

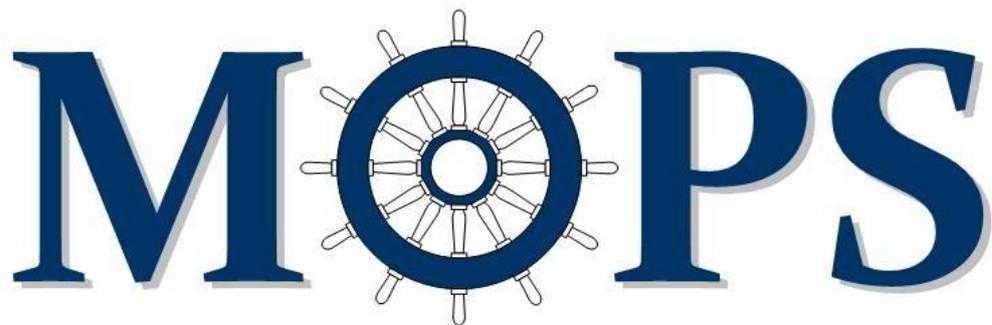
Public white paper

MOPS WP1 – Implementation of Shipping KPI Reporting Regime

Best practices and lessons learned

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Report

MOPS WP1 – Implementation of Shipping KPI Reporting Regime

Best practices and lessons learned

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ABSTRACT

This report is an adapted version of deliverable D1.1 from the NRC funded project MOPS (Managing Operational Performance in Ship Management). For comments or questions please contact author Dag Atle Nesheim (Research Scientist at MARINTEK and member of the KPI Association Ltd KPI Expert Group). Any comments or questions would be most welcome.

The MOPS project (Managing Operational Performance in Ship management) is the first research project concerning the actual use of the Shipping KPI Standard. This report documents best practices and lessons learned from the MOPS participants' implementation of the Shipping KPI Reporting Regime. The reporting regime is the first step towards implementation and utilisation of the Shipping KPI Standard. Later reports from MOPS will cover the utilisation of the Shipping KPI Standard in a performance management concept.

Implementation of the Shipping KPI Reporting Regime consists of three main steps, namely organisational implementation (tuning the organisation towards successful implementation), processing of Performance Indicators (making sure required parameters are ready for retrieval and reporting) and technical implementation (finalising structure for retrieval and reporting the required parameters). In this report each step is described in light of challenges and the MOPS participants' best practices and lessons learned in solving these challenges.

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Table of contents

- 1 Background 4**
- 2 Lessons Learned and Best Practices related to Implementation of the Shipping KPI Reporting Regime..... 4**
 - 2.1 Capturing the lessons learned and best practices 4
 - 2.2 Organisational implementation 4
 - 2.3 Internal Processing of Performance Indicators..... 7
 - 2.4 Technical implementation 9
 - 2.4.1 Two alternative structures for retrieving and reporting PI Values..... 10
 - 2.4.2 Conditions for successful technical implementation 12
- 3 Concluding Remarks 14**

1 Background

This report is an adapted version of Deliverable D1.1 responding to the R&D Project Managing Operational Performance in Ship management (MOPS) *WPI – Populating the Benchmarking database*, in Contract 210732/O70 between Odfjell Management AS and the Research Council of Norway (RCN). One of the objectives of WPI was to document lessons learned and best practice related to the implementation of the Shipping KPI Reporting Regime to aid users in an efficient implementation process, both regarding the actual implementation as well as securing an efficient day to day reporting of the actual Shipping KPI Performance Indicators (performance parameters). The actual use and added value of reported KPIs (performance management) will be documented in later deliverables in MOPS.

Through the cooperation with InterManager (the international trade organisation of ship managers) the MOPS project has access to two important tools related to benchmarking, namely the Shipping KPI Standard and the Shipping KPI System. It should be noted that these tools are available and free of charge to any ship manager through www.shipping-kpi.org.

2 Lessons Learned and Best Practices related to Implementation of the Shipping KPI Reporting Regime

This section documents the lessons learned and best practices derived from following the MOPS partners' implementation of the Shipping KPI Reporting regime. The section is organised on basis of three building blocks, namely 1) Organisational Implementation, 2) Processing of PIs and KPIs and 3) Technical Implementation. Please note that the building blocks are not to be interpreted as sequential processes. Indeed, they are in most cases run in parallel. As an example, top management support can be communicated by top management being present during the processing of the Performance Indicators.

2.1 Capturing the lessons learned and best practices

MARINTEK as the R&D partner in MOPS (in addition to being the project manager) met with each MOPS partner at their own facilities, facilitated joint workshops where all partners were present and the implementation process was discussed in plenum. In addition, follow-up interviews were conducted at selected MOPS partners. Section 3 in this report is the result of MARINTEK's documentation. All findings are generalised to secure each MOPS partner's anonymity.

2.2 Organisational implementation

Organisational implementation in the context of Shipping KPI entails the creation of a proper structure supporting the implementation of Shipping KPI, a culture facilitating the required changes in the organisation, involvement of the right people and resources and a well-defined and

communicated implementation process. Below we present the common characteristics of the MOPS partners in how all the above was accomplished.

Top Management Support

All MOPS partners stressed the importance of top management support. The lowest management level used to communicate management support was the QA manager but most MOPS partners used head of department or higher. The main message was: 'Let there be no misunderstanding, this is something we are going to do'. As the implementation of the Shipping KPI Reporting Regime was part of a research project, there was a risk that some may see this as a research activity (meaning that the degree of successful implementation was not seen as an important goal of the organisation itself) and the unambiguous message from top management was therefore critical. The main incentive for all involved actors was thereby established: This is something you will have to do as it is important for the business and therefore required by top management. In some company cultures this would be sufficient, but in other companies more incentives may be needed.

Focus on Incentives

There are two main types of incentives relevant for the implementation of the Shipping KPI Reporting regime: Personal incentives (relevant for each person involved) and organisational incentives (relevant for the overall organisation). All MOPS partners focused on the latter when communicating why implementation of the Shipping KPI Reporting Regime was considered beneficial. Four key incentives were generic to all MOPS partners, namely

- Shipping KPI will make us shine
 - Quantitative evidence (on basis of an industry standard) that we are high level performers
- Shipping KPI will enable us to pinpoint areas of potential improvement
 - This will help us improve
- Shipping KPI will enable us to do internal benchmarking of vessels and fleets
 - This will enable us to identify and communicate best practices
- Shipping KPI will enable us to validate our existing portfolio of KPIs¹
 - We can improve our existing KPIs

In light of Shipping KPI being an international standard for KPIs in ship management, the research team was expecting focus on the possibility for external benchmarking. This, however, was not the case. There is a potential lack of trust in other ship managers' reporting on the Shipping KPI standard as no formal vetting regime² is in place and external benchmarking results are therefore not considered trustworthy.

Another incentive expected by the research team relates to the Shipping KPI Standard as a potential common voice from the industry. Although perceived as interesting by the MOPS partners during common workshops this incentive require the Shipping KPI Standard to mature both in light of number of participating ship managers as well as acceptance from external stakeholders. As discussion concerning this incentive was initiated by the research team we have no evidence that the incentive holds much perceived power.

¹ Or indeed, if no internal portfolio of KPIs exists in the organisation, Shipping KPI is a great starting point

² A formal vetting regime for the Shipping KPI Standard has indeed been discussed. There are pros and cons to such an initiative and we will not go into past discussions in this report. It is sufficient to say that pt. such a vetting regime is not in place.

The MOPS partners all indicated that it would have been very valuable to have access to success stories from other ship managers already having implemented the Shipping KPI Standard. As the MOPS project is the first research project concerning the actual use of the Shipping KPI standard, such documentation is not publicly available. In addition, the Shipping KPI Standard is relatively new and not many success stories are likely to exist as proof of benefits from its implementation will take time to evolve, understand and document. Indeed one of the goals of the MOPS project is to create such documentation for others to benefit from and this report is the first step towards achieving this goal.

Control the Fear

Equivalently important as focussing on the incentives is the need to control the fear associated with quantitative monitoring (which is basically the main area of use of KPIs in the first place). Common concerns among the people responsible for reporting the required Performance Indicators are that they will be held responsible for the KPI Values, especially if KPIs indicate underperformance.

Will my salary, bonus or future promotions be based on these KPIs?

All MOPS partners openly discussed these issues, although proactively initiated by top management or the Shipping KPI Expert³. The main message from top management was that the KPI Values, although expressing a certain performance, are the results of several operational elements. The KPI 'Lost Time Injury Frequency' (LTIF) was used as an example. A single bad KPI Value means little in regards to assessment of personal performance. Accidents happen, due to bad luck, bad procedures or any number of reasons. Only a consistent trend of bad KPI Values of the LTIF indicates a real problem. Even when such a problem has been identified, the root cause is not evident and most likely complex. The quantitative (continuous) monitoring of the LTIF therefore only enables the indication a potential problem. A qualitative assessment is needed to identify the root cause and the remedy. In addition, the person responsible for reporting the LTIF parameters (PIs), typically the superintendent, is not responsible for the organisation's HSE performance. This means that there is no direct relationship between being responsible for reporting PIs and being responsible for bad KPI Values. This fact is perceived as important to communicate, according to the MOPS partners.

Another potential fear relates to the perceived added workload of reporting PIs. Again, access to real life figures from ship managers having experience with reporting to the Shipping KPI Standard would be very beneficial but no such figures are publically available. In addition, all organisations are unique and the workload related to reporting PIs is also heavily connected to the degree of automation of the reporting process (which will be dealt with in section 2.4 in this report). Generic figures related to estimated workload would therefore have the risk of being misleading, either by indicating too high a workload (causing worries) or too low (causing disappointments and challenges related to resource planning).

However, in MOPS we are not yet discarding the idea of documenting figures related to workload. At the moment this issue is kept open and actions will be taken to identify potential generic figures or trends.

³ The role of the Shipping KPI Expert will be scrutinised in later sections of this report

2.3 Internal Processing of Performance Indicators

There is no way around it; all 66 Performance Indicators must be processed by the organization to make sure that:

- The PI description is well understood (what to report)
- The required information is available in the organisation (PI source)

There are however a number of ways to streamline and structure this process. Below we present how this was done by the MOPS partners.

At most MOPS partners the task of reporting PIs require the involvement of several persons from different departments (HR, Technical, IT, etc.). To gather all involved persons in a common meeting where all PIs are processed makes little sense. People should only be present during the processing of PIs relevant for them to avoid apathy and waste of time during processing of non-relevant PIs. What most MOPS partners did was to invite representatives from each relevant department and do a rough mapping of PIs to responsible persons or departments. The basis for this was a table with one column for PIs and one column for PI responsible person (see Table 1).

PI Name	PI Description	PI Responsible
Number of absconded crew	Number of absconded crew (vessel specific) on a one year rolling time period	HR Manager
Transport Work	Cargo transported X distance sailed per voyage	Superintendent

Table 1 PI mapping table - first iteration

This table was then used as basis for planning meetings where all PIs relevant for a certain department or person were processed in light of making sure that the PI description was well understood and where the required information could be found.

Even with a limited number of PIs to process, this is rather complicated as it requires that at least one person has a thorough understanding of what the PI description means. To make the processing of PIs more efficient, the MOPS project provided a Shipping KPI Expert to attend all meetings. Such experts are few and not readily available to all organisations interested in implementing the Shipping KPI Standard. In MOPS, the expert was provided by MARINTEK to the participants as part of the project. The Shipping KPI Expert had detailed knowledge about the PI descriptions, but even more importantly, had insight into the history behind the PI descriptions. The value of the latter cannot be overestimated as most people, when confronted with the PI descriptions, will have questions regarding *why* the descriptions are as they are. By answering these questions on the spot, a lot of time was saved and the participants grew more confident that the PI descriptions were based on rational arguments. In addition, the Shipping KPI Expert should report findings and comments back to the Shipping KPI Expert Group. In our case, the expert was a member of the group and comments or other feedback from the participants was therefore

directly transferred to the Shipping KPI Expert Group for further processing. This also gave the company participants a form of ownership to the standard in the sense that the participants knew that their opinion and suggestions would be part of the continuous improvement of the Shipping KPI Standard. The Shipping KPI Expert also provided support to the MOPS partners' responsible for the overall implementation.

To document the result of each meeting the initial table was extended with two columns as seen in the table below (PI Source and PI Comments):

PI Name	PI Description	PI Responsible	PI source	PI Comments
Number of absconded crew	Number of absconded crew (vessel specific) on a one year rolling time period	HR Manager	HR System.Crew.Deviations. AWOL	This PI should be reported on a one year rolling time period. This means that any AWOL taking place within the time period should be reported. An AWOL will therefore be reported four times (one for each quarter within the one year rolling time period)
Transport Work	Cargo transported X distance sailed per voyage	Superintendent	Vessel's voyage report	For each voyage the cargo transported and the distance sailed must be multiplied and registered. Each voyage calculation is then aggregated for all voyages which have taken place during the quarter

Table 2 PI mapping table - second iteration

First and foremost, the table now contains an overview of where the required information is found for each PI. In addition the final column contains any comments which came up during the processing. The latter column is highly important for the next phase where the organisations need to come up with a way of retrieving the required information and reporting the PI Value.

Note that the PI sources in the example vary from a specific cell in a table in an existing information system to a printed report (voyage report). Other sources may also be relevant such as external reports, specific persons in accounting, etc. One should always strive towards identifying electronic sources as this gives greater flexibility in the next phase where the organisations need to come up with a method for retrieving the required information and reporting the PI Value.

Worst case scenario is where no sources are found for a specific PI. Existing reporting requirements for ship management are already overwhelming, especially on Masters, and all possible actions should be taken to avoid increasing the burden. Most MOPS partners did indeed lack sources for some of the PIs. A decision was made to leave these PIs be and concentrate on the PIs where sources did exist. A back-log of PIs was then created for processing at a later stage. In cases where the same PIs lacked sources at more than one of the MOPS partners, this was fed back to the Shipping KPI Expert Group to check for trends regarding the feasibility of reporting these PIs. Of course, missing PI Values means that some KPI Values cannot be calculated. Thus, one

must weigh the disadvantage of missing KPI Values up against the resources needed to create a source for the PIs in question.

After all meetings had been conducted, the end result was documented in the table shown above. This was then used as input for the final stage in the implementation process: How to retrieve and report PI Values to the Shipping KPI System, in this report referred to as Technical Implementation.

2.4 Technical implementation

The PIs are now well understood and the sources of the required information are identified. The next step is to make sure that the retrieval and reporting of the PI Values is as effective and efficient as possible. Simply put, the less time and resources spent on retrieving and reporting PI Values, the more time and resources are available for assessing the results and use the assessment for improvement.

The figure below illustrates different levels of maturity related to Shipping KPI Reporting and organisations can use the illustration to assess which level of maturity they are currently on and which level of maturity should be the goal.

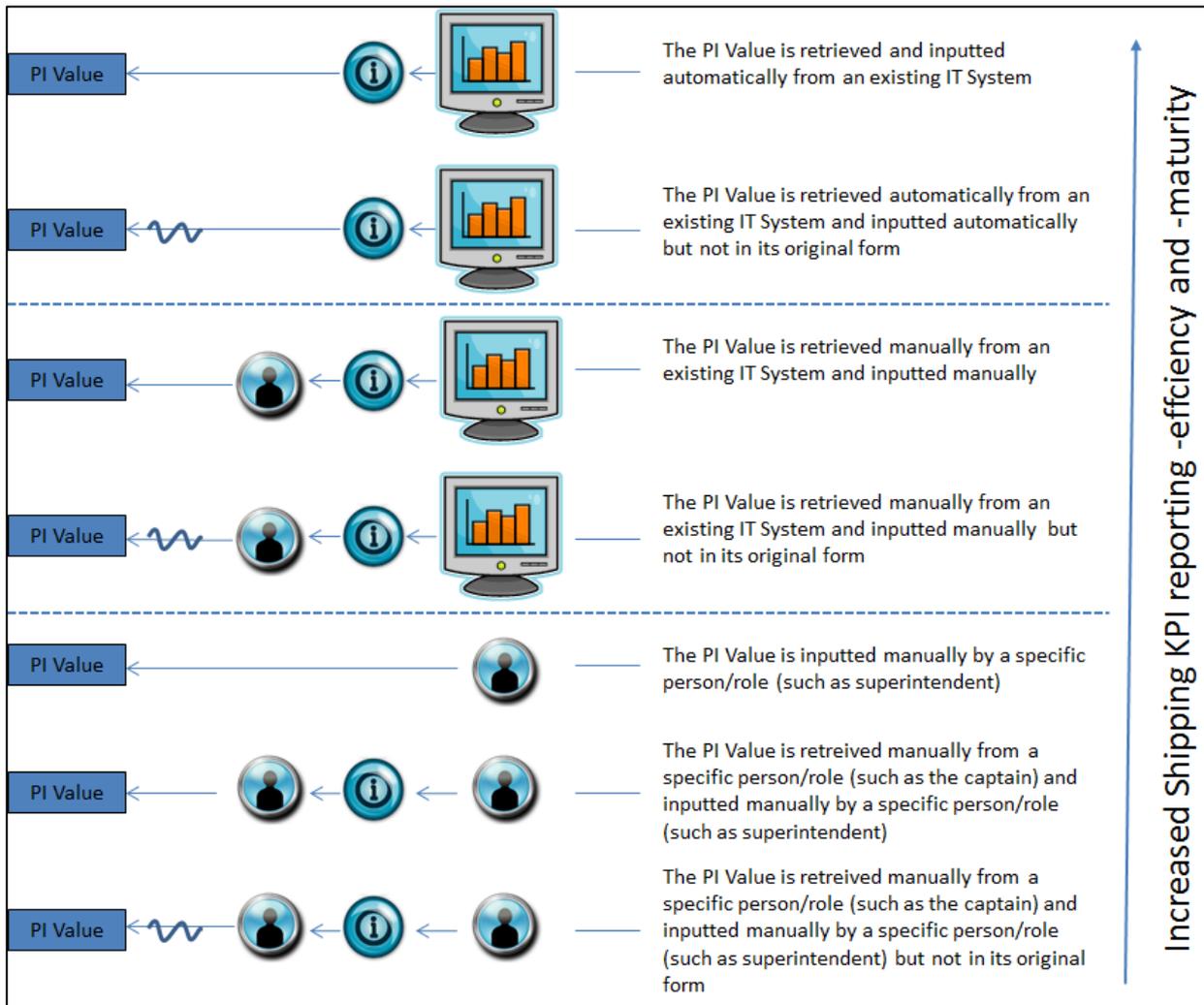


Figure 1 Shipping KPI Reporting Regime - Levels of Maturity

As seen from Figure 1 one should strive towards automatic retrieval and reporting of PI Values. This means that IT (either internal IT department or 3rd party IT provider) should be involved in this phase. It could also be useful to do a re-run of PIs where no electronic source has been identified. It may very well be that persons with more extensive knowledge of the information systems are able to find the required information. For the same reason, also PIs where no source was found initially should be given a second processing with IT personnel.

2.4.1 Two alternative structures for retrieving and reporting PI Values

The MOPS partners came up with two alternative structures for retrieving and reporting PI Values. These are both visualised and scrutinised below:

Alternative 1: Retrieve – Consolidate - Report

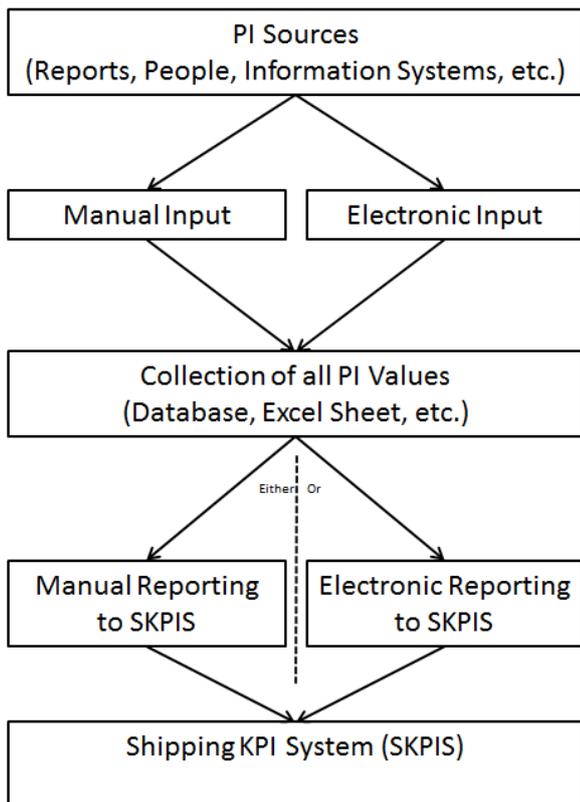


Figure 2 Retrieval and reporting PI Values - Alternative 1

This alternative entails a structure where all PI Values are first retrieved and stored locally (in a database, excel sheet or similar) before being reported to the Shipping KPI System either electronically or manually. PI Values are inputted either manually or electronically in the local storage.

The advantages of such a structure is that the organisation can do a combination of electronic retrieval of PI Values available from existing information systems and manual retrieval of PI Values which are not available from existing information systems (or in cases where an electronic retrieval is considered too high cost to develop in the initial stages of the implementation process). The structure is therefore suitable for an incremental implementation of increasingly automatic retrieval of PI Values.

This structure also enables the option of either developing electronic reporting from the locally stored PI Values to the Shipping KPI System (through the web API or through a Comma Separated Value file – CSV) or manually reporting the PI Values to the Shipping KPI System (through the web interface). In addition this alternative enables validation⁴ of the PI Values before they are reported to the Shipping KPI System.

Alternative 2: Retrieve – Report

⁴ As the Shipping KPI System itself offers validation of PI Values on basis of predefined ranges of acceptable values the internal validation should be of a more qualitative nature.

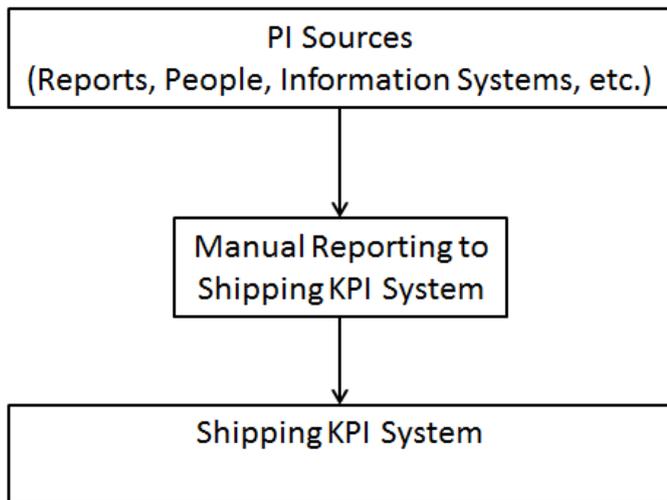


Figure 3 Retrieval and reporting PI Values - Alternative 2

This alternative is a pure manual process where PI Values are retrieved from the defined sources and reported manually to the Shipping KPI System through the web interface. All MOPS partners started reporting PI Values manually to get things up and running and to get a look and feel of the the Shipping KPI System software. For ship managers with a limited fleet there is nothing wrong with sticking to manual retrieval and reporting of PI Values. The threshold for the number of vessels before a more automated solution should be developed, depends on a number of factors (e.g. to what extent the reporting process is streamlined) and further research is needed before more general guidance can be provided.

2.4.2 Conditions for successful technical implementation

During the technical implementation two generic conditions became evident.

Cooperation with IT providers

All MOPS partners recognised the need for close cooperation with their IT providers to be able to retrieve PI Values from their information systems. In ship management a number of commercial information systems are in use (for HR, for maintenance, etc.) and a lot of the information needed for the PI Values can be found in these systems. The ship managers all had a very good overview of where information would be found in their information systems, but few had the competence required to actually create a solution for electronic retrieval of the information. At the moment few of the commercial information systems offers 'Shipping KPI compatibility'⁵ and the MOPS partners therefore relied on their IT providers to develop the solutions from scratch. As the MOPS partners in some cases use the same commercial information systems, an initiative of collaboration was launched to share costs of creating the requirement specifications and developing the required software solutions. This collaboration was seen as very helpful. In addition to the monetary savings the availability of a forum to share and discuss ideas was an added value.

⁵ More and more IT providers are looking into integration of the Shipping KPI Standard in their commercial solutions. This means that the technical implementation of the Shipping KPI Reporting Regime is likely to become much less costly and time consuming in the future. IT providers will also be more willing to share risk with their clients to develop 'Shipping KPI compatibility' as the number of users of the Shipping KPI Standard reaches critical mass.

Cost Benefit Assessment of manual vs. electronic retrieval of PI Values

In a perfect world with unlimited access to money and resources it is clear that a fully automated retrieval of PI Values should be pursued. This utopia was rather quickly dismissed by the MOPS partners and they came up with the idea of a cost benefit assessment formula. The formula compares the costs of developing an electronic solution to the savings of not having to do manual retrieval of a PI Value. Below we scrutinise the cost benefit assessment formula by looking at the two parameters.

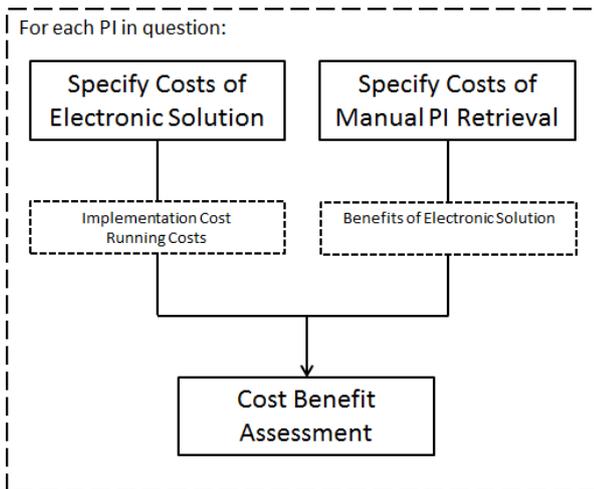


Figure 4 Cost Benefit Assessment for electronic vs. manual retrieval of PI Values

Defining the Costs

The costs of developing an electronic solution for retrieving a given PI Value depends on at least the following three issues (list not exhaustive):

- Is the required information available in any existing information system?
 - If not, the first thing necessary is to create a solution where the required information is integrated in the information system
- Does the required information require complicated processing before the PI Value is found/calculated/aggregated?
 - In some cases the PI Value needed is exactly the same as the information element found in the information system, in other cases, however, this is not so and a solution to 'convert' the information into a PI Value is needed
- Are existing commercial software solutions available off the shelf or do I need to develop it from scratch?

Defining the Benefit

The benefit from an electronic solution is found by looking at the resources needed for a manual solution. The benefit is therefore defined as avoidance of spending resources. The following issues are relevant to consider (list not exhaustive):

- How many vessels am I going to report?
 - The more vessels, the more resources needed for manual retrieval and reporting
- How much manual processing is needed to 'convert' the information into PI Values?
 - In some cases the PI Value needed is exactly the same as the information element found in the information system, in other cases, however, this is not so and a solution to 'convert' the information into a PI Value is needed
- What is the nature of the PI in question?
 - Some PIs will have very few instances, such as the PI "Fire and Explosions". Manually having to retrieve this PI is therefore not considered a heavy work load. The PI "Transport Work", on the other hand, requires that the distance sailed by a vessel (within the quarter for which you are reporting) is multiplied with the volume of goods transported. This will have to be done for each vessel for each quarter and the resources needed for a manual retrieval can be considerable

It should be noted that the cost-benefit assessment formula is only to be considered as a guidance in the decision making process.

3 Concluding Remarks

The figure below depicts the implementation process as conducted by and documented for the MOPS partners. This figure corresponds to the steps described in section 2, where each step is described in detail.

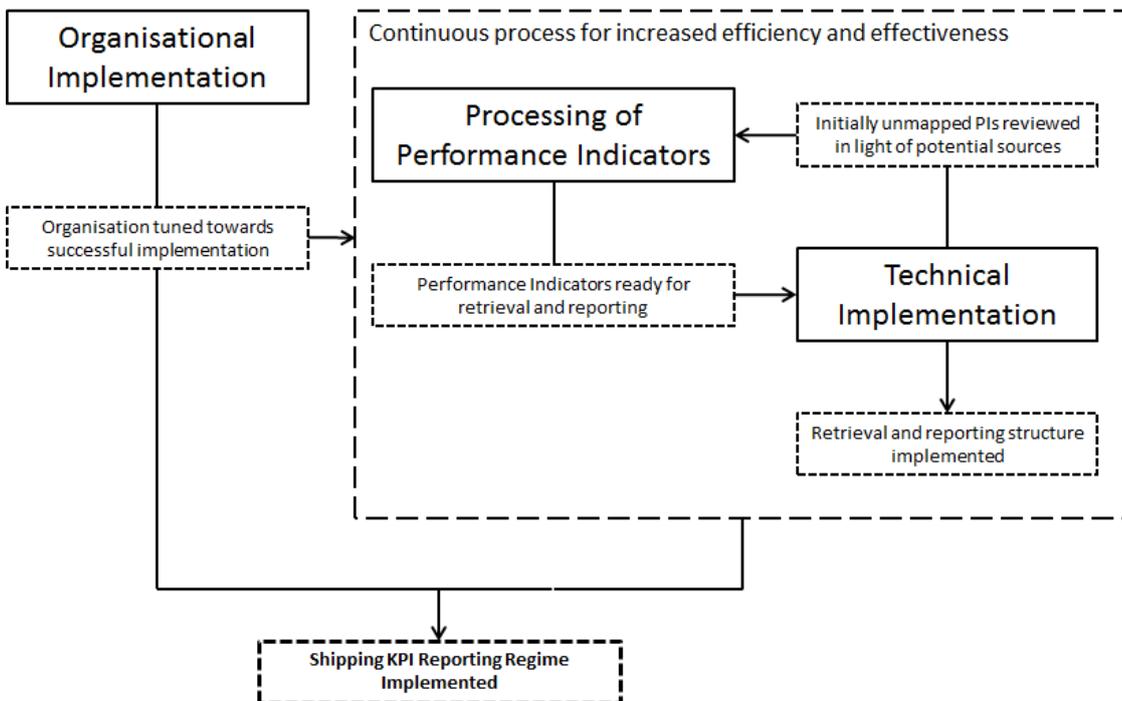


Figure 5 Implementation of the Shipping KPI Reporting Regime

The three steps are summarised as follows:

- Organisational Implementation
 - Communicate top management support
 - Focus on incentives
 - Control the fear
- Processing of Performance Indicators
 - Map PIs to responsible persons/departments
 - Make sure each PI is well understood
 - Map each PI to its source
- Technical Implementation
 - Assess the organisation's level of maturity
 - Define the desired level of maturity
 - Decide on the structure for retrieving and reporting PI Values
 - Involve IT, both internal and 3rd party providers
 - Conduct a cost benefit assessment for PIs before starting expensive IT development

During the implementation process we were able to document both best practice and lessons learned. Quite interesting is the fact that all MOPS partners reported that access to best practices and lessons learned would have been very helpful in their implementation. The value of this report is therefore obvious. It is, however, important to note that the best practices and lessons learned documented in this report are not necessarily directly transferable to all organisations interested in implementing the Shipping KPI Standard. The main reason for this reservation is the limited number of ship managers participating in the MOPS research project. In addition, these ship managers are rather homogenous in the sense that they are all part of the same local cluster and they are all more or less integrated shipping companies (not exclusively 3rd party ship managers). Finally their implementation process is not completed in the sense that they will continuously strive towards more effective and efficient solutions for reporting the PI Values. As MOPS now turns focus to an overall model for performance management in ship management, we will hopefully be able to capture any best practice and lessons learned throughout the research project and document these in the reports to come.