



A REPORT DETAILING AN INNOVATIVE SOLUTION TO AN
OPERATIONAL PROBLEM

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Executive Summary

This report addresses a critical operational challenge within the Maritime Coast Guard Agency (MCA), specifically focusing on inefficiencies in the current email-based vessel registration process. The identified problem has led to delays, errors, and reduced customer satisfaction, impacting the overall effectiveness of the agency's operations.

To resolve this issue, the report proposes the implementation of an online portal for vessel registration. This innovative solution aims to streamline the registration process by allowing vessel owners to submit documents through a structured, user-friendly platform. The portal provides real-time feedback, ensuring all necessary documents are correctly submitted, thereby reducing the need for manual intervention and improving the accuracy and speed of the registration process.

The solution was developed using a structured creativity process, including stages such as Preparation, Incubation, Illumination, and Verification. The proposed innovation was evaluated using tools like Force Field Analysis, which demonstrated its potential to address the identified problem effectively. A pilot project further validated the solution, showing significant improvements in processing times, error reduction, and customer satisfaction.

The report also highlights the importance of adopting a transformational and authentic leadership style within the MCA to successfully implement the portal and foster a culture of continuous innovation. Recommendations include enhancing the organisational climate through targeted training programmes and recruitment strategies to support ongoing innovation.

In conclusion, the proposed online portal represents a practical and realistic solution that aligns with the MCA's strategic goals of improving operational efficiency and customer satisfaction. Its successful implementation will position the MCA as a leader in digital innovation within the maritime sector, ensuring long-term sustainability and growth in an increasingly competitive and digitalised environment.

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1. Introduction

1.1. Introduction to the Maritime Coast Guard Agency (MCA)

The Maritime Coast Guard Agency (MCA) is a pivotal government body in the United Kingdom responsible for ensuring the safety and security of the nation's waters. Its primary mission is to protect lives at sea, enforce maritime law, and safeguard the marine environment. The agency's operations extend from rescuing individuals in distress at sea to monitoring and regulating shipping activities to prevent accidents and environmental damage. MCA plays a crucial role in maintaining the integrity of the UK's maritime operations, ensuring that vessels comply with international and national regulations such as the International Convention for the Prevention of Pollution from Ships (MARPOL) (Fitzmaurice, 2022).

In my role within the MCA, I am responsible for the registration of vessels on the UK Ship Registry. This includes handling both brand-new and second-hand vessels of varying sizes and types. My primary responsibilities involve guiding vessel owners through the registration process, ensuring all required documentation is submitted correctly, and providing support via email and phone communication. This role is critical to maintaining accurate records within the MCA, which is essential for regulatory compliance and the smooth operation of maritime activities within the UK's jurisdiction.

1.2. Importance of Creativity and Innovation in the Maritime Sector

Creativity and innovation are fundamental concepts in modern business and are particularly crucial in sectors that operate in dynamic and highly regulated environments, such as maritime. Creativity refers to the ability to generate novel ideas and concepts, while innovation involves the application of these ideas to develop new or improved processes, products, or services (Barnett & Woods, 2021). The maritime sector, including agencies like the MCA, operates within a framework that is increasingly influenced by technological advancements and environmental considerations.

The significance of creativity and innovation in the maritime sector cannot be overstated. As the industry faces challenges such as stricter environmental regulations, the need for sustainable practices, and the advent of autonomous shipping technologies, innovation becomes essential for maintaining competitiveness and compliance (Zhou et al., 2020). For example, the adoption of blockchain technology in maritime operations has been identified

as a critical innovation that can enhance transparency and efficiency in shipping processes (Balci & Surucu-Balci, 2021). Thus, fostering a culture of creativity and innovation within the MCA is vital for adapting to these changes and ensuring long-term sustainability.

1.3. Industry Analysis: The Role of Innovation in Long-Term Sustainability

The maritime industry is currently navigating a period of significant transformation, driven by technological advancements, environmental imperatives, and evolving regulatory frameworks. One of the major challenges facing the industry is the need to reduce carbon emissions and transition towards more sustainable practices. This challenge is particularly pronounced in shipping, which is a significant contributor to global greenhouse gas emissions. The International Maritime Organization (IMO) has set ambitious targets to reduce emissions, which necessitates innovative solutions in vessel design, fuel technology, and operational practices (Ezinna et al., 2021).

In addition to environmental challenges, the industry must also contend with the growing complexity of global supply chains and the need for enhanced security measures. The rise of digital technologies, such as big data analytics and the Internet of Things (IoT), presents both opportunities and challenges for the maritime sector. These technologies can improve operational efficiency and safety but require significant investment and a willingness to embrace change (Yau et al., 2020).

Innovation plays a crucial role in addressing these challenges and ensuring the long-term sustainability of the maritime industry. For instance, the development of alternative fuels, such as green hydrogen, represents a significant step towards decarbonizing maritime transport (Atilhan et al., 2021). Similarly, the implementation of autonomous ships, while still in its early stages, has the potential to revolutionize shipping by reducing human error and improving operational efficiency (Kim et al., 2020).

For the MCA, embracing innovation is essential not only for meeting regulatory requirements but also for enhancing the agency's operational capabilities. Innovations in digital communication and data management, for example, can streamline the vessel registration process, reducing administrative burdens and improving service delivery to vessel owners (Chuah et al., 2021). By fostering a culture of innovation, the MCA can better position itself

to respond to the evolving needs of the maritime sector and contribute to the overall sustainability of the industry.

2. Identifying the Innovation

2.1. Problem Identification in MCA's Operations

Within the Maritime Coast Guard Agency (MCA), a critical operational challenge has been identified in the process of vessel registration. The current system, which heavily relies on email communications for document submissions, is often inefficient and prone to delays. Vessel owners are required to submit various documents via email, which are then manually processed by MCA staff. This process is time-consuming and frequently leads to errors, such as incomplete submissions or miscommunication regarding the required documentation. Furthermore, the reliance on email as the primary mode of communication has proven problematic for vessel owners who are less familiar with digital tools, resulting in increased phone support to assist these customers (Chuah et al., 2021).

The problem was identified through a combination of customer feedback and internal audits. Customer feedback highlighted frequent frustrations with the email submission process, particularly regarding the time taken to receive confirmation of registration and the clarity of the instructions provided. Internal audits corroborated these findings, revealing a significant number of cases where documents had to be resubmitted due to errors or missing information. The audits also indicated that the manual nature of the process was leading to a bottleneck, particularly during peak periods, which impacted the agency's ability to meet its service level agreements. These insights underscored the need for a more streamlined and efficient process that could enhance customer satisfaction and operational efficiency.

2.2. Type of Innovation: Incremental vs. Radical

The proposed innovation to address the identified problem within MCA's operations is an incremental innovation rather than a radical one. Incremental innovation involves making small, continuous improvements to existing processes, which in this case, aims to enhance the efficiency of the vessel registration process (Tidd & Bessant, 2018). The innovation will involve the development and implementation of an online portal that allows vessel owners to submit their documents through a dedicated system rather than via email. This portal

would feature an intuitive user interface, automated document checks, and instant feedback on the submission status.

This innovation falls under the “Process” category of the 4 P’s of innovation (Product, Process, Position, Paradigm). Process innovation refers to improvements in the way that products or services are created or delivered. In the context of the MCA, the shift from email-based submissions to an online portal represents a significant improvement in the process of registering vessels (Felski & Zwolak, 2020). The incremental nature of this innovation means that it builds upon existing systems and processes, making it easier to implement and more likely to be accepted by both staff and customers. It also aligns with the current technological capabilities of the MCA, making it a realistic and practical solution.

2.3. Justification of the Identified Innovation

The rationale for selecting this specific innovation lies in its potential to significantly enhance operational efficiency and customer satisfaction within the MCA. The online portal is designed to address the key issues identified during the problem identification stage, such as delays in processing, errors in document submission, and the high volume of support calls related to the use of email. By automating parts of the registration process and providing real-time feedback to users, the portal will reduce the workload on MCA staff, allowing them to focus on more complex tasks and improving the overall speed and accuracy of the registration process (Parker, 2021).

Moreover, the implementation of this innovation has broader implications for the maritime sector. As the industry increasingly moves towards digitalisation, the adoption of more sophisticated digital tools within regulatory agencies like the MCA is essential for keeping pace with industry developments (Kapidani et al., 2020). The online portal not only aligns with the global trend towards digitalisation but also sets a precedent for other maritime agencies to follow, potentially leading to wider adoption of similar technologies across the sector. This, in turn, can contribute to the overall efficiency and effectiveness of maritime operations, enhancing safety, compliance, and environmental sustainability.

Additionally, the portal can be continuously improved with additional features, such as integrating it with other digital services provided by the MCA or external maritime databases, making it a scalable and future-proof solution. The incremental nature of this innovation

allows for gradual implementation, reducing the risk of disruption to current operations while still delivering substantial benefits in terms of efficiency, accuracy, and customer satisfaction.

3. Creativity Process Applied

3.1. Overview of the Creativity Process

The creativity process is a structured approach that guides the development of innovative ideas and solutions. It typically consists of four key stages: Preparation, Incubation, Illumination, and Verification (Tidd & Bessant, 2018). The **Preparation** stage involves gathering relevant information, identifying the problem, and understanding the context. This stage sets the foundation for the creative process by ensuring that the necessary background knowledge and insights are in place.

The **Incubation** stage follows, where the mind subconsciously processes the gathered information. During this phase, creative thinkers often take a step back from the problem, allowing their subconscious to explore potential connections and ideas without the pressure of immediate problem-solving.

Next is the **Illumination** stage, where the solution or a breakthrough idea suddenly becomes clear. This "aha" moment is the result of the subconscious mind making connections between previously unrelated concepts, leading to innovative solutions.

Finally, the **Verification** stage involves critically evaluating the proposed solution to ensure its feasibility and effectiveness. This stage includes testing, refining, and validating the idea to ensure it meets the necessary criteria for implementation and success in the real world (Carpenter et al., 2020).

3.2. Application of the Creativity Process at MCA

In applying the creativity process at the Maritime Coast Guard Agency (MCA) to address the identified problem in vessel registration, each stage of the process played a critical role in developing an effective solution.

During the **Preparation** stage, a thorough analysis was conducted to understand the existing challenges within the vessel registration process. This involved reviewing customer feedback, conducting internal audits, and gathering insights from team members who are directly involved in processing registrations. The information collected highlighted specific pain

points, such as delays caused by manual document processing and communication breakdowns with vessel owners (Chuah et al., 2021).

In the **Incubation** stage, after gathering the necessary data, I allowed time for reflection and subconscious processing of the information. This stage was crucial as it enabled the exploration of various potential solutions without the constraints of structured problem-solving. Techniques such as De Bono's Six Thinking Hats were employed to view the problem from different perspectives, encouraging creative thinking and the consideration of alternative approaches (Bleiker et al., 2019).

The **Illumination** stage occurred when the idea of developing an online portal for document submission became the focal point of the solution. This breakthrough was the result of connecting the need for efficiency with the growing trend of digitalisation in maritime operations. The portal concept emerged as a way to streamline the registration process, reduce manual errors, and enhance customer experience by providing real-time feedback on document submissions (Yau et al., 2020).

Finally, during the **Verification** stage, the proposed solution was subjected to rigorous testing and evaluation. A pilot version of the portal was developed and tested with a select group of vessel owners and internal staff. Feedback was collected to refine the system and address any technical issues. Additionally, a Force Field Analysis was conducted to assess the potential barriers and drivers for successful implementation, such as the need for training staff on the new system and the potential resistance to change from less tech-savvy users (Felski & Zwolak, 2020).

This structured approach ensured that the final solution was not only innovative but also practical and aligned with the operational needs of the MCA.

3.3. Skills Required for Creative Problem-Solving

Creative problem-solving requires a diverse set of skills that enable individuals to generate innovative ideas and implement effective solutions. One of the most critical skills is **critical thinking**, which allows individuals to analyse information logically, identify patterns, and make connections between seemingly unrelated concepts (Gruson et al., 2019). This skill was essential during the Preparation and Verification stages of the creativity process at MCA, where thorough analysis and evaluation were required.

Collaboration is another key skill, particularly in environments like the MCA, where solutions often require input from various stakeholders. Collaborative skills were crucial during the brainstorming sessions and the application of De Bono's Six Thinking Hats, where diverse perspectives contributed to a more comprehensive understanding of the problem and potential solutions (Bleiker et al., 2019).

Adaptability is also important, especially in navigating the uncertainties that often accompany the creativity process. The ability to adapt to new information and pivot when necessary was vital during the Incubation and Illumination stages, where flexible thinking allowed for the emergence of innovative ideas (Herodotou et al., 2021).

These skills were effectively utilised in the innovation process at MCA, ensuring that the proposed solution was both creative and feasible, ultimately leading to a successful outcome.

4. Evaluation of the Solution

4.1. Effectiveness of the Proposed Solution

The proposed solution of implementing an online portal for vessel registration within the Maritime Coast Guard Agency (MCA) directly addresses the key operational problems identified earlier. By replacing the current email-based document submission system with a more streamlined and automated portal, the solution aims to reduce the incidence of errors and delays, thereby improving overall efficiency and customer satisfaction. The portal allows vessel owners to submit documents through a structured, user-friendly interface that provides real-time feedback on submission status and checks for completeness, ensuring that all necessary documentation is provided before submission. This automation significantly reduces the manual workload on MCA staff, allowing them to focus on more complex tasks, such as verifying compliance with maritime regulations (Chuah et al., 2021).

To evaluate the effectiveness of this solution, a Force Field Analysis was conducted, which involved identifying and weighing the forces for and against the implementation of the online portal. This tool helped in understanding the driving forces, such as the need for efficiency and customer satisfaction, and the restraining forces, such as potential resistance to change from staff and customers. The analysis revealed that the driving forces significantly

outweighed the restraining forces, indicating that the implementation of the online portal would likely be successful if managed effectively (Gruson et al., 2019).

Additionally, the effectiveness of the solution was tested through a pilot project, where a small group of vessel owners and MCA staff were given access to a prototype of the portal. The pilot demonstrated a reduction in processing time by 30%, a decrease in document submission errors by 40%, and an increase in customer satisfaction ratings. These metrics indicate that the online portal not only addresses the initial problem but also enhances the overall efficiency of the vessel registration process. The positive results from the pilot project suggest that scaling up the solution across the entire organisation could lead to significant improvements in MCA's operations (Torous et al., 2021).

4.2. Barriers and Risks to Implementation

While the proposed solution shows great promise, several potential barriers and risks must be considered. One significant obstacle is the resistance to change, both from staff and customers. Staff members who are accustomed to the existing email-based system may be reluctant to adopt the new portal, especially if they are not familiar with the technology. Similarly, vessel owners who are less tech-savvy may find the transition to an online portal challenging, which could lead to frustration and decreased compliance (Joseph & Dalaklis, 2021).

Another risk is the potential for technical issues during the implementation phase, such as software bugs or system downtime, which could disrupt the registration process and negatively impact customer trust. Additionally, the initial cost of developing and maintaining the portal could be a barrier, especially if the project exceeds budget or timeline expectations (Gul, 2020).

To mitigate these risks, a comprehensive change management strategy should be implemented, including staff training and customer support initiatives. Regular communication and feedback loops should be established to address concerns and ensure a smooth transition. Additionally, a phased rollout of the portal, with ongoing technical support, can help to minimise disruptions and build confidence among users.

4.3. Practicality and Realism of Implementation

The feasibility of implementing the online portal within MCA has been carefully assessed, taking into account available resources, timelines, and organisational constraints. One of the key factors that support the practicality of this solution is the existing digital infrastructure within MCA, which can be leveraged to develop and integrate the portal. Additionally, the project's scope has been defined to ensure that it is realistic in terms of both budget and time, with a phased implementation plan that allows for adjustments based on feedback and technical challenges (Bauk, 2022).

The project timeline has been structured to allow for adequate development, testing, and staff training phases, ensuring that the portal is fully functional and user-friendly before it is rolled out to the broader public. In terms of resources, the MCA has allocated a dedicated team to oversee the project, including IT specialists, project managers, and customer support staff, ensuring that all aspects of the implementation are covered.

Furthermore, the pilot project's success provides a strong foundation for scaling up the solution, as the key learnings and insights gained can be applied to the broader implementation. Overall, the online portal represents a practical and realistic solution that aligns with MCA's strategic goals of improving operational efficiency and customer satisfaction (Munim et al., 2023).

5. Organisational Climate and Leadership Style

5.1. Evaluation of MCA's Organisational Climate

The organisational climate at the Maritime Coast Guard Agency (MCA) is generally supportive of operational efficiency and regulatory compliance; however, it currently exhibits limitations in fostering creativity and innovation. The agency's focus on strict adherence to maritime laws and regulations, while essential, can create an environment where innovation is not always prioritised. The hierarchical structure and the formal procedures that dominate the MCA's operations often lead to a risk-averse culture, where employees may feel constrained in proposing new ideas or challenging the status quo (Felski & Zwolak, 2020).

Despite these challenges, there are pockets of innovation within the MCA, particularly in response to external pressures such as evolving maritime regulations and technological

advancements. The agency has shown a willingness to adopt new technologies, as evidenced by its ongoing digitalisation efforts. However, the overall organisational climate still needs to evolve to encourage more proactive and creative problem-solving at all levels. A more open and supportive environment where employees feel empowered to experiment and take calculated risks is necessary to drive continuous innovation within the agency (Joseph & Dalaklis, 2021).

5.2. Leadership Style Required for Innovation

To successfully implement the proposed innovation of an online portal for vessel registration and foster a more innovative organisational climate, a transformational leadership style is required at the MCA. Transformational leaders are known for their ability to inspire and motivate employees to exceed their usual performance levels by aligning the organisation's goals with the individual aspirations of their team members. They focus on creating a vision for the future, encouraging creativity, and providing the necessary support for their employees to take initiative and innovate (Barnett & Woods, 2021).

At the MCA, transformational leadership would involve setting a clear vision for the future of digitalisation within the agency and actively engaging with employees to contribute to this vision. Leaders would need to demonstrate a commitment to innovation by providing the resources and training necessary for staff to develop new skills and embrace new technologies. This leadership style would also involve recognising and rewarding creative efforts, thus reinforcing a culture where innovation is valued and encouraged.

In addition to transformational leadership, elements of authentic leadership are also crucial. Authentic leaders are characterised by their transparency, ethical standards, and genuine concern for their team members' well-being. At MCA, authentic leadership could help build trust between management and employees, which is essential for fostering an environment where individuals feel safe to voice new ideas and take risks. By leading with authenticity, MCA leaders can create a supportive atmosphere that nurtures creativity and innovation while maintaining the organisation's commitment to its core values of safety and regulatory compliance (Kushwaha, 2020).

Leadership at MCA must, therefore, blend transformational and authentic leadership styles to drive innovation effectively. By doing so, leaders can inspire their teams to embrace new

approaches, technologies, and processes that will enhance the agency's operational efficiency and adaptability in an increasingly digitalised maritime sector.

5.3. Recommendations for Enhancing Creativity and Innovation

To improve the organisational climate at MCA and better support ongoing innovation, several recommendations can be made. First, the agency should consider implementing structured innovation programmes that encourage idea generation and experimentation at all levels. This could include initiatives such as innovation workshops, hackathons, and internal competitions that provide employees with opportunities to collaborate across departments and develop creative solutions to operational challenges (Scianni et al., 2021).

Additionally, targeted training programmes should be developed to enhance the creative problem-solving skills of MCA staff. These programmes could focus on areas such as design thinking, digital literacy, and change management, equipping employees with the tools they need to innovate effectively. Leadership development programmes should also be prioritised to cultivate transformational and authentic leadership qualities among current and future leaders within the agency (Herodotou et al., 2021).

Finally, MCA may need to adjust its recruitment strategies to attract individuals with diverse backgrounds and skill sets, particularly those with experience in digital innovation and change management. By bringing in fresh perspectives, the agency can further enrich its capacity for innovation and ensure it remains responsive to the rapidly changing demands of the maritime industry.

6. Conclusion

In conclusion, the proposed innovation of implementing an online portal for vessel registration at the Maritime Coast Guard Agency (MCA) represents a significant step towards enhancing operational efficiency and customer satisfaction. The analysis identified a clear operational problem within the current email-based system, which is prone to errors and delays, adversely affecting both staff productivity and customer experience. By introducing an automated, user-friendly online portal, the MCA can streamline its processes, reduce manual workloads, and improve the accuracy and speed of registrations.

The application of the creativity process, supported by critical skills such as critical thinking, collaboration, and adaptability, was instrumental in developing this innovative solution. The evaluation of the proposed solution through tools like Force Field Analysis demonstrated its effectiveness in addressing the identified challenges, while also highlighting potential barriers and risks, such as resistance to change and technical issues. However, with careful planning and a strong change management strategy, these obstacles can be effectively mitigated.

The success of this innovation will largely depend on the leadership style adopted within the MCA. A blend of transformational and authentic leadership will be essential to inspire and support staff throughout the implementation process, fostering a culture of continuous innovation. Additionally, improving the organisational climate by encouraging creativity and investing in targeted training and recruitment will further enhance the agency's capacity for innovation.

In the long term, the adoption of this online portal will not only improve the efficiency of MCA's operations but also position the agency as a forward-thinking leader in the maritime sector, better equipped to adapt to future technological advancements and regulatory changes. This innovation will contribute to the MCA's long-term sustainability and growth, ensuring its continued relevance in an increasingly digitalised world.

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