

A survey on the role of deck officers with experience of ship operations in ice-covered waters

N Southwell¹

Supervisor: Dr Chris Houghton, Marine Learning Alliance College ₂
MLA College, Plymouth Science Park, Plymouth, UK

Introduction

A continued multidecadal decline in sea-ice extent¹ has led to the opening up of the polar regions to emerging maritime opportunities. These are mostly in fisheries, mineral, oil and gas exploitation and transportation sectors, as well as a destination for a growing specialised cruise sector.

In spite of a decline in sea-ice, extreme variability in ice, temperature and weather conditions remains a significant navigational challenge to mariners. Thus, the emerging opportunities for increased maritime operations in the polar regions present significant safety and environmental risks². As such, seafarers with ice navigation expertise is a necessity for polar operations.

Objectives

An exploratory study was carried out into contemporary navigation skills in ice-covered waters worldwide, with a focus on current training requirements, knowledge and skills required for safe polar operations, This poster only presents the findings on training aspects of the survey.

Methodology

An inductive approach was adopted for the research and a qualitative analysis of opinions was conducted through a 2-part survey format. An online questionnaire was designed so as to obtain a series of attitude and attribute variables from ice navigators and ice pilots dispersed worldwide. The survey statements also drew upon on wider aspects of ice-covered maritime operations including icebreaker operations, the maritime human element, as well as the influence of navigational systems and emergent technologies.

Results

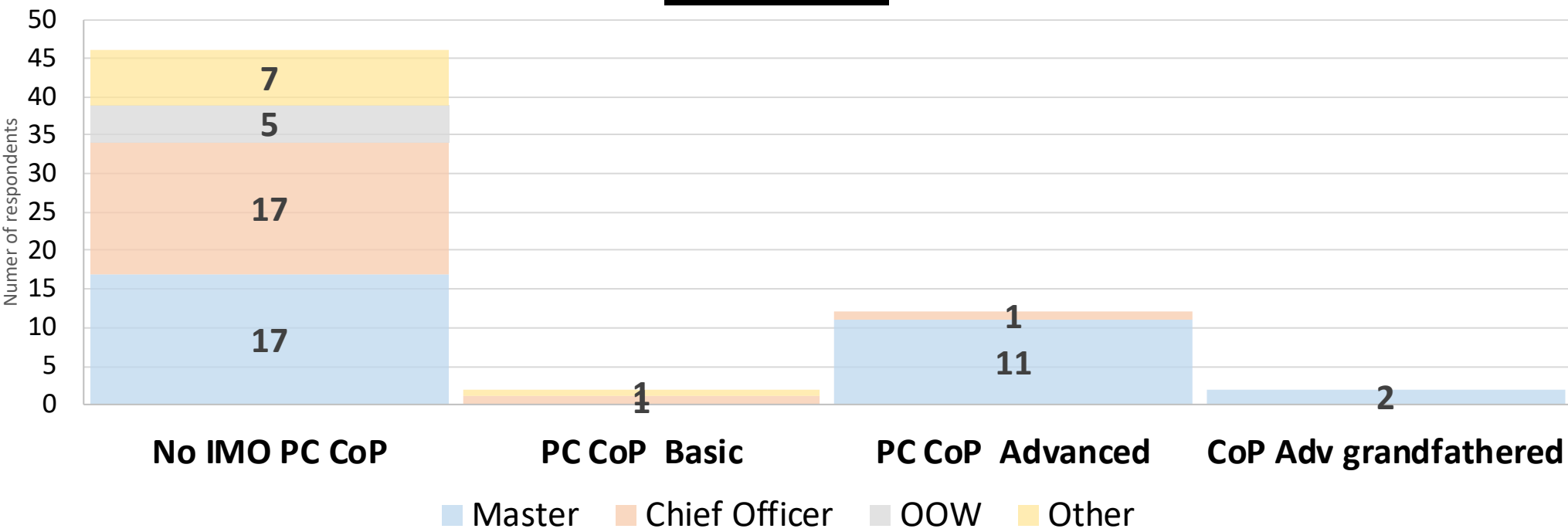


Figure 1: IMO Polar Code Training Course completed by Rank. Source Southwell (2019)

The 48 survey respondents reflected a variety of onboard experience including merchant vessels, icebreakers, research and naval ships. The majority of the survey respondents did not hold an IMO Polar Code Certificate of Proficiency (Fig. 1).

41% of the participants stated having experience of working on government-operated ships, while 39% on commercial ships. 88% respondents stated they had regular ice navigation experience of two seasons or more, while 6% with experience of only individual voyages. Participants had completed ice navigation training in several countries worldwide, (as cadet, simulator exercises, theoretical courses and on-the-job training).

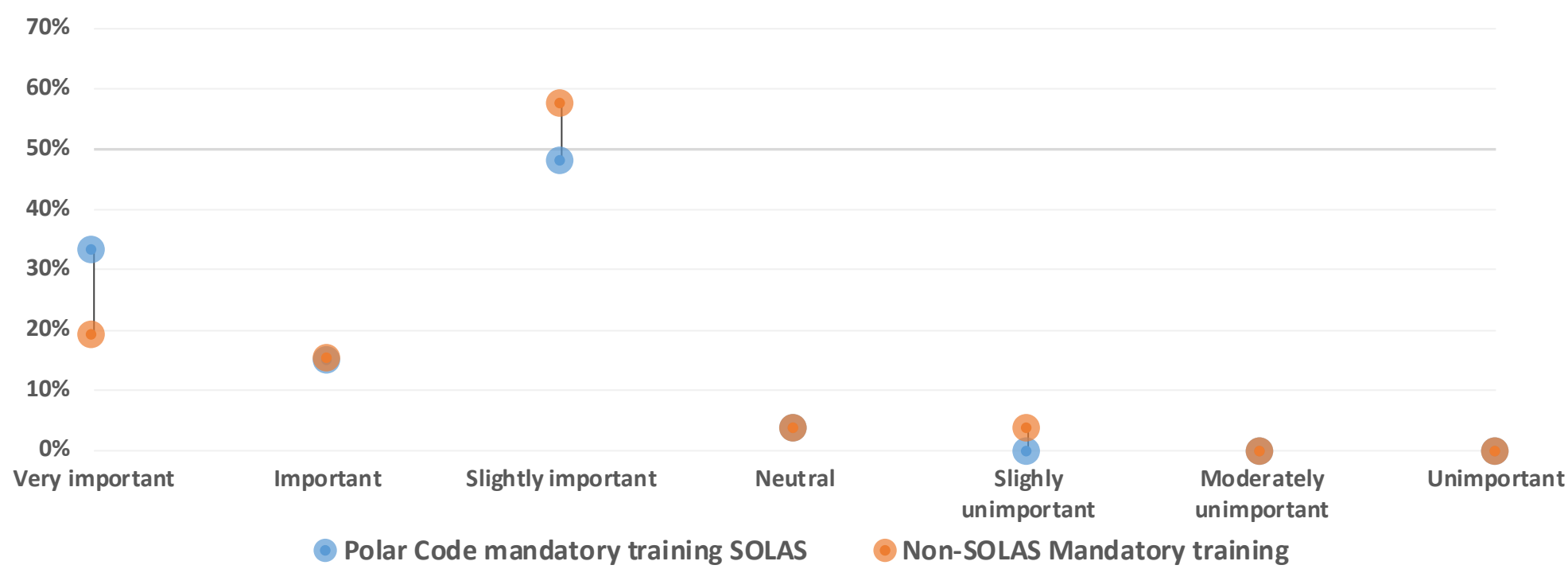


Figure 2: IMO Polar Code Training Course – SOLAS and future non-SOLAS mandatory for polar regions. Source: Southwell (2018)

As Fig.2 shows most participants considered the survey statement in mandatory SOLAS Polar Code training as important for promoting safety.

Results (cont.)

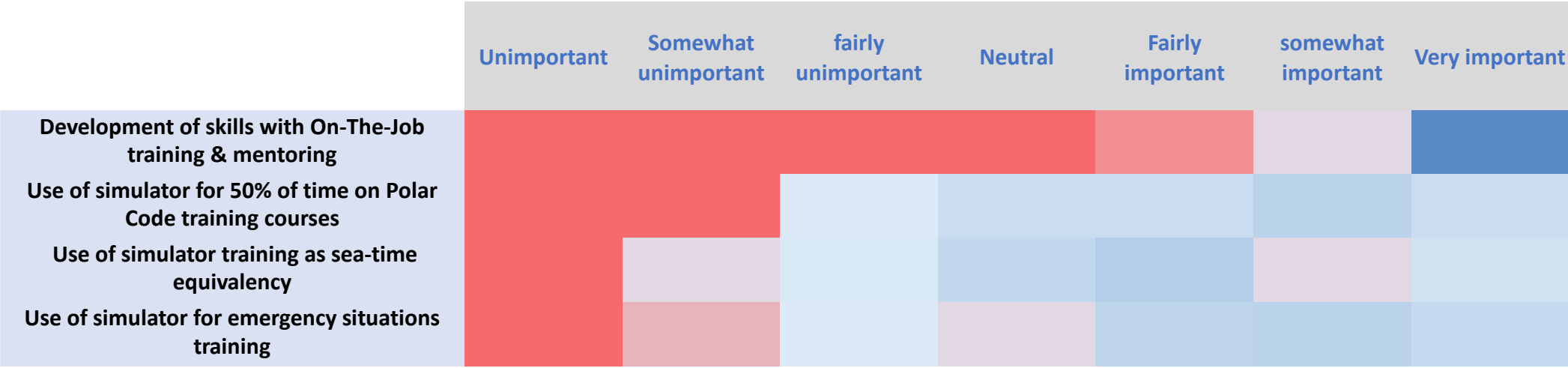


Figure 3: Survey responses to the development of OJT training, OJT mentoring, use of simulators for training scenarios . Source Southwell (2019)

Key: Dark red: Minimum value with progression to dark blue – maximum value for survey replies.

A wide range of deck officers, from novice to very experienced ice navigators considered On-the-Job Training (OJT) and mentoring as not only very important but also very influential on the development of ice navigation skills, (Fig. 3 & Fig.4). Numerous additional comments by participants articulated the need for a well-rounded mentoring of new ice navigators to “serve a solid grounding to the realities of ice danger to a vessel.” Moreover, participants tended to view positively the combination of OJT, in different ice conditions, supplemented by classroom and simulator sessions. Several comments were expressed that simulators cannot replace actual time onboard.

Several participants noted that the variability of ice conditions from year-to-year, time of the year and geographical area, may prove to be problematic for ice navigators in gaining adequate “in-ice” experience, as navigation would be focused on avoiding encounters with ice in the first place. Thus, a navigator will not have accumulated sufficient time in ice conditions to develop their skills but are also at risk of losing the knowledge gained.

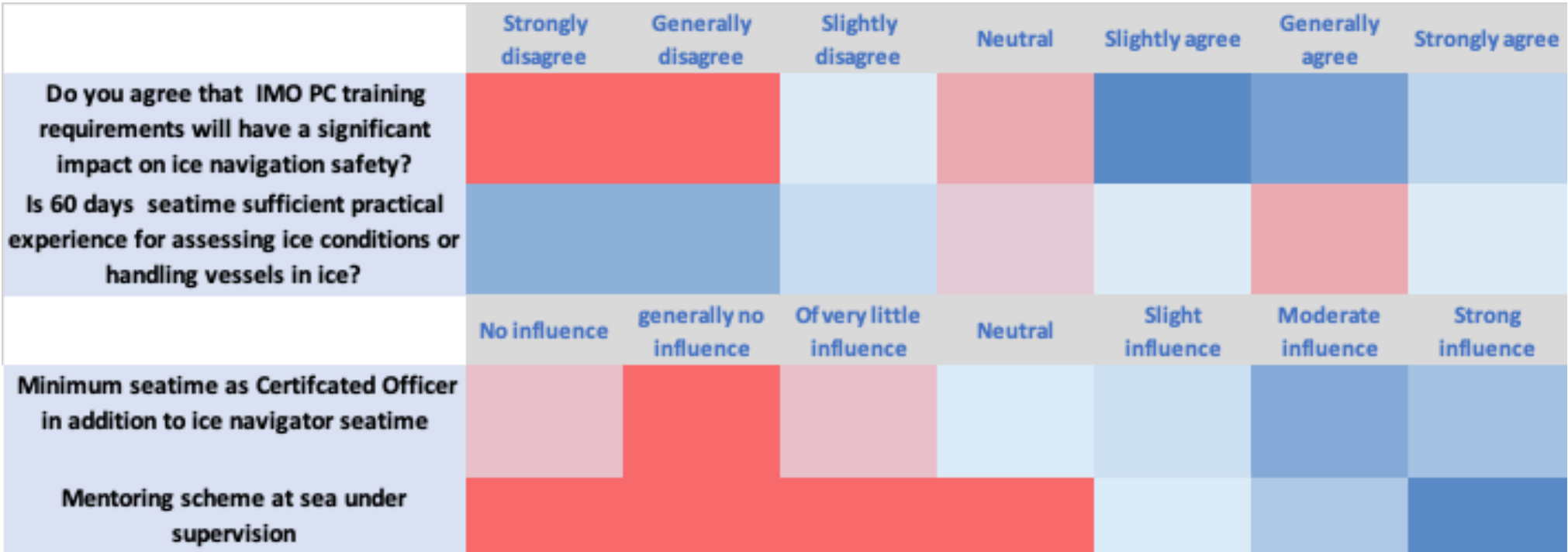


Figure 4: Survey responses to the Polar Code training requirements and impact on safety, OJT mentoring scheme & minimum time as qualified navigator. Source Southwell (2019)

Key: Dark red: Minimum value / dark blue – maximum value for survey replies.

The majority of respondents viewed the 60-day prerequisite for Advanced Polar Waters training courses as being insufficient for assessing ice conditions or ship handling in ice-covered waters, (Fig.4). Concerns over inexperienced ice navigators also ranked highly in survey comments, frequently cited together with sufficient knowledge of ice conditions, (Fig.5). Another factor noted was the continuity of experienced key shore and ship personnel as a current obstacle to safe operations in ice-covered water.

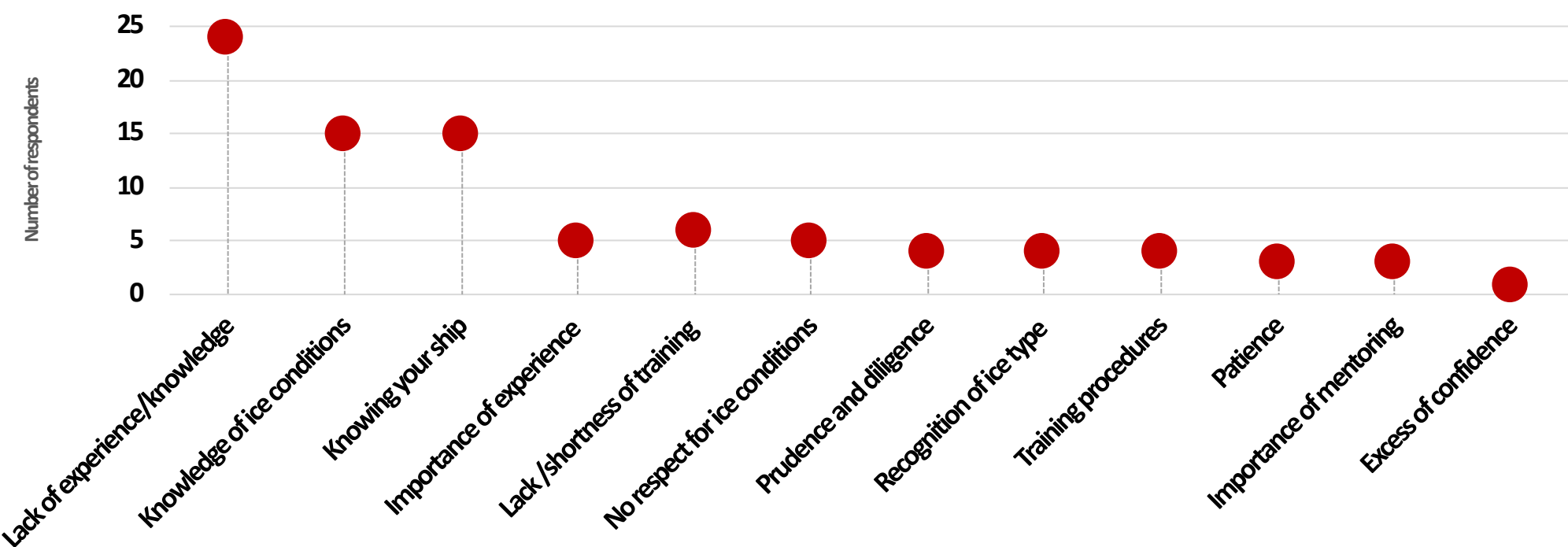


Figure 5: Training, knowledge & skills factors. Source Southwell (2019)

Conclusion

The survey results highlight the significance of deck officer training, skills and competence requirements for polar maritime operations. The findings reveal a contrast between regulatory training and competency and actual expectations of ice navigation competency and skills. The research shows that safety and experience in ice navigation is considered more critical than open water navigation.

References

- Melia, N., Haines, K., and Hawkins, E. (2016), Sea ice decline and 21st century trans-Arctic shipping routes, *Geophys. Res. Lett.*, 43, 9720– 9728, doi:10.1002/2016GL069315.
- Parsons, James, and Progoulaki, Maria. "Promoting Safety and Managing Risks in Arctic Marine Transportation: A Best Practices Approach and the Polar Code." *Proceedings of the ASME 2014 33rd International Conference on Ocean, Offshore and Arctic Engineering*. Volume 10: Polar and Arctic Science and Technology. USA. , 2014. V010T07A014. ASME. doi: <https://doi.org/10.1115/OMAE2014-23271>

¹ Corresponding author: Natacha Southwell – [NatachaSouthwell\[at\]protonmail.com](mailto:NatachaSouthwell[at]protonmail.com). ² www.mla-uk.com

A full copy of the research MSc dissertation is at: DOI: 10.13140/RG.2.2.25999.94883