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1. Summary

Taking into account the historic work practices in port and shipping operations, the study examines the need for determining the training requirements of port and terminal personnel, with a special emphasis on Dublin Port, the training programmes that can meet these requirements, the means of implementing the training programmes and the benefits to the individuals, to the port and to the industry.

The training and work practices on a large bulk terminal and alumina plant are examined and the means whereby training helps maintain the competitiveness of the organisation in international markets.

There is an outline of professional training for managers in port communities and the study concludes with a brief overview of the composition of a Knowledge Centre that would be appropriate for a medium-to-large port.

Target Stakeholders

- Port and terminal management and stevedoring companies;
- Customers of port services, e.g. ship operators, haulage operators, forwarders and shipping agencies;
- Port-related companies operating in the port environs;
- Training & educational colleges, institutes and companies;
- European, state and international training authorities and agencies.

Approach

A case-based approach was used in carrying out the study, with Dublin Port Company being the primary focus. It has the following general structure:

- a. Backdrop to port and shipping operations; changes that have occurred in the past 40 years, reduced labour requirements, increased throughput volumes and values, specialised skills requirements, burgeoning need for specialised training and career flexibility.
- b. Carrying out a training needs analysis; achieving buy-in for participants in carrying out the analysis; interpretation of results; designing training programmes to meet the needs of personnel; organisation and resources required for implementing training programmes; training as a practical manifestation of corporate responsibility; state aids for training of ports' personnel.
- c. Modifying and extending career opportunities of personnel; benefits of training programmes to a port; widening of scope to training to training overseas supervisory and managerial personnel.
- d. Training of personnel at a large bulk terminal and plant; deployment and training of self-sufficient work teams that have the skills and flexibility of working on the terminal and in the plant.
- e. Professional training and education for managers in port communities.
- f. Composition of a Port Knowledge Centre.

- g. Conclusions.
- h. Recommendations.

References

Key projects

'Effective Operations in Ports (EFFORTS)'

'Tools and Routines to Assist Ports & Improve Shipping (TRAPIST)'

'Sustainable Knowledge Platform for the European Maritime and Logistics Industry (SKEMA)'

'Promotional Platform for Short Sea Shipping & Intermodality (PROPS)'

Key web sites

www.efforts-project.org

<http://www.necl.ie/trapist/index.htm>

<http://www.skematransport.eu/>

<http://www.props-sss.eu/>

http://ec.europa.eu/transport/maritime/careers/institutions_en.htm

2. The Need for Training in Ports

In the nineteen seventies there was a sharp drop in the number of dockers required to load / discharge ships due to –

- An accelerated change from coal to oil, dispensing with the need for teams of men to discharge colliers and distribute coal to a multiplicity of destinations,
- The use of specialised dry bulk ships that could be loaded or discharged rapidly at bulk terminals with very little labour,
- The change from general cargo ships, which required gangs of men to load and discharge over long periods of time, to unitised carriers – LoLo and RoRo – that are highly mechanised and that can be turned around in port in a matter of hours.

Dockers at the time were typically unskilled casual workers who built up their own hierarchical structures, of which they were very defensive. The sharp drop in numbers required on the docks resulted in massive unrest, chronic uncertainty and frequent strikes. The outcome in many cases was disruption to trade, resulting in terminal and port closures, the opening of specialised new ports and terminals and, in the case of Britain, the selling off of many state owned ports. The missing element in ports was the complete lack of training, which prevailed until relatively recent times. In a report in the TRAPIST¹ project it was noted, following a survey of small-to-medium ports in Britain, the Netherlands, Ireland and Northern Spain –

'It is evident, especially in small ports / terminals, that there is a hands-off approach to people who are not directly employed by a port but who work on the port premises, primarily dockers. Dockers are often casual workers. Terminal managers and even stevedoring companies who are their employers, do not appear to have adequate regard for their training and, ultimately, their safety'.

In a further study² in the TRAPIST project, it was found that –

'There is a surprising and somewhat disturbing finding: accident data is generally not available. It is understandable that individual ports should be secretive about accidents to a research organisation because of outstanding injury claims that can be financially crippling. But official data is missing, even though the reporting of +3 day accidents to relevant safety agencies is mandatory. The exception to this is the United Kingdom, where the dangerous nature of dock work is recognised and excellent records are available to the interested public'.

It was found in the United Kingdom that work on terminals / docks was inherently dangerous, that reported injuries were over four times the average for all industries, twice that for construction and about the same as for mining and quarrying. In response to these findings, the British established a Safer Ports Initiative

¹ TRAPIST (Tools & Routines to Assist Ports and Improve Shipping). The study was 'Safety and Training in European Ports and Terminals' Carol Trant (APT), Benedicte Sage (NECL), Yvonne Cornelis (STC) August 2003

² 'Accidents in Ports & Terminals' Carol Trant (APT) February 2004

(SPI) in 2002 that resulted in the total number of reportable accidents in ports declining by 32% and the number of major & fatal accidents reducing by 22%. The success of SPI has resulted in the launching of a second ports' initiative, SPI 2 which concentrates on qualifications, training and guidance for dock workers.

In Ireland, training in ports was initiated by Dublin Port Company, where the task was addressed systematically, commencing with a determination of the actual training needs of the Dublin Port Community.

3. Training Needs Analysis in Dublin Port Community



Dublin Port, with Dublin City in the background

3.1 Background to the Training Needs Analysis

The impetus for establishing Dublin Port as a 'learning organisation' was provided by its Chief Executive, Enda Connellan, who declared that a principal characteristic of a learning organisation is 'when the company extends its learning culture to include customers, suppliers and other significant stakeholders – and where human resource development strategy is made central to business policy'.

In 2006 Dublin Port embarked on a training programme in partnership with FAS, the national training and employment authority, commencing with a Training Needs Analysis that included the companies that were resident in the Port estate. Thirty of the one hundred companies participated in the programme, with the thirty companies cumulatively employing over 2,000 employees. At the time, Ireland's ports handled over 90% of Ireland's freight imports and exports, with Dublin Port accounting for over 60% of the total.

Up to 60% of the costs of the training needs analysis were covered by FAS. Each company's individual training needs provided the basis for the development of a Dublin Port generic training needs summary. Subsequent training was also grant-assisted under training programmes approved by FAS.

The various businesses of the companies participating in the programme were roughly as follows:

Ref.	Nature of Business	No. of Companies
1	Freight Forwarding	6
2	Storage / Warehousing	6
3	Ship Operators	4
4	Ship Agents	3
5	Hauliers (general & specialised)	3
6	Stevedoring	3
7	Importers / Distributors	2
8	Waste Management	2
9	Dublin Port Company	1

3.2 Results of Training Needs Analysis

The analysis identified approximately 50 themes or areas where training was deemed to be desirable. The respondents were also categorised by their functions within their own organisations, as follows:

Organisational Category	No. of Participants
Senior Management	318
Administration & Sales	796
Operations	870
Total	1984

The top-ten training themes were:

Rank	Training Themes	Senior Mng	Off. Admin & Sales	Operations	Total
1	Team working & Interpersonal skills	34	106	99	239
2	Strategic Planning	53	101	79	233
3	Customer service skills & IT	19	115	56	190
4	Dublin Port Induction	31	56	71	158
5	European Computer Driving Licence	11	92	36	139
6	Health & Safety	23	41	42	106
7	Hazardous chemical & hazardous cargo handling	4	9	76	89
8	Employment & equality legislation	17	40		57
9	Supervisory management	23	24	8	55
10	Interviewing, selection, performance appraisal	12	37		49

General Findings from the Training Needs Analysis:

1. Staff in the participating companies were all under considerable time pressure, so that companies could only release 2 or 3 people at a time for training. This meant that several training programmes had to be run to accommodate the numbers in the more popular programmes; it also highlighted that a critical mass of trainees is necessary.
2. The training programmes could be divided into 'hard' training, which are mandatory training required by regulatory authorities such as health & safety at work, handling dangerous chemicals and cargoes – and 'soft' training (e.g. management & negotiating skills). Managers invariably supported 'hard' training, whereas they may have reservations about the merits of 'soft' training.
3. Participating companies expressed a desire to get involved in the design of specific programmes for their staff.
4. The preferred location of training was close to the port, to minimise travel times.
5. It was found that the port freight companies operate in a rapidly changing environment, with mergers and acquisitions quite common within the industry, upsetting the training programmes for employees.
6. Participants commented on the need for quality assurance in training, based on their various experiences with other training programmes.

7. It was suggested by some managers that training at certificate level relevant to general freight forwarding and port activity i.e. port security or freight forwarding, should be applicable to all Irish ports.

4. Implementation of Training at Dublin Port

Dublin Port had established a Training & Development Centre, fully equipped with computers and training aides and with a core training / administrative staff. This was the focus for much of the training, with external trainers providing the specialised training. In addition, some of the courses were held in cooperation with colleges in the city. The programme was deemed to be successful, albeit very ambitious. In that regard, the question that arises with training in general is what constitutes success?

4.1 Success in Training

The division of training into 'hard' training, which is mandatory and required by regulatory authorities, and discretionary 'soft' training, is helpful. Hard training requires certification as evidence of satisfactory completion of the training, while soft training is judged on results, and therein lies a problem as results can be difficult to determine, whereas the costs are immediate and can be painful.

Dr. Paul Donovan, in his presentation at a SKEMA workshop in Dublin Port³, pointed out that the traditional means of evaluating training, which is completing a questionnaire at the conclusion of the training programme, does not work because people usually enjoy training and are well disposed towards their trainer.

From discussions with managers and professional trainers, the following are suggestions for maximising the benefits of soft training:

- Trainees should be primed by their managers before the training as to the benefits that are expected from the training;
- They should be de-briefed afterwards as to the actual benefits and how these can be realised in the work environment;
- The training itself should be driven by the objectives of the organisation, department or team, rather than be task-driven.

This latter point was strikingly made by Capt. Wolf Arlt⁴ at the SKEMA workshop in Dublin Port during his stimulating presentation on training. Wolf contended that the traditional emphasis on training was on 'how to do things', whereas the more appropriate emphasis should be on 'what to achieve'. He pointed out that the ports and maritime industries have to contend with a bewildering array of conflicting and totally uncoordinated regulations, besides having to deal with operational and commercial imperatives in a highly

³ Dr. Paul Donovan, Head of Management Development at the Irish Management Institute, "Evaluation of Training – Factors that affect Transfer of Learning" at the SKEMA Workshop in Dublin Port "Knowledge, Training & Policies in the Maritime and Ports Industries" 22nd January '09

⁴ Capt. Wolf Arlt, Managing Director, HPTI Hamburg Port Training Institute GmbH.

competitive environment. This reinforces the point that training should be aimed at achieving results rather than simply doing things. This, of course, makes it much easier to assess the success or otherwise of 'soft' training; i.e. does it enable the trainees achieve specified objectives in their work?

In the case of Dublin Port, the skills training programme was deemed to be a success based on the outcomes. For example, before the training a large number of employees were deemed to be computer illiterate, whereas afterwards there was an 85% literacy level, which enabled IT-based efficiencies to be incorporated into work practices.

4.2 Training in Preparation for Career Changes at Dublin Port

At this time Dublin Port Company was changing the nature of its business from being a heterogeneous organisation carrying out a wide range of port-related services to a lean organisation focussing on its core businesses while releasing non-core activities to private industry. To this end it initiated a number of parallel measures:

- It offered its employees 18 months training in areas of their own preference and on full salary, to enable them make career changes;
- The Dublin Port Company's Training & Development Centre carried out the necessary administration and provided facilities, where required, to pave the way for the career-changing training.
- It assigned 3% of the company's payroll (~ € 300 k / year) to training on an on-going basis.

This programme was very successful to the extent that a 25% reduction in the numbers employed was achieved over a three year period without aggravation. The benefits to the trainees was in fulfilling pent up ambitions to set up their own businesses or to specialise in areas in which they had natural inclinations, though some had difficulty in breaking their institutional dependency. The Port authorities were pleased with the outcomes from their training programmes, both from the improved skills levels and raised moral of employees and achieving a restructuring of the company to a more focused and manageable organisation. They also received plaudits from external agencies, which, as a state owned company, contributed to a favourable image within the community.

4.3 Training of Trainers with UNCTAD

In 2007 UNCTAD issued a request for expressions of interest from port partners to carry out a Training-of-Trainers programme for English-speaking ports in developing countries. Dublin Port responded and agreed to participate in a pilot programme for Ghana, Tanzania, Indonesia, Malaysia, Sri Lanka and the Maldives. The Training-of-Trainers programme is demanding on the staff of Dublin Port Company. The estimated cost over a three year period is € 1 million and is being funded jointly by Irish Aid (50%) and Dublin Port (50%) under the Port's Corporate Social Responsibility programme.

There are spin-off benefits to the port that were not expected:

- It has helped get the Port into the international arena where it now moves confidently and with considerable expertise;

- It has provided the Port with high level contacts that are important to it;
- It has enabled the Port to identify commercial opportunities that eventually may be activated.
- The big advantage of the UNCTAD training for everybody engaged in the training is that its effects are sustainable in the countries for which it is assigned.

5.0 Training of Terminal Personnel at Rusal Aughinish, Limerick



Rusal Aughinish is the largest alumina refinery in Europe. At full production the terminal has a total throughput of approximately 6.5 million tonnes / year, composed of bauxite, alumina, caustic soda, acid and heavy fuel oil. It is located in the Shannon Estuary in the South West of Ireland. The plant is operated in an intensely competitive environment and its success / survival depends on meeting key objectives that are underpinned by a comprehensive training programme. The key objectives include:

- A total commitment to safe operations in the plant and on the terminal;
- Enthusiastic implementation of all requirements regarding environmental protection throughout the plant and in terminal operations;
- A high level of efficiency in plant operations; the company is a market leader in bulk loading and unloading (BLU) of ships, to the extent of being the principal author of the BLU Operator's Manual;
- Self-sufficient work teams that operate without supervision but with the support of a facilitator and that are critical to the efficiency ethos of the company;
- Adaptable work practices, enabling work teams to be deployed where they are most required;

- State certification accompanying the training and personal development programmes, empowering personnel and enabling them to change their employment if they so wish.

The operational skills that are enhanced / reinforced in the training programmes include:

- Strengthening of craft skills in relation to the work environment, such as crane operations;
- Multi-operational skills to facilitate flexibility of roles and self-sufficiency of teams;
- Effective team operations, which are the core operational units of the organisation.

The company participates in the state operated 'Excellence through People' programme, which provides a framework for an organisation to carry out training needs analysis and to plan, implement, review and record its training programme. It also provides an independent annual audit of the training.

The adherence to its key objectives, supported by a comprehensive and on-going training programme has enabled Rusal Aughinish to reduce its workforce from 850 initially to 450 currently and to operate successfully in an openly competitive international market.

6. Professional Training / Education for Managers in Port Communities

Managers of companies working in port communities are drawn from a wide range of disciplines and with quite varied backgrounds. Nevertheless, there are specialised courses and qualifications offered by a number of universities and professional organisations that are particularly relevant to managers in port communities, with the following being a brief sample:

- The Chartered Institute of Ship Brokers is an internationally recognised body representing ship brokers, ship managers and ship agents. It runs courses and professional qualifying examinations which, with relevant experience, lead to membership of the institute. The courses are popular with ships' officers, port and terminal managers and ships' agents, as well as a wide range of professional people who may wish to specialise in the maritime industry.
- The Chartered Institute of Logistics & Transport run Higher National Diploma and Degree courses for people engaged in logistics and transport. These include transport managers of importing & exporting companies, freight forwarders, warehouse and distribution managers as well as ships' officers who may wish to make the transition from maritime to logistics & transport.
- Middlesex University has a project-based Masters Degree programme for seafarers who have held a Class 1 Certificate of Competency (Master Mariner) for five years. This helps advance the careers of people who may be at sea or working ashore in ports, education or in maritime related activities.
- The EU research project EFFORTS has an ambitious programme of work relating to ports, which includes training in ports. The deliverable that will be of most interest in relation to this study will be a European Port Training Inventory Data Base, which will describe existing sources of training for port personnel.

7. Composition of a Knowledge Centre

Dublin Port Company (DPC) has pioneered the training of ports' personnel in Ireland. It made the commitment, in cooperation with the state Training Agency (FAS), to assign the time and resources to up-skilling Dublin's Port Community. It followed up with an innovative programme of career-changing training aimed at re-focussing DPC on its core businesses. This raises the question: what would be the composition and benefits of a Knowledge Centre that would be geared towards a port's requirements?

From discussions with people participating in this study, the following is a suggested composition for a Knowledge Centre that would be geared to the requirements of a port:

1. Participate in relevant training / life-long learning programmes in cooperation with other ports and training institutes & colleges.
2. Carry out focussed studies that are relevant to the commercial objectives of the port.
3. Participate in research projects, particularly European research projects, that would –
 - a. keep the port up-to-date with developments in safety, security, environmental protection, port operations and technologies;
 - b. contribute to the formation and implementation of European policies in relation to ports.
4. Contribute to the port's overseas commercial developments.
5. Support programmes that are initiated under the Corporate Social Responsibility of the port.
6. Contribute to and avail of knowledge from the SKEMA Knowledge Management Platform for Maritime Transport & Logistics.

8. Conclusions

The conclusions of the study, in the order in which the material is presented, are:

1. The lack of training, as was the situation amongst dock workers in the not-too-distant past, results in divisions arising between workers and their employers, the formation of alternative hierarchical structures amongst employees, rigid demarcation in work practices, high personnel costs and ultimately industrial strife and gross under-performance. The lack of training is also a contributing factor to high accident rates and crippling insurance claims.
2. On the positive side, training helps align the objectives of a company with the requirements of employees i.e. skills attainment, satisfaction in their work, career advancement and life-long learning. It also helps increase efficiency, competitiveness and sustainability of companies and it makes them adaptable to market changes.
3. It can be difficult to measure the success or otherwise of training. In that regard, it is helpful to divide training into 'hard' training associated with regulatory compliance, discretionary 'soft' training and training for professional attainment.

- The success of 'hard' training is in the certification of trainees to comply with the requirements of regulatory authorities.
 - The success of 'soft' training is in contributing to the company objectives for which the training is focussed.
 - The success of professional training is in the certification of the trainees and the subsequent advancement of their careers.
4. Self-sufficient work teams that operate without a supervisor but with a designated facilitator provide the foundation for efficient, flexible operations both on the terminal and in the plant in Rusal Aughinish. The model is used successfully in other plants and industries, with appropriate training of team members being the basis for its success.
5. Training needs the support of the state, of management and of learning institutions.

States support training to quite a considerable extent because it contributes to the success of the companies that avail of training programmes and it augments the life-long work ambitions of the trainees.

Training needs the support of management to specify their training requirements, to cover their share of the cost and to release people to participate in training programmes.

Training also requires the support of the training institutes and universities. The Institute of Chartered Shipbrokers and the Chartered Institute of Logistics and Transport are two institutes that provide professional training that is relevant to managers working in port companies.

Universities that have an association with large hub ports provide a range of training programmes that are relevant to ports' personnel.

Otherwise, with small-to-medium ports, it can be difficult to obtain viable numbers of people. Cooperative training between two or more colleges and in the spirit of the Bologna Accord could be organised to provide specialised modules using the strengths of the different colleges and potential clients in a number of regions, as is suggested in the EFFORTS project.

7. A Knowledge Centre for a port is not a clearly defined entity; rather, its attributes can be selectively chosen from a list that includes:
- Organisation and management of relevant training / life-long programmes,
 - Managing studies that support the commercial objectives of the port,
 - Participating in research projects, particularly in relation to EU policy formation & implementation, as well helping keep the port abreast of developments in its field,
 - Investigating the potential of strategic opportunities for the port and contributing to forward planning,
 - Supporting programmes under Corporate Social Responsibility of the port,
 - Contributing to and availing of knowledge from the SKEMA Knowledge Management Platform for Maritime Transport & Logistics.

9. Recommendations

1. In view of the many positive features of suitable ports training and the severe damaging consequences of inadequate or lack of training in ports, it is recommended that cooperative training programmes be prepared that will provide –
 - a. Minimum standards and certification in basic training for ports and terminals in safe work practices, security, environmental protection and protocols that are common to all cargo types;
 - b. Minimum standards and certification in efficient and safe work practices in relation to different cargo types, such as LoLo, RoRo, general cargo and oil terminals, with codes of practice similar to those used in bulk terminals;
 - c. Skills training in modular formats that facilitate transferability with related industries, such as construction, and that provide port / terminal workers with greater options for advancing their careers;
 - d. Objective-orientated team training that will improve efficiency, adaptability and responsibility of work teams in ports and terminals;
 - e. Management training covering all aspects of port & terminal management for different cargo types and terminals, prepared and presented in modular formats, enabling different modules to be presented by training centres / colleges that specialise in different aspects of an overall Port Management Programme.
2. It is recommended that a roadmap be prepared for designing and implementing a Knowledge Centre within a port, facilitating a port to select the combination of features that are most suited to its circumstances. The roadmap should also facilitate the preparation of a business case for a Port Knowledge Centre, detailing costs and benefits.