to study at their own pace and convenience. These courses can cover a broad spectrum of topics, from technical skills and industry regulations to soft skills such as communication and leadership.

Many reputable institutions and platforms offer online courses tailored to the oil and gas industry. By incorporating online learning into their CPD programs, companies can provide their employees with access to high-quality education without the need for travel or extended time away from work.

Mentorship Programs: Establishing mentorship programs and promoting peer learning to enhance CPD effectiveness [4].

Mentorship programs pair experienced professionals with less experienced colleagues, providing guidance, support, and knowledge transfer. These programs can accelerate the learning process and help mentees navigate their career paths more effectively.

For example, a mentorship program that pairs senior engineers with junior staff can facilitate the transfer of technical expertise and industry insights. This collaborative approach to learning fosters a culture of continuous improvement and professional development.

Professional Certifications: Pursuing certifications from recognized bodies validates a professional's expertise and commitment to their field. Certifications such as the Project Management Professional (PMP) or the Certified Petroleum Engineer (CPE) can enhance a professional's credentials and open new career opportunities.

Many professional organizations offer certification programs tailored to the oil and gas industry. By supporting their employees in obtaining these certifications, companies can ensure that their workforce remains highly skilled and competitive.

Self-Assessment Tools: CPD can be implemented by incorporating self-assessment

tools to help professionals identify learning needs and set personalized development goals [9].

4.3 Challenges

Time Constraints: Balancing work responsibilities with continuous learning can be difficult for professionals with demanding schedules [10]. Finding the time to attend training sessions, complete online courses, or participate in workshops can be difficult.

Cost: Training programs, courses, and certifications can be expensive. The cost of CPD activities can be a barrier for both individuals and organizations, particularly during periods of economic uncertainty or budget constraints.

Access to Resources: Professionals in remote locations or smaller companies may have limited access to CPD opportunities. Geographic and financial constraints can restrict access to high-quality training programs and learning resources.

4.3.1 Overcoming challenges

Flexible Learning Options: Providing online courses and virtual seminars to make CPD accessible to employees with varying schedules and locations [10].

Offering flexible learning options, such as online courses and virtual seminars, can help professionals manage their time effectively. These options allow individuals to learn at their own pace and convenience, reducing the impact on their work schedules.

Lack of Resources: Insufficient resources, such as funding and access to quality training materials, can hinder the implementation of effective CPD programs. Organizations need to invest in CPD to ensure it is accessible to all employees [10].

Employer Support and motivation: Companies can support their employees' development by providing financial assistance, paid time off for training, and access to learning resources. By investing in CPD, employers demonstrate their commitment to their workforce's growth and development.

Keeping professionals motivated and engaged in CPD activities also requires creating relevant and interesting content [4] and providing a climate that encourages individual development and change and by providing ample opportunities for informal learning [11,12,13,14,15,16].

Collaborations: Partnering with educational institutions, professional bodies, and industry organizations can enhance access to CPD opportunities. Collaborative initiatives can provide tailored training programs, certifications, and learning resources that meet the specific needs of the oil and gas industry.

Measuring Effectiveness: Aside the motivation and support, another important way of solving the challenges of CPD in the oil and gas industry is through developing metrics and evaluation methods to assess the effectiveness of CPD programs and ensure tangible improvements in performance and skills [9]. This will not only encourage participation, but also enhance attitude to learning.

Employee Development Programs: Developing robust employee development programs is essential for fostering a skilled and adaptable workforce. Dharmagunawardene and Samaraweera [10] highlight the importance of understanding barriers to CPD, such as time constraints and lack of resources. By addressing these barriers, the oil and gas industry can develop more accessible and flexible CPD programs, ensuring that all employees can participate regardless of their schedules or locations.

5. CASE STUDIES

5.1 Shell's CPD Program

Shell has implemented a comprehensive CPD program that includes online courses, on-the-job training, and international assignments. This multifaceted approach has led to improved employee retention, enhanced operational efficiency, and a more skilled workforce. Shell's commitment to CPD ensures that its employees are well-equipped to handle the industry's challenges and leverage new technologies (Shell Global, 2022).

5.2 BP's Learning and Development Initiatives

BP offers a range of CPD activities, including technical training, leadership development programs, and mentoring. These initiatives have helped BP maintain a skilled workforce and stay competitive in the market. By investing in the continuous development of its employees, BP fosters a culture of innovation and excellence [17,18].

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Continuous professional development is crucial for the oil and gas industry. It not only enhances individual skills and career prospects but also contributes to organizational success. By addressing the challenges and implementing effective CPD strategies, the industry can ensure a competent and adaptive workforce capable of meeting future demands. Investing in CPD is an investment in the future of the industry, ensuring that it remains resilient, innovative, and competitive in a rapidly changing world.

6.2 Recommendations

To enhance continuous professional development (CPD) in the oil and gas industry, companies should prioritize flexible learning options such as online courses and virtual seminars to accommodate busy schedules. They should also invest in comprehensive CPD programs, including regular training, workshops, mentorships and professional certifications. Additionally, fostering a supportive learning culture and providing financial assistance for CPD activities can further motivate employees. Collaborative efforts with educational institutions and industry bodies can ensure access to high quality, relevant training. By implementing these strategies, companies can maintain a skilled adaptable workforce capable of meeting future challenges.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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