Journal of Maritime Research, Vol. IV. No. 1, pp. 5–22, 2007

ISSN: 1697-4840

DELPHI STUDY OVER LANGUAGE TECHNOLOGIES USE TO IMPROVE MARITIME COMMUNICATIONS

R. de la Campa Portela[1], F. Louzán Lago[2] and S. Fernández Hermida[3]

Received 20 November 2006; received in revised form 20 November 2006; accepted 2 April 2007

ABSTRACT

The inadequate knowledge of language is identified by International Maritime Organization as one of the forty four components of the so-called human factor or human element.

One of the possible actions aimed to prevent or to reduce the negative consequences derived from the lack of misuse or a common language on maritime communications is based on the research over the use of new communication and information technologies in maritime settings and its adaptation to communication needs in such setting.

In that respect and from University of A Coruña, a project is being developed with the object of studying the feasibility of these technologies application to maritime communications, with the purpose of improving its efficiency as well as to encourage the maritime safety aspects related to them.

One of the basic actions to develop this project is the carrying out of a Delphi study –experts' panel– with the aim of stating the legal, commercial and technical viability of the use of this kind of resources through the enquiry to maritime experts which develop a considerable part of their professional activities in an international communication environment.

The present article analyse the views expressed by these experts on maritime communications over the possible implementation of language technologies in maritime settings.

Keywords: maritime communications, information and communication technologies, language technologies, Delphi.

[1] Profesor, ETS Náutica y Máquinas, Universidad de A Coruña, rosamary@udc.es, Paseo de Ronda 51, 15011, A Coruña, Spain. [2] Profesor, ETS Náutica y Máquinas, Unviersidad de A Coruña, flouzan@udc.es, Paseo de Ronda 51, 15011, A Coruña, Spain. [3] Profesor, ETS Náutica y Máquinas, Universidad de A Coruña, senenfh@udc.es, Paseo de Ronda 51, 15011, A Coruña, Spain.

INTRODUCTION

More than a decade ago research began into automatic speech translation, a technology that combines speech recognition and automatic translation, as a tool to improve communication in different areas. Its achievements are based in large measure on the use of so-called "controlled languages" between interlocutors. These languages stand out for their simplicity based on the use of a limited vocabulary and the restriction of grammar rules.

In the maritime workplace, Standard Maritime Communication Phrases (SMCP) fulfils the necessary requirements to be considered a controlled language, as these phrases are useful in an automatic speech translation system. As a part of the University of A Coruña's project entitled "Language industries as applied in the maritime workplace", this article endeavours to describe the results obtained in a Delphi study. The aim of this study was two-fold. First, to gather the opinions of maritime communications experts on the possible use of new computer science technologies and communication in order to improve maritime communication, and second, to determine the suitability of using SMCP as a basic tool in the running of these applied technologies within the maritime workplace.

INTRODUCTION TO THE CONCEPT OF THE DELPHI METHOD

The Delphi method is defined (Landeta, 1999: 32) as "a systematic and repetitive process which seeks to collect the opinions of a group of experts, and if possible reach a general consensus". Its evaluation methodology belongs to the so-called qualitative research methods, whose main characteristic is that the study's objective is the determining factor in selecting the method and not vice-versa: "the objectives are not reduced to individual variables, but rather they are studied in all their complexity and totality within a day-to-day context" (Flick, 2004: 19).

A Delphi study is basically a selection of a group of experts who are asked about their opinions on issues dealing with future events. The experts' opinions, which are anonymous are gathered and analysed in successive rounds with the aim of reaching a general consensus but without infringing on the participants' complete autonomy (Astigarraga, 2006). As a whole the Delphi method allows one to foresee what could be the most important changes within the next few years in the object of study.

THE DELPHI PROCEDURE: A STUDY ON THE APPLICATION OF LANGUAGE INDUSTRIES IN MARITIME COMMUNICATION

The study's aim

An inadequate knowledge of a language is identified by the International Maritime Organisation (IMO) as one of the forty-four components of the so-called human factor or element. The problems stemming from an inadequate use of the

language are, thus, an inherent risk area of typical maritime trade activities, which can occur during on-board operations, especially on ships with multicultural and multilingual crews. Problems can also arise as a result of interaction between ships or between ships and land services.

One of the possible measures to prevent or reduce the negative consequences stemming from the mistaken or poor use of a common language in maritime communication is based on the research on the use of new computer technologies and communication in the maritime workplace and its adaptation to the communication needs in this area. On the one hand research into speech recognition could lead to new aids for the running of the ship and could, at the same time, reduce communication problems due to the training of multilingual crews; on the other hand research into automatic translation applied to this area could make oral communication easier, mainly those types of communication that are done with the aid of communication equipment.

In this sense, the Delphi study included in this project entitled "The language industries applied within the maritime workplace", which is being undertaken by the University of A Coruña, is one of this project's goals. The study has been undertaken with the aim of establishing the legal, commercial and technical feasibility of the use of this type of resource by consulting with maritime experts who work to a considerable extent within an international communication environment.

Hence this article analyses the points of view expressed by these maritime communication experts on the possible implementation of language technologies in the maritime workplace.

Stages of the study

As previously mentioned, a Delphi study is basically the undertaking and analysis of successive questionnaires with the aim of attaining the greatest level of convergence among the experts who were surveyed. Prior to handing out the questionnaires we should resolve several matters that will determine the research's guidelines, such as determining the number of experts and getting their consent to participate, the number of rounds that are to take place and the manner that will be used to hand out and collect the questionnaires. As for the number of experts participating in this study it is important to indicate that there were 30 initially, but as a result of the number of withdrawals in successive surveys the number of expert participants was reduced to 10.

Table 1 summarizes the participation and withdrawal rate of the participants, who were divided into two groups in order to make the results clear:

— Experts: traffic control operators and professors who are experts in maritime communication.
— Affected individuals: merchant marine captains, tugboat captains and port pilots.

Table 1: Participation rate in the Delphi study

	Number of initial surveys	Number of replies in the first round	Number of replies in the second round	Number of replies in the third round	Number of total replies	Percentage of final participation	Percentage of follow-up
Experts	12	7	6	6	19	50%	86%
Affected	18	16	7	4	27	22%	25%
Total	30	23	13	10	46	33%	44%

The results found in the table show that the high rate of withdrawals is due to communication difficulties with certain groups of participants, in particular with the captains.

Likewise it is important to indicate the need to convey to the experts information on the objectives and methodology of the study, the number of questionnaires, the approximate duration of the process and the potential use of the information that is received, in order to get from them an even-level of participation that is thoughtful and justified.

In our study this previous stage took place by sending out a letter of introduction which explained and provided the aforementioned information as well as contact information of the study's coordinator. As for the establishment of the number of rounds, we considered that in order to achieve the aims of this research project an adequate consensus could be reached with three rounds. Finally, it is important to indicate that the handing out and picking up of the questionnaires took place via electronic mail, as it was the fastest method.

Results

The Delphi study "Language industries applied within the maritime workplace" that is presented in this article consists of three questionnaires, whose replies are divided into two parts: part A has 8 points which gather the replies to questions about the relation between communication and security, peculiarities and problems in oral communication and the use of the IMO's Standard Maritime Communication Phrases. Part B, which has 9 points, collects the comments on the use of language industries as a support tool in order to improve exterior oral communication in the maritime workplace; we also find in this part comments on the functional specifications of a speech translation unit designed for this purpose. All of these results are presented in the following section in a question-answer form.

Part A

1. *Do you think that spoken communication between people of different nationalities can be a problem for maritime safety?*

91% of the experts replied affirmatively to this question, while 8% answered negatively.

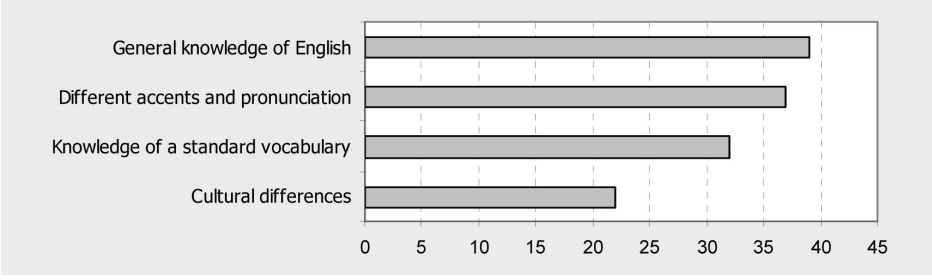
2. *What types of communication do you consider to be more problematic: ship-to ship, ship-to-shore or internal?*

38% of the experts consider ship-to-shore communication to be the most problematic, while ship-to-ship and internal communication were considered to be the most problematic by 31% of the experts who were surveyed. Hence we can also infer from these data that 69% of the experts consider external communication (the sum of ship-to-ship and ship-to-shore communication) to be the most problematic, vis-à-vis the 31% of those surveyed who consider internal communication to be the most problematic.

3. *The following points are proposed as the most important problems that affect ship-to-ship and ship-to-shore communication. Rank them according to priority from the most important to the least important: knowledge of a standard vocabulary, general knowledge of English, different accents and pronunciations, cultural differences between interlocutors.*

Once a point system of 1 to 4 was established for the previous points, the following results were obtained in Figure 1. Thus according to the opinions of the experts who were consulted, the most important problem that affects communication is general knowledge of the English language (39 points), closely followed by different accents and pronunciation (37 points), the next important problem would be knowledge of a standard vocabulary (32 points), and finally, with a relatively low score, cultural differences (22 points)

FIGURE 1: the most important problems that affect ship-to ship and ship-to-shore communication



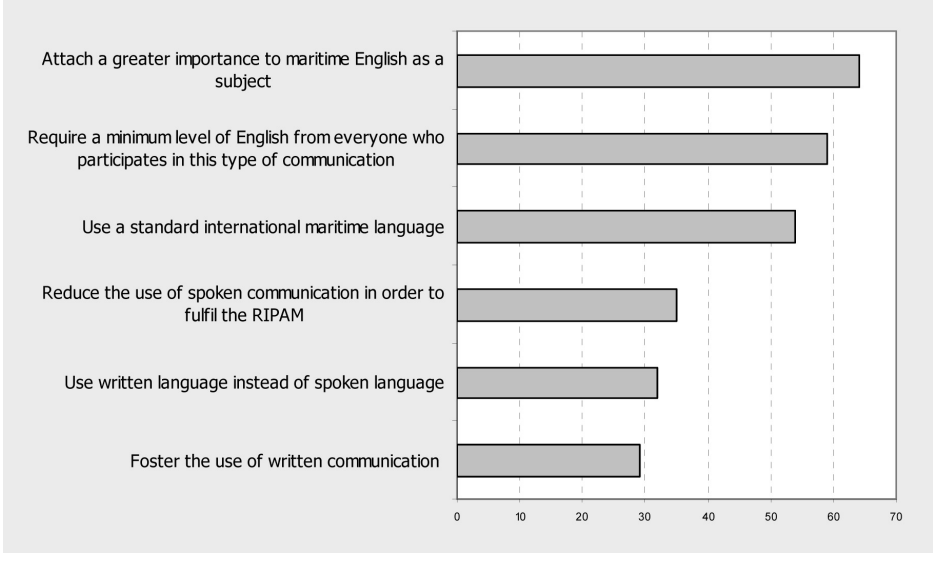
4. *In order to improve this type of communication the following solutions are proposed. Rank them according to whether you consider them to be more or less suitable:*

– attach a greater importance to maritime English as a subject
– use a standard international maritime language (IMO Standard phrases)
– use written language preferably instead of spoken language

– *require a minimum level of English in hiring anyone who is involved in this type of communication*
– *foster the use of written communication such as fax or electronic mail*
– *reduce the use of spoken communication in order to comply with the international law on the prevention of collisions at sea*

Once a point-system from 1 to 6 was established for these possible solutions on the part of the experts who were surveyed, the following data was gathered in Figure 2, which shows that they considered the best solution for this type of communication problem would be to attach a greater importance to maritime English as a subject (64 points), followed by the requirement of a minimum level of English for those who participate in this type of communication (59 points). The third solution would be to use a standard international maritime language (54 points), followed by the reduction in the use of spoken language in order to comply with the international law on the prevention of collisions at sea (35 points). The two solutions that were considered to be the worst are the use of written language instead of spoken language (32 points) and the fostering of written communication (29 points).

FIGURE 2: solutions for improving this type of communication

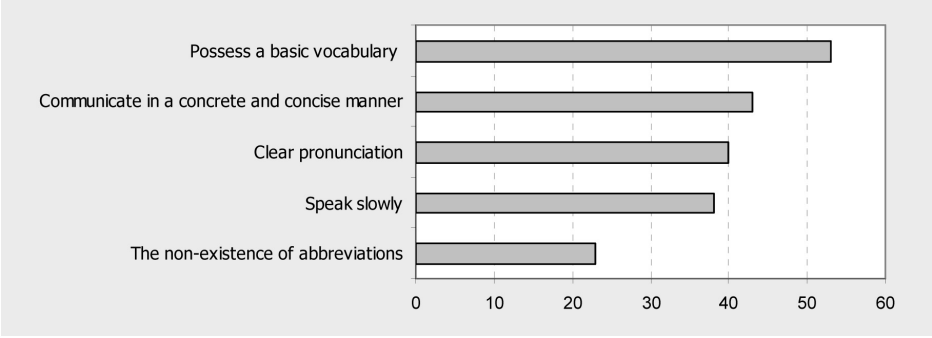


5. *The following points reflect the linguistic aspects of a language that could foster spoken communication. Rank them according to whether you consider them more or less important: possessing a basic vocabulary, the non-existence of abbreviations, speaking slowly, clear pronunciation, concise and concrete communication.*

Once these aspects were ranked according to importance on a point scale of 1 to

5, the following results were tallied: possessing a basic vocabulary (53 points) is considered to be the most important aspect by the experts who were surveyed, followed by clear and concise communication (43 points) and clear pronunciation (40 points). The least important aspects were speaking slowly (38 points) and the non-existence of abbreviations (23 points), as shown in Figure 3.

FIGURE 3: linguistic aspects of a language that could foster spoken communication



6. *Have you used the IMO's Standard marine communication Phrases habitually in the course of your professional obligations and to communicate with ships and authorities on land?*

71% of the experts admitted to not using these standard phrases in a regular manner for exterior international communication, while 29% asserted that they had used them regularly for this purpose.

The experts who were consulted indicated that the main reason these phrases are not used regularly for maritime communication is due to the general ignorance of said phrases.

7. *Do you believe that the use of this kind of standard vocabulary makes international communication easier?*

77% of the experts stated that the use of standard phrases does make international communication easier, while 23% believed that it did not.

It is important to mention that the experts who answered negatively claim a general lack of knowledge with regards to the use of said phrases.

8. *The following are features that could be attributed to the IMO's Standard marine communication Phrases. Indicate if you agree very much, agree, disagree or disagree very much with the following statements:*

– *Standard phrases make comprehension easier*
– *They are a relatively small collection of phrases which enables one to learn and practise them well.*

– *In case they are used in stressful situations people who do not have a good level of English will find them easier to use*
– *In the case of a lack of communication they enable all the crews and coastal stations to follow the same communication guidelines*
– *They make communication easier in emergency situations.*
– *They avoid errors in interpretation.*
– *They are a standard language based on short and clear phrases.*
– *They are a common ground for communication that is not excessively long.*
– *They reduce vocabulary by avoiding the use of different words to describe the same thing.*
– *They provide information clearly and concisely.*
– *They allow one to understand people with a low level of English.*

Figure 4 shows the results of all of these questions. In these data one can observe a rather general consensus among the experts, with the exception of the affirmation that these phrases enable one to understand people who have a low level of English. The majority of the experts "disagree" on this last point. It is also important to highlight the resounding affirmation that these phrases make comprehension easier, since 60% of the experts stated that they "agreed very much" with this statement. On the other hand this statement, along with "they are a standard language based on short and clear phrases" and "they avoid errors in interpretation", are the only questions in which no expert "disagreed".

Part B

9. *Do you think that new communication technologies, such as automatic translation or voice recognition, could be applied in any way to foster an effective maritime communication process?*

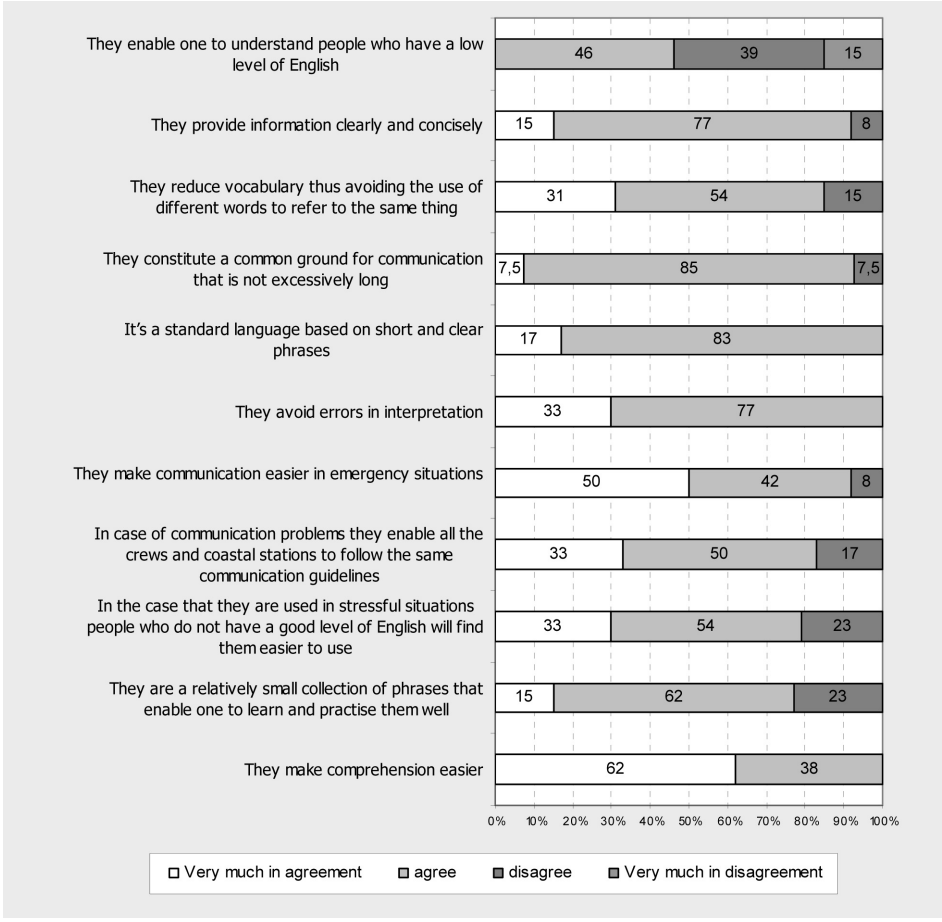
This question reveals the great level of disinformation that exists within the maritime milieu vis-à-vis these types of technologies, since 35% of the experts did not reply on account of their lack of knowledge on this topic. On the other hand, 35% of the experts consider that these technologies cannot be applied currently or in the future to improve the maritime communication process, while 30% consider that they can be successfully applied to achieve this goal.

10. *How could these technologies be used in the maritime workplace?*

These are some of the comments on the matter of possible uses of new technologies to improve maritime communication:

— "The best thing would be to receive a written translation of what had been received via VHF"
— "instantaneous written communication between ships and ship-to-shore"
— "in my opinion, the best way to use these technologies would be to provide a

FIGURE 4: Characteristics that could be attributed to the IMO's Standard Maritime Communication Phrases



discreet control device on each ship that would translate into the operator's mother tongue on a digital screen"

— "all of the ship or land stations' VHF should have a visual data screen according to the transmission equipment; upon receiving calls from a station this equipment would carry out a simultaneous voice translation"

— "the new technologies could recognise the language and translate directly, if this conversation were recorded on a screen one could translate it perfectly even if the communicator can no longer transmit anything else for whatever reason"

— "[new technologies] are an aid for written messages"

Prior to formulating questions 11 to 17 we briefly explained to the experts the process of automatic speech translation, and we outlined the idea of the development of a maritime communication unit with this feature. The following questions are thus related to the characteristics of such a unit as well as other important aspects dealing with the possible implementation and use of such equipment.

11. *Should this equipment always work as part of the VHF or as an independent unit onto itself?*

With respect to this question 77% of the experts were of the opinion that the equipment should be independent of the VHF, and in any case it should be added to this if it were necessary, while 33% believe that such equipment should be part of the VHF and should always operate with the VHF equipment.

12. *After having made a prior selection of the opinions on the operation of the equipment, the following were chosen more often:*

A – The communicating officer should speak in his/her mother tongue (Spanish for example) and the device should translate into English before sending the message. The message would appear on a screen in written form.
– The receiving device does it in English and translates into the mother tongue of the receiving officer (Danish for example) by relaying this translation orally. At the same time the equipment displays the message received in English on the screen in written form.

B – The officer should speak English and the device would transmit in this language and also display it in English on a screen.
– The receiving device does it in English and transmits orally in this language. The equipment also displays the written message on the screen in written form, either in English or in the native language of the receiving officer.

C – The officer who transmits should speak in his/her native language (Spanish for example) and the device would translate into English before sending out the message. The message would appear on a screen in written form.
– The device receives in English, translates into Danish, sends the message orally in English and the message appears on the screen in Danish.

Taking into account that a unit of this type would be, in any case, a communication aid that would not exempt anyone from having the responsibility of possessing a good level of English, which option do you believe would be the most interesting?

Options A and B were chosen equally by the experts who were surveyed.

13. *The following points reflect some of the technical and linguistic barriers that could*

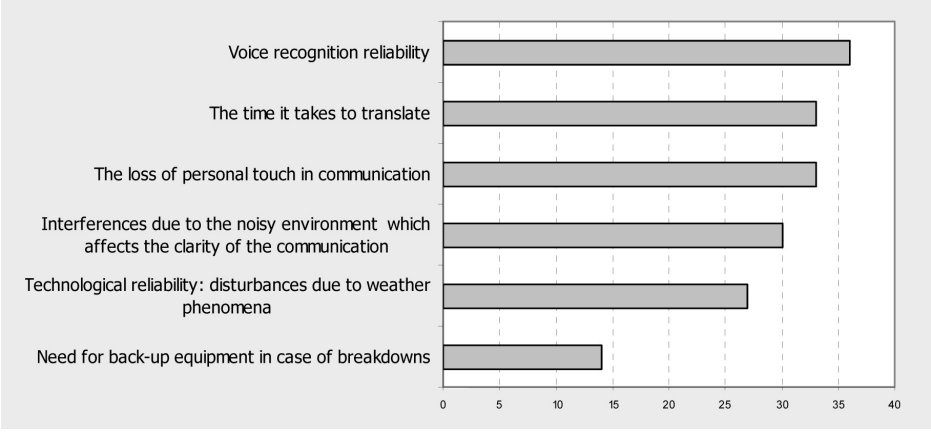
arise while using this equipment. Rank them according to whether you consider them to be more or less problematic or difficult to overcome:

– *The loss of the personal touch in communications*
– *The time it takes to do the translation*
– *Reliability of the speech recognition mechanism*
– *Interferences due to the noisy surroundings which affect the clarity of the communication*
– *Technological reliability: disturbances due to weather phenomena*
– *The need to have back-up equipment in case of breakdowns*

Once the point system of 1 to 6 was set up, the following conclusions were reached: reliability of the voice recognition system is considered to be the most problematic and difficult aspect to resolve (36 points), followed closely by the time used up to translate, and the loss of the personal touch in communication, both were considered to be equally problematic (33 points). Next in the ranking were the disturbances due to the noisy surroundings (30 points) and the technological reliability due to disruptive weather conditions (27 points).

The premise that was considered to be less problematic and thus easier to resolve was the need to the have back-up equipment (14 points). All of these data are shown in Figure 5.

FIGURE 5: technical and linguistic barriers that could arise while using this equipment



14. *If this equipment were developed and in a testing period, would you be willing to try it out?*

85% of the experts would be willing to try this equipment out, while 15% would not.

15. *Would you recommend the development of equipment with these features as an aid in maritime communication?*

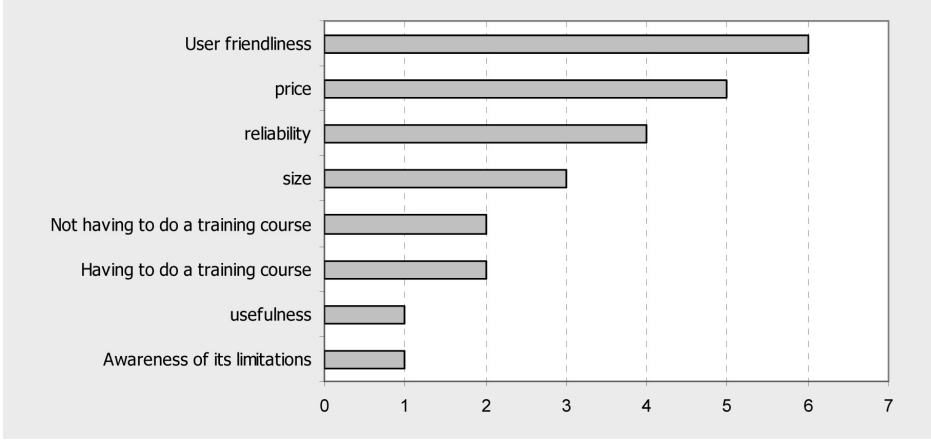
69% of the experts would recommend the development of equipment with these features, while 31% would not.

16. *If you were thinking about the possibility of acquiring this type of equipment, what would you consider to be the most important features?*

The following characteristics were indicated by the experts as being the most important when purchasing this type of equipment: user friendliness, price, reliability, size, need to do training courses, usefulness of the equipment and awareness of its limitations.

Figure 6 shows how these characteristics ranked according to their importance.

FIGURE 6: If you were thinking about the possibility of acquiring this type of equipment, what would you consider to be the most important features?

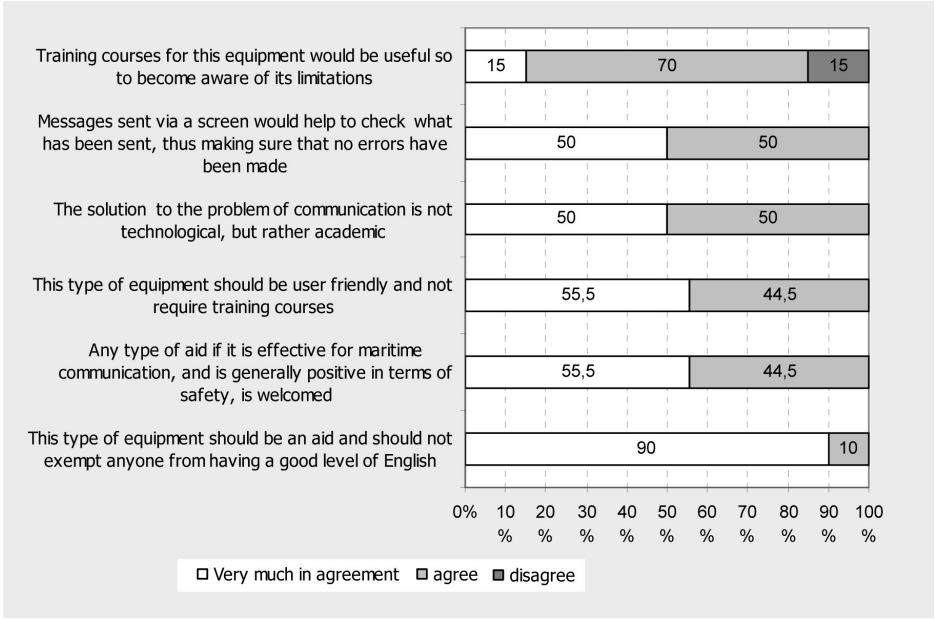


17. *Indicate if you are very much in agreement, agree, disagree or disagree very much with the following statements:*

- *This type of equipment should be an aid and should not exempt anyone from possessing a good level of English*
- *Any type of aid if it is effective for maritime communication, and is generally positive in terms of maritime safety, is welcomed.*
- *This type of equipment should be user friendly and not require any training courses.*
- *The solution to the problem of communication is not technological, but rather academic.*
- *The messages sent via the screen would help to check what has been sent, thus making sure that no errors are made.*
- *Training courses on how to use the equipment are useful so as to become aware of its limitations.*

Figure 7 shows us how the experts replied to this question. As we can see they almost agree unanimously on all of the statements, except for the statement about whether training courses would be useful in order to become aware of the equipment's limitations, as 15% of the experts stated that they disagreed.

FIGURE 7: Indicate if you are very much in agreement, agree, disagree or disagree very much with the following statements



CONCLUSIONS

1. As for the matter of the relation between communication and safety:

— A large majority of the experts coincide in believing that oral communication between people of different nationalities can be a safety problem in the maritime workplace, and they also consider that the most problematic types of communication are those that take place externally: ship-to-ship, and ship-to-shore.

— On the other hand general knowledge of English is considered to be the most problematic area in external communication, as differences in pronunciation and accent and awareness of standard vocabulary are also seen as the most problematic factors for developing such communication.

— To improve external spoken communication experts stress above all the need to lend greater importance to maritime English as a subject; they also indi-

cate the need to involve maritime administrators and authorities so that they can demand a minimum level of English from the people who are involved in this type of communication. The Use of a standard international maritime language is considered to be the third best solution for these communication problems.

2. The use of the IMO's Standard marine communication Phrases

— Despite the fact that the use of standard vocabulary appeared in the previous point as one of the best solutions for the problems of spoken communication, only 30% of the experts stated that they use or have regularly used this vocabulary professionally. In harmony with this contradiction, 77% of the experts consider that the use of this type of vocabulary makes international communication easier; they all agree, to a greater or lesser extent, that these phrases facilitate understanding and avoid mistakes in interpretation. Likewise the majority of the experts agree that these phrases provide information clearly and concisely and facilitate communication in emergency situations.

3. The usefulness of language industries in maritime communication

— To start with, one third of the experts state that they have no specific knowledge about the use of language technologies in the maritime workplace; another third of the experts think that such technologies could not be applied in this environment, and the last third believes that these communication technologies can be applied in some way so as to foster an effective communication process in the maritime workplace. Thus there is initially a clear and apparently irreconcilable difference of opinion.

— However, once a possible design was proposed for a unit of equipment that would use speech recognition and automatic translation as an aid in external oral communication, almost 70% of the experts would recommend the development of equipment with these features, and 85% would be willing to try out the equipment if such equipment were developed and in the testing stage.

4.-Functional specifications of the equipment

— Almost 80% of the experts who were surveyed would opt for an independent VHF unit, that in any case could be fixed to it whenever it were necessary.

— As for the running of the equipment, 50% of the experts would select the following model:

– The officer who transmits a message should speak in his/her native language (Spanish for example) and the device would translate into English before sending out the message. The message would appear on the screen in written form.

– The receiving device produces it in English and translates into the mother tongue of the receiving officer (Danish for example) by sending out the translation orally. At the same time the equipment displays the message received in English in written form on the screen.

The other 50%, however, would opt for this other model:

– The officer should speak in English and the device would transmit in this language, displaying the message in English on a screen.
– The receiving device produces it in English and transmits in this language orally. The equipment also displays the received message in written form on a screen, either in English or in the mother tongue of the officer who receives the communication.

Based on the comments made by the experts themselves and transcribed previously, we can conclude that those experts who selected the second option as the most suitable believe that the translation process is more complex than the speech recognition process. Therefore they choose to avoid it insofar as it is possible.

In addition, it is interesting to point out that the third option in which the interlocutors send and receive messages in their native tongue, was not selected by any of the experts.

— As for the most problematic areas that would have to be overcome to ensure the proper running of the equipment, reliability of the voice recognition system and the time it takes to do the translation are indicated as being the most problematic technical and linguistic barriers and the most difficult to solve.
— Finally, according to the experts who were consulted, user friendliness, price and reliability are, in this order, the most important characteristics that should be taken into account when thinking about the possibility of buying a unit with these features.

REFERENCES

Astigarraga, E. (2006) *El método Delphi*. San Sebastián: Universidad de Deusto.

Flick, U. (2004) *Introducción a la investigación cualitativa*. Madrid: Ediciones Morata S.L.

Landeta, J. (1999) *El método Delphi: Una técnica de previsión para la incertidumbre*. Barcelona: Editorial Ariel S.A.

ESTUDIO SOBRE EL USO DE LAS TECNOLOGÍAS DEL LENGUAJE PARA MEJORAR LAS COMUNICACIONES MARÍTIMAS

Resumen

El conocimiento inadecuado de la lengua es identificado por la Organización Marítima Internacional como uno de los cuarenta y cuatro componentes del llamado factor o elemento humano.

Los problemas derivados del uso inadecuado de la lengua son, por lo tanto, un área de riesgo inherente de las actividades típicas del comercio marítimo, que pueden producirse tanto durante las operaciones a bordo, especialmente en buque con tripulaciones multiculturales y multilingües, como pueden surgir en la interacción entre buques o entre buques y servicios de tierra.

Una de las posibles acciones encaminadas a prevenir o a reducir las consecuencias negativas derivadas de la falta o mal uso de una lengua común en las comunicaciones marítimas está basada en la investigación sobre el uso de las nuevas tecnologías de la información y la comunicación en el ámbito marítimo y su adaptación a las necesidades comunicativas en dicho ámbito. Por un lado la investigación en el reconocimiento del habla conducirá a nuevas ayudas para la operación del buque y, a su vez, reducirá los problemas comunicativos debidos a la formación de tripulaciones multilingües; por otro lado la investigación en traducción automática aplicada a este ámbito facilitará las comunicaciones orales, principalmente aquellas realizadas con la ayuda de equipos de comunicación.

En este sentido, como parte de los objetivos del proyecto "Industrias de la lengua aplicadas al ámbito marítimo" desarrollado desde la Universidad de A Coruña, se encuentra el estudio presentado a continuación, cuyo fin es el establecimiento de la viabilidad de la aplicación de las nuevas tecnologías de la información y la comunicación a las comunicaciones marítimas, con el fin de mejorar su eficacia así como resaltar los aspectos de la seguridad marítima relacionados con ellas.

MÉTODO

Desarrollaremos, en el presente artículo, el procedimiento y resultados obtenidos de un estudio Delphi realizado con el fin de establecer la viabilidad legal, comercial y técnica del uso de las nuevas tecnologías de la información y la comunicación en el ámbito marítimo, a través de la consulta a expertos marítimos que desarrollan una considerable parte de sus actividades profesionales en un ambiente comunicativo internacional.

Un estudio de este tipo consiste básicamente en la selección de un grupo de expertos a los que se les pregunta su opinión sobre cuestiones referidas a acontec-

imientos futuros. Las estimaciones de los expertos se recogen y analizan en sucesivas rondas, anónimas, con el fin de conseguir consenso pero con la máxima autonomía por parte de los participantes. En su conjunto el método Delphi permitirá prever las transformaciones más importantes que puedan producirse en el fenómeno analizado en el transcurso de los próximos años.

El presente artículo analiza, por lo tanto, los puntos de vista expresados por expertos en comunicaciones marítimas sobre la posible implantación de las tecnologías del lenguaje en el ámbito marítimo.

CONCLUSIONES

De entre las conclusiones obtenidas de este estudio es interesante destacar los siguientes puntos:

La gran mayoría de los expertos coincide en que la comunicación oral entre personas de distinta nacionalidad puede suponer un problema para la seguridad en el ámbito marítimo, y además encuentran que las comunicaciones más problemáticas son aquellas que tienen lugar con el exterior: buque-buque y buque-tierra.

Por otro lado el conocimiento general de la lengua inglesa es considerada el área más problemática en las comunicaciones exteriores, siendo las diferencias en la pronunciación y acentos y el conocimiento de un vocabulario normalizado considerados factores también muy problemáticos en el desarrollo de tales comunicaciones.

Para la mejora de estas comunicaciones orales exteriores los expertos recalcan sobre todo la necesidad de conceder una mayor importancia a la formación en inglés marítimo, también indican la necesidad de implicar a los gestores marítimos y a las autoridades competentes para que exijan un nivel mínimo de inglés a los implicados en dichas comunicaciones. El uso de un lenguaje marítimo internacional normalizado es señalado como la tercera mejor solución a estos problemas comunicativos.

A pesar de que el uso de los vocabularios normalizados se exponía en el punto anterior como una de las mejores soluciones a los problemas de la comunicación oral, sólo el 30% de los expertos declara utilizar o haber utilizado de forma habitual estos vocabularios en el desarrollo de sus funciones profesionales.

En consonancia con esta contradicción, el 77% de los expertos considera que el uso de este tipo de vocabularios facilita las comunicaciones internacionales, estando todos ellos de acuerdo, en mayor o menor grado, en que dichas frases facilitan el entendimiento y evitan los errores de interpretación. Así mismo la mayoría de los expertos coinciden en que estas frases proporcionan información de forma clara y concisa y en que facilitan las comunicaciones en situaciones de emergencia.