Consideration of Stakeholders for Technology Acceptance in Marine Conservation

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SUMMARY

This paper discusses the importance of understanding various stakeholder perspectives before investigating technology acceptance. Stakeholders are identified, from a systems perspective, with their key requirements and interactions. This is part of wider work towards developing an Augmented Technology Acceptance Model (for example acceptance of drone technology) within the context of marine conservation.

KEYWORDS

Technology acceptance, stakeholders, marine

Introduction

Digital technology is developing at speed and application areas are constantly emerging. For such technology to be successfully implemented, we need to appreciate the perception and potential impact for all stakeholders (not just operator/ user/ owner/ customer). Without acceptance from all stakeholders, operational efficiency is incidental. Technology acceptance is not a new field of research (Davis, 1989; Venkatesh and Bala, 2008), however, it is clear that some sectors have a more mature understanding. For example, whilst there is some appreciation of impacts of technology within conservation (Hahn et al, 2022; Speaker et al, 2021; Wilfred et al, 2019), the marine sector has not considered acceptance of digital technologies in any formal depth. The overall aim of this work is to understand barriers and drivers which may oppose or support technology acceptance of digital technology (e.g. drones) within the marine conservation context, applications such as wildlife surveillance, ocean contamination detection, and legal and illegal operations at sea.

Stakeholders

The importance of technology acceptance in this context became evident during a variety of field work studies, which were initially focused on design and deployment of digital technologies within marine conservation. During these field work studies, stakeholders were identified and mapped (using stakeholder influence techniques) using an ethnographic approach.

This enabled the understanding of the variety of stakeholders who have an interest or impact in digital technology in a marine context. A summary of this is presented in Table 1.

Stakeholders	System involvement	Key concerns	
Manufacturer	Produces digital technology	Will people know how to use the system?	
Operator	Operates digital technology	How do I operate the system?	
		What rules should I be aware of?	
Local industry and	May be able to implement the	Need to understand how we can use/ exploit	
Charitable	technology	the technology.	
organisations		What are the opportunities and risks?	
Security (private	Maintain security and safety	Are these systems being used appropriately?	
and public)		What is the potential for misuse?	
Regulatory bodies	Provide/ maintain relevant	Do our current regulations cover any new	
	regulations and guidance (for the	technologies?	
	technology and operators)		
Local residents	Live and/ or work in areas where	Will this impact my quality of life?	
	the technology may be	I'm worried because I don't really know how it	
	implemented	works.	
Students and	Learning about the technology	Exciting, applied opportunities to learn.	
educational	being implemented and the	How do we keep the system up to date?	
establishments	contexts in which it is deployed.		
Research	Utilising the technology to gather	How much can I trust the system and the data	
scientists/	data in fieldwork	it generates? Does the technology help or	
conservation		make my life harder? Does this change the job	
technologists and		I do? Will my team make use of the	
engineers		technology or is it just a waste of money?	
Maintenance team	Maintaining the technology	Will I get the training and support I need if this	
		is not technology I am familiar with?	
Visitors	Visiting the areas where the	Will this positively or negatively affect my	
	technology may be implemented	visit? Will it cost me money?	

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Table		Stakeholders	views
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Conclusion – next steps

Identification of relevant stakeholders is a necessary first step towards developing an approach to technology acceptance. It is important to consider acceptance by all stakeholders within the system (or ecosystem). Barriers and drivers for technology acceptance should be considered as early as possible in the process – not just when preparing for implementation. Next steps for this work is to engage with representatives from the identified stakeholders (through observation, questionnaires and semi structured interviews) to develop the Augmented Technology Acceptance model. Further stakeholder interviews and field work will also be used to validate the model. The understanding gained from this stakeholder analysis has allowed for targeted design of this data collection and validation. Parallel work is considering transferring lessons learned across industrial sectors (for example, marine conservation, manufacturing and defence). The output from this work will help enhance the business case and inform management practices to support successful adoption of digital technology. It will also go on to understand the potential impacts on all stakeholders, supporting a human centred view on design optimisation and suitable deployment of digital technology.

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