Improving training outcomes: the significance of motivation when learning about new shipboard technology

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Abstract

This paper reports on some of the findings from a study of new technology and training in shipping. It identifies the key significance of motivation in the learning process and identifies potential factors that motivate or demotivate seafarers when undertaking training about new equipment. It shows that seafarers' motivation is likely to be impacted by confidence that training is good for the job as well as for promotion. It demonstrates that companies can facilitate and encourage individuals to initiate learning activities but that they may equally adopt strategies which discourage learning. Enabling factors include: establishing a positive learning environment; adopting clear policies; allowing seafarers to identify their own training needs and allowing seafarers to request support for specific courses. Conversely, companies may demotivate some seafarers in relation to training by shifting the burden of training 'costs', such as time and money, onto them.

Keywords: Training motivation, shipping, new technology, informal learning

Introduction

Shipping remains one of the most hazardous industries. It is associated with higher occupational injury and mortality rates than many comparable land-based activities (Borch et al. 2012; Roberts and Marlow 2005). Historically many accidents at sea related to structural failures and natural hazards. Today however as design and systems relating to navigation and weather prediction have improved many accidents have been shown to relate to human and organisational decisions and 'errors'. In this context, one major factor that has been linked to accidents is training (Hetherington et al. 2006; Ross 2009; Tang et al. 2013). Consequently training is a significant issue for stakeholders particularly when new crew are hired and when new technology is introduced on ships. In 2009 a survey was published which suggested that while seafarers embrace new technology in general, they are greatly concerned about the availability of relevant training (Allen 2009). Such concern seems particularly pertinent when accident investigation reports are considered. Mounting evidence suggests that inadequate training contributes to accidents at sea (Tang et al. 2013) and there are specific incidents which have contributed to the view that technology assisted accidents at sea are becoming a problem. Following consecutive accidents involving Electronic Chart Display and Information System (ECDIS) for example, Protection and Indemnity clubs have warned that over-reliance on

electronic equipment may lead to 'electronically guided accidents' (Ott and Drablos 2014). In a similar vein, the Nautical Institute website lists eight maritime accidents related to ECDIS (http://www.nautinst.org/en/forums/ecdis/casualty-reports.cfm) emphasising the consequences of the inappropriate use of technology.

While the importance of training in relation to introduction of new technology cannot be overstated, it should not be simply equated with the provision of courses and the issue of certificates which has often been demonstrated by researchers to be problematic (Bloor and Sampson 2009). To make this point clearer, it is useful to differentiate between training and training outcome. As the saying goes, 'You can lead a horse to water, but you cannot make him drink.' Similarly training does not inevitably produce desired training outcomes (von Treuer et al. 2013). For example, the Marine Accident Investigation Branch (MAIB 2014, 2) report on the grounding of the chemical tanker *Ovit* in the Dover Strait points out, 'Although training in the use of the ECDIS fitted to the vessel had been provided, the master and deck officers were unable to use the system effectively.' This lack of ability was one major contributory factor to the accident. Whether training can produce the desired outcomes depends on many factors, however one of the most significant is trainee motivation. While training has been at the forefront of discussions about the role of humans in avoidable accidents, training motivation has not received the serious attention it deserves in the industry. In this context, drawing upon a study of new technology and training in shipping, this paper discusses factors which were identified as potentially motivating and demotivating seafarers in relation to learning. It outlines the implications for training policy and provision and presents some related recommendations.

Training motivation

Motivation to learn has been recognised to be a critical factor for training effectiveness (DeSimone et al. 2002; Kontoghiorghes 2002; von Treuer et al. 2013). 'Research has shown that trainees who are motivated on entry into a training program clearly have an advantage from the beginning' (Mathieu and Martineau 1997, 196). It is further posited that adults tend to learn only what they regard as necessary for a particular purpose indicating the central importance of motivation in terms of knowledge attainment.

As such the factors which encourage trainee motivation have been given some careful consideration by those concerned with education and training pedagogy and a number of variables have been identified which are related to training motivation (Baldwin et al. 1991; Colquitt et al 2000; Kontoghiorghes 2002; Mathieu et al. 1992; Noe 1986; von Treuer et al. 2013). These include: trainees' belief and confidence that training is useful for career development and the achievement of their personal goals. This is in line with research findings that people are guided by basic emotional drives and one key drive is '*to acquire'* (i.e. to obtain scarce goods, including intangibles such as social status) (Lawrence and Nohria 2002; Nohria et al. 2008). When training helps individuals to acquire knowledge, status, promotion and career goals, they are likely to be motivated to learn. Another key motivational factor is the ability of learners to participate in making decisions about training selection (Knowles 1984). Research evidence indicates that if people take a training course which they choose for themselves, they are more motivated to learn and as a result they achieve better learning outcomes, compared with those undertaking externally imposed training (Baldwin et al. 1991; Mathieu et al. 1992).

Another important feature of motivation is highlighted by the training literature, which reminds us that learning is not merely an individual cognitive activity, but occurs in the social world and is shaped by social conditions (Gallivan et al., 2005). Thus we find that training motivation is affected by organisational 'climates' (Maruping and Magni 2012). From the organisational perspective, research has found that adequate resources as well as managerial/peer support are key motivational factors (Colquitt et al 2000).

It is also important to remember that training need not be formal. Formal training is usually structured, institutionally sponsored, explicitly planned and organized, led by instructors, and associated with assessment and evaluation. However, people also learn informally in everyday life, and informal learning activities can take the form of self-directed reading, experimenting with new tools/equipment, and observing and/or consulting colleagues (Aiman-Smith and Green 2002; Spitler 2005). In fact, the research literature on ICT implementation suggests that end users may depend more on informal means of learning, such as learning on the job and consulting colleagues, than on formal classroom training to acquire computing skills (George et al. 1995; Lambrecht et al. 2004; Spitler 2005; Winter et al. 1997). In a qualitative study of

experiences of computer users in business firms, Lambrecht et al. (2004) found that users commonly learned their skills informally, on the job, by observing and learning from others, and less commonly, they acquired skills through formal training. Their findings suggested that learning was most effective when it took place while doing the actual job and with the presence of co-workers to discuss problems and exchange insights and discoveries (Gallivan et al. 2005; George et al. 1995; Waite 2004). Studies of teachers' integration of technology into teaching have similarly suggested that peer coaching is an effective method of learning (Brand 1997; Valcke et al. 2007; Zhao and Cziko 2001). Peers can not only address each other's particular needs, but also pass hands-on experience and provide in situ assistance. According to Spitler (2005), formal training is the initial and short stage in the learning process when new technology is first introduced, and after that a long process of informal learning continues in the on-going use of the technology.

These findings do not imply that informal learning can replace formal training, as this body of literature also suggests that both forms of learning activities complement each other to produce better outcomes (Robey et al. 2002; Sharma and Yetton 2007). What they indicate is that in relation to motivation, equal attention should be paid to formal and informal ways of learning.

The above literature indicates that interventions can make a difference in relation to employee motivation when it comes to training. Drawing on the experiences of seafarers this paper will explore how some organisational factors are presently serving to motivate seafarers with regard to training and how conversely some serve to demotivate them when it comes to learning. It will reflect on some of the associated implications.

Methods

Shipping is a globalised industry. It is a common practice that ship owners register their vessels in so called 'Flag of Convenience' countries (such as Liberia and Panama) and outsource crewing to countries where labour is cheap and labour supply plentiful (Bloor and Sampson 2009). This practice gives rise to a global seafarer labour market (Alderton et al. 2004). Therefore the participants in this study consisted of seafarers from different countries.

To explore how seafarers acquire the skills necessary for the operation of new shipboard equipment, we undertook 43 semi-structured interviews with seafaring officers from a number of countries (including the UK, Ireland, India, the Philippines, China, Germany, Pakistan, and Bangladesh). Thirty four participants were deck officers representing all ranks from captain to third officer. The remaining (nine) participants were engineers representing all ranks from chief engineer to fourth engineer. As one researcher is fluent in both English and Chinese, three interviews were conducted in Chinese with Chinese seafarers, while 40 were conducted in English with seafarers of other nationalities. In the course of these interviews, we sought to gain an in depth understanding of the training participants had received in conjunction with the introduction of new equipment on board, how they learned to use on-board equipment, what encouraged or discouraged them in learning about equipment, and what their opinions were of the training they received.

To support the interview data, we administrated a questionnaire to seafaring officers and cadets in various port welfare centres. One aim of the questionnaire was to establish the extent to which company training practice might serve to motivate/demotivate seafarers to learn when consideration is given to the lessons from the broader educational literature. As such, it included questions related to issues such as how training needs were identified and who paid for training. We designed the questionnaire in English, but translated it into Chinese for Chinese seafarers. Altogether 1007 questionnaires were completed and returned to us. The questionnaire respondents were from more than 50 countries, the largest groups coming from the Philippines (33%), India (18%) and China (13%). These three countries are amongst the most significant labour supply countries in relation to the global shipping industry. The Philippines and China are the largest suppliers of seafarers to the global fleet and India is also a significant labour supplier. The respondents were split almost equally between deck department (524) and engine department (478). Eighty-five respondents were cadets, and the rest were serving officers. While we do not claim this is a representative sample of seafarers[1], it nevertheless serves to illustrate and highlight some issues related to training motivation. In this paper we draw upon relevant findings from questionnaires completed by officers (excluding responses from cadets) to expand on and add supportive evidence to issues revealed by the interview data.

Interview data were thematically organised and analysed with the assistance of NVivo software. Questionnaire data were analysed using SPSS software. The analysis was informed by the pre-existing literature, however, the research was designed to allow scope for new issues relating to motivation to emerge.

We acknowledge that research is not a neutral or objective process, but is context specific and influenced by the relationship between the researcher and the researched (Dean et al. 2017; Tarrant 2014). As such, it is important to reflexively examine researcher positionality as well as how the research context might have influenced our outcomes in particular ways. One of us is an ex-seafarer who left the industry more than a decade ago and has insider knowledge of this occupation, and the other one of us has conducted extensive fieldwork on-board merchant ships since 1999. Both of us have a good understanding of the industry and working life and conditions on ships, which helped us conduct interviews and interpret the data. However neither of us had strong pre-conceived ideas about training and new technology and neither of us had detailed exposure to such training either as a practitioner or a researcher. Our knowledge of the industry allowed for the development of rapport with interviewees but we do not feel it was sufficiently detailed in this area to have led to unconscious bias in the interview process or in the analysis of data. However, our knowledge of the sector did affect our research design inasmuch as it allowed us to appreciate that in a labour market characterised by precarious temporary employment seafarers may be reluctant to discuss any matters which may be interpreted as reflecting poorly on themselves and/or their employers. It was important therefore to seek out seafarers away from the context of their employment and as a result we conducted our interviews on the 'neutral' territory of training colleges with trainees who were undertaking standard certification courses (not specialist training relating to new technology on board). These were a mixture of cadets studying for compulsory entry-level certification and qualified officers studying for mandatory 'higher' certificates which would allow them to apply for senior ranking positions. In addition, we went to seafarer welfare centres in ports where seafarers would not associate us with their companies.

Motivating factors

The data indicate that at an individual level seafarers were well motivated to learn. Their strong motivation was underpinned by a drive 'to acquire' (Nohria et al. 2008) new skills in relation to their job. From the perspective of seafarers, such training could serve to enhance knowledge and skill and to boost seafarers' confidence and value in terms of both self-worth and in relation to the labour market. For example, one chief officer described his own motivation in pursuing training in his own time. For him it related to his ambition to be promoted to captain and more than that to become an effective captain. He explained that:

> If there's a certain area that I feel that I am weak in. I feel that I could have definitely gone for some more intense training, because at the end of the day [when] we're masters, we're going to take over the ships so we must be very, fairly confident over that. (NE4-CO)

Training, especially formal training courses, demands resource, such as (very valuable) time[2] and money and it was significant that this seafarer was not alone in terms of his willingness to invest in his own professional development. This is important given that our questionnaire data indicated that almost half of our respondents were expected to meet (in part or full) the costs of training undertaken with regard to new equipment in board.

A significant motivational factor underpinning the drive to 'acquire' is the prospect of promotion. This was also true of our participants, who identified career progression as providing them with significant incentives to pursue training, sometimes in their own time and at their own cost. To discharge their specific duties and responsibilities, seafarers identified a need to operate or take charge of particular equipment. Our findings indicated that seafarers were often willing to take the initiative in undertaking training over and above the minimum requirements associated with their 'ticket' (certificate of competency). This was consistent with a desire to achieve promotion and thereby attain the means for a better income, better working and living conditions and higher status. One seafarer described how:

> I learned the loading system in container, 'loadicator' [by myself on the ship]. How we load on container vessel, how the program works, how to discharge cargo. [...] We have to learn it. When on-board, everybody needs to learn, because he wants to be promoted. It is inside him that he must learn. He automatically wants to learn it. Otherwise, he will not be promoted. (LS36-2O)

In this example the seafarer concerned sought out opportunities to learn 'on the job', however, in other cases the desire for advancement drove seafarers to seek out training opportunities provided by companies. Our questionnaire data indicated that in such cases seafarers would generally be nominated for training by company shore side personnel (74% of questionnaire respondents) or senior officers (20% of questionnaire respondents). However, some suggested (10%)[3] that they had the opportunity to request particular courses and regrettably 7% of respondents indicated that training needs were never identified at all. When asked about how training needs were identified in his company, one third officer said:

> Well, they [the company] send out the matrix and say that 'these are the courses available and anything you want you tell us'. So I do that. I saw five courses I want to do during this leave. I have only been back for six weeks. But I saw five thing I want to do. So I sent an email to the office saying can I do this, this and this. If I am lucky, they say 'yes', otherwise, they say 'no'. And they said 'no' to me except this one course. Ideally, if you get all the courses done faster, you get promoted faster. That's what we all want. (LP13-3O)

At an individual level, these examples reveal the strong perceived link between promotion and training motivation. The two examples further indicate that seafarers' motivation for advancement may result in both formal training as well as on the job learning. It worth noting that the active participation by seafarers in the selection of training is likely to be key to enhanced levels of motivation and in turn more effective learning (Baldwin et al. 1991; Mathieu et al. 1992).

While our interview data revealed that on the job learning is common on ships with seafarers taking time to learn from colleagues and from manuals and 'trial and error' for example. In most cases, this kind of learning amongst qualified seafarers is driven by self-initiative; and most companies were not identified in the research as having clear policies to facilitate or encourage such learning. This kind of learning also depended on the co-operative spirit of

senior officers and other colleagues as well the availability of time. If senior officers and colleagues did not want to assist others for any reason, self-initiated on the job learning was more difficult.

In this context, companies have an opportunity to develop policies to encourage peer coaching with a view to creating a positive learning environment which would in turn reinforce training motivation. Where such policies have been adopted seafarers found them to be supportive. A second officer described such a policy in his company. He stated in the interview that officers were required by the company to learn the skills of the next rank while supervised by another higher rank officer on-board, and that such learning activities were recorded and documented. He elaborated:

> We do have a training programme on-board for officers' training. The master is in charge to see that senior officers are giving junior officers training. Whatever training you give, you sign the file. For example, the chief officer is in charge of anchor operations, he teaches junior officers how to do anchor operations. (LS28-2O)

Not only did seafarers wish to undertake training in pursuit of promotion it was also the case that seafarers who were employed on per voyage (short-term) contracts felt compelled to undertake particular types of training in order to protect their position in the labour market. The maritime industry is characterised by different sectors, such as dry bulk, container, tanker, and off-shore. Some of these demand specialised training (and certification) and these may also attract higher remuneration. In this context, some seafarers seek to broaden their opportunities by investing their own money and time in specialist training such as that required in the offshore sector. In several interviews we found examples of such practice relating to attendance at 'dynamic positioning' courses and we identified a belief amongst participants that the acquisition of such training improved their marketability in terms of jobs. One second officer explained that:

> I'm planning to do a DP (Dynamic Positioning) course. … If you've done a course, company will prefer you. Like if I do a DP course, and I want to go into DP market, I will do this DP course and after doing this course, I will join some BP ships, like DP vessels. Then this course, I will be doing for my own sake, because I want to go in DP field. The company will not take me unless I have this certificate or I have this DP course done. (VG5-2O)

The discussion so far indicates that both individual and organisational factors can motivate trainees or users to learn. Sometimes these two sets of factors mingle together and reinforce each other. There are also occasions, however, when organisations fail to provide sufficient support and as a result they demotivate individuals in terms of learning.

Demotivating factors

As we have already discussed training incurs costs in relation to time and money, and some seafarers are prepared to meet these costs in pursuit of competence and promotion. Individuals lead complex lives however and may have competing and conflicting goals. The motivating factors discussed above are related to work and career. However, in common with others seafarers have families and a life outside work. In the context of long absences from home work-life balance may be a particular issue (Gregory and Milner 2009; Thomas et al. 2003). Given this, they may be torn between the goals of spending precious time with family members and advancing their career prospects. The general literature on training and motivation suggests that where training contributes to the achievement of one goal but negatively affects others, trainees may not be motivated (Zhao and Cziko 2001). Research relating to ICT training in other industries has shown that end users are reluctant to undergo training if it demands their own time even though ICT is useful for their job (Brand 1997; Galanouli et al. 2004; Monk 2004; Valcke et al. 2007; Waite 2004). In shipping, time also poses constraints. Formal training is likely to take place in training centres ashore, which means training is undertaken when seafarers are on leave. This is a particular issue for seafarers because of the limited time that they are able to spend with family and friends ashore. Their competing needs for relationships and for advancement may clash in such circumstances and interfere with motivation even where training is regarded as useful. One second officer expressed such conflicted feelings as such:

> As soon as I sign off the ship, within 15 days, there will be call from the training centre saying that you have to come for so and so course. It is bit irritating: you are just home for less than a month. But it is quite good to do the course. It is beneficial. (LS28-2O)

For some seafarers however the opportunity costs to training were experienced as too great and they refused to undertake courses during their leave time. One chief officer, for example, stated:

> The human resource department arranges the courses and then the person involved has to go and attend courses. But the hitch point is: when do they do these courses? The courses are done in their time off. … Now, how else in this world, people go for training courses on Saturday and Sunday? I mean people who work Monday to Friday do not take training courses on Saturday and Sunday, do they? They only do training courses on weekdays, when colleges are running. But for seafarers, they have to do all the courses possible when they come home on leave, which they earn after working four months or six months away from home at sea, and then the employers expect them to train in their time when they're on leave, and then go back on the ship. So that's why you get rarely any seafarer volunteering to do courses and training to enhance their skills. What they want is a decent piece of leave. (VG2-CO)

Another seafarer expressed a similar view when he said:

> It is in the company's safety management system that each deck officer shall attend a bridge team management course every five years, but then I've been qualified for, I don't know, over 5 years now, and I haven't been on one. Which is apparently a failing of myself, because I've taken shorter leave periods, but also the company, they could have tried to work a bit harder to make dates available it would be better for me. …So they used to send us to that, you needed to have five people on the course. But now they can't, the company can't fill 5 places on the course, so they're mixing with other – it's the same with bridge management, you need at least three people. And they have their training project, and they set the dates and they say, "Right, okay, we need to get such and such." And that's quite – I've been at home twice and asked twice, I go on holiday a lot and I'm not home as well, so I'm probably not – not as flexible as maybe other people are. I'm not going to sacrifice my leave for training. (VG3-CO)

Although for different reasons, both these officers were unwilling to sacrifice their holiday time with family in exchange for training. In this context of heavily demotivated learners, if and when companies attempt to impose a requirement for training during leave time on seafarers then it is quite likely that training will be relatively ineffective.

On some occasions, training not only demands seafarers' leave time, but also their money. Formal training involves external experts and resources, and therefore incurs a financial cost. While well-established shipping companies were reported by some seafarers to be committed to investing in training, this is not invariably the case. For example, one Indian second officer reported that one shipping company tried to transfer training costs directly to him:

> Once I was about to join one company, and they were paying very good, so I was planning to go to that company. But then, the person in the office, he asked me "Do you have this course?" Some bridge team management course. I said no. He said "You have to do that course." As a second mate I did not have to have that course, it's not mandatory. … So I said I don't have that course with me. He said "You have to do that course… But our company will not pay you. You do it off your own. Not a thousand, about 200 pounds in all, and when you do that course you can join us." (VG5-2O)

Our research identified important nationality differences when it came to the provision of free training relating to new equipment on board vessels. Chinese seafarers were the most likely group to identify companies as paying for training associated with the introduction of new technology and Filipino seafarers were the least likely group to indicate that this was the case. Only 42% of Filipino respondents to our questionnaire stated that companies paid for such training compared with 74% of Chinese respondents. Further demotivating factors were also identified in in the questionnaire data. About 28% of officers were *never* compensated for leave time that was lost in undertaking training and a further 19% *were not usually* compensated for such lost leave. In terms of variations associated with nationality we found that European seafarers were the most likely to be 'compensated' for lost leave time and this happened in 38% of cases, while Filipino seafarers and seafarers from other ASEAN (Association of Southeast Asia Nations) countries were the least likely to report compensation for lost leave time during training – only 19% of these groups of seafarers received such compensation.

This appears to be another lost opportunity for companies given that where seafarers reported proper support from companies they appeared enthusiastic about training and therefore much more likely to benefit from provision. One engineer described how he felt 'very good' about is company and his training. He told us:

> [I feel] Very good [about the training I have received]. I have been only in this company. They sponsored me from the beginning, my diploma from Singapore, they paid everything. They paid for the junior engineer certificate. (HK41-2E)

This quote reveals an additional benefit of a supportive training regime. If seafarers are happy with the training provided by the company, it seems they are motivated not only to learn, but also to stay with the company. Motivation goes hand in hand with commitment. This helps some companies to retain a qualified and motivated workforce despite employing them on temporary (flexible) contracts.

Concluding discussion

Shipping is a safety critical industry. A failure of either a technological or a human kind that results in an accident carries the risk of causing damage to property, loss of life and environmental pollution. At present there is evidence that seafarer competence in relation to new equipment is insufficient and that in relation to some new equipment seafarer confidence also remains low (Tang and Sampson 2011). In the wake of the introduction of new technology, it is crucial to train seafarers better in order to avoid further 'technology–assisted' failures. In this context, training motivation is of particular importance because of its established role in the quality of training outcomes.

This paper has shown that seafarers in general have strong motivation to learn both formally and on the job, which is likely to be derived from the belief and confidence that training is good for the job as well as for promotion. Given this, the important issue is whether or not companies can effectively capitalise on such belief and confidence with appropriate policies and resources. If companies adopt clear policies in relation to training requirements and promotion, establish a positive learning environment on ships, and allow seafarers to identify their own training needs, individuals are likely to be more motivated and therefore more effectively trained. Conversely, seafarers' motivation in relation to training may be undermined if companies shift the burden of training costs, such as time and money, solely onto them.

The findings from this research indicate that there remain opportunities available to companies with regard to the maximisation of training efficacy. A useful starting point is for companies

to recognise the variations that can be found among seafarers with regard to their life goals and how these impact on training motivation. While companies may rely on a small number of seafarers seeking out training in pursuit of professional advancement or marketability, many seafarers may be more concerned with remaining healthy by taking advantage of opportunities to rest during vacation times and to be with friends and family members. In this complex situation companies have the potential to play a major role in encouraging and motivating learning. By providing resources in the form of compensation for lost time and free training places companies can alleviate seafarers from the temporal and financial burdens related to training thereby increasing motivation to learn.

In the context of the provision of clear guidance to seafarers about the competence they require in specific roles and the training that must be undertaken in support of this (prior to promotion), companies have the opportunity to increase seafarer motivation with regard to training by allowing them to identify their own training needs. These could either be emailed to office staff directly by seafarers or could be discussed with senior officers as part of development plans and/or performance appraisal.

A third opportunity for companies stems from the recognition that effective learning takes place in many situations, and training can take various forms - classroom training, on the job training, and peer mentoring and coaching. Such forms of training are generally complementary and while simple equipment such as Automatic Identification System (AIS) may only require seafarers to learn from manuals and colleagues in order to become proficient in their use more complex equipment generally requires more intensive teaching which is usually better suited to a classroom environment (Tang and Sampson 2011). Such formal classroom training might be extensive or might simply provide an initial and short-term stage in the learning process when new technology is introduced (Spitler 2005). In the on-going use of technology, new problems may crop up and users will need to consult colleagues, technical experts, and manuals, or go through other forms of informal learning processes in order to solve those problems (Lambrecht et al. 2004; Santhanam et al. 2007; Spitler 2005). This is particularly the case in shipping perhaps due to the issue of a lack of equipment standardisation. Seafarers may need to relearn or re-familiarise with the new ‘model’ when they join a different ship. In this context, on top of procedures to guide and encourage seafarers to take training,

companies also need to set out clear guidance for on board training and learning and create a positive climate in support of such steps.

To conclude, training motivation can be boosted with systematic and structured training policies and plans, and the provision of adequate resources, to support and stimulate seafarers' aspirations relating to competence, confidence, and career development. Such approaches to seafarer training not only enhance seafarer competence but there are indications that they can result in other positive benefits such as the long term commitment of seafarers to their employers and their careers.

Note

1. In fact, it is impossible to obtain a representative sample of seafarers since the exact population and composition of seafarers is unknown.
2. Many seafarers undertake training during their vacation periods. These are particularly precious to them as they are generally the only times when they can be with family members. Absence at training courses thus carries a very high 'opportunity cost' for seafarers who are employed. Conversely unemployed seafarers may have plenty of available time but may have little available cash to divert to training
3. The question allowed for multiple responses to capture the full range of ways in which training needs were identified. The percentages therefore exceed a total of 100.

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