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Jobs and Competency Requirements in Supply Chains

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Abstract

Activities in supply chains are becoming to be more complex, diversified. It results in managers' and operatives' work requiring more competencies than before. This paper focuses two issues in supply chains: (1) Redefinition of jobs in supply chains; and (2) competency requirements and training need analysis. There is a European project called CENTRAL, which deals with job classification and creating a common European training framework for selected jobs. They found that there are many differences in the existing qualification and exam requirements in European countries. Authors present the result of the international research consortium: titles and short definitions of jobs, competence requirement, framework of training modules. The framework is compatible with European Credit system for Vocational Education and Training system (ECVET).

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1. Introduction

According to Martin Christopher: “supply chains compete, not companies”. This competition has created a demanding work environment for managers and operatives. The main characteristics of development are:

- Enforcement of an integrative, supply chain approach. This means that participants need to have more holistic view to focus on the whole process than they did in the past. In this context the objective is not only to successfully move, store of goods and to supply the receiver but to facilitate the business success of the whole system. There are sensitive task, activity, cost and risk sharing among organizations and individuals along the chain (Kovács, Pató & Elbert, 2011).
- Restructuring of jobs. As a consequence of the above-mentioned trend, the content of jobs is changing. New jobs have been created and the content of traditional jobs have been changed.
- International operation. Local and international standards have to be followed at the same time.

The changes occurring in the logistics and transport sector give rise to increased demand for new skills. The existing certifications and training programs do not always provide a satisfactory response to the needs of employers and training unites. Due to these and other trends, jobs and their competency requirements must be redefined. There are many publications of competency need analysis, many of them on supply chain management (SCM) (Veres,

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Locklear & Sims 1990; Heran-Le Roy, Niedhammer - Sandret & Leclerc, 1999); Sandberg, 2000; Sanghi, 2004, Pató, Kovács, & Pató G, 2006). Silva (2012) gives a local analysis of social issues of vocational training.

2. Job classification and definition

Statistical systems like NACE, SOC, ISCO are not enough fast to follow the changes in real world. Researchers have to build up their own categories. Rosetti & Dooley (2010) used cluster analyses to create categories, based on similarity of job descriptions, which indicate eight different types of SCM jobs, differentiated by associated tasks as well as industry characteristics. Their second analysis shows that supply chain management is most closely aligned with sourcing and operations management. The CENTRAL nomenclature can be seen in Table 1. (<http://www.logisticsqualifications.eu/>)

Table 1. CENTRAL nomenclature.

Group 1: Formulating & implementing supply and waste chains strategy
Supply Chain Manager, Logistics Manager, Logistics Analyst, Logistics Engineer, Logistics Controller, Logistics IT-Specialist, Logistics Supervisor.
Group 2: Resource Management
Materials Manager, Packaging Manager, Purchasing/ Procurement Manager, Purchasing Officer, Purchasing Clerk, Stock/ Inventory Controller.
Group 3: Production Planning and Control
Operations Manager, Production Planner and Controller
Group 4: Warehousing
Warehouse Management: Warehouse Manager, Warehouse Supervisor
Warehouse Operations: Warehouse Operator, Forklift Driver, Order Picker
Administrative Operations: Order Processing Clerk
Warehouse Supporting Activity (examples): Maintenance Supervisor, Maintenance Operator
Group 5: Conceiving transport solutions
Transport manager/supervisor, Transport analyst, Transport IT specialist
Group 6: Managing and monitoring transport solutions
These activities are covered by a wide variety of jobs including: Transport agency manager, Operations manager/supervisor, Traffic planner, Fleet manager, Consignment manager, Dispatcher, Transit officer.
Group 7: Haulage
Driver with different specialization.
Group 8: Vehicle maintenance
Maintenance planner, Maintenance manager, Workshop supervisor/ foreman.
Group 9: Compliance functions: regulations, standards and contracts
Quality manager /advisor, Security advisor, Custom agent / broker, Contract officer/contract and procurement agent
Group 10: Other administrative functions
Transport administrator, Clerks for administrative management of transport/logistics.
Group 11: Freight forwarding
Freight consolidator, Charterer, Cargo agent, Forwarding agent/Multimodal transport organisator.

This classification shows recent development in supply chains. Consortium partners (re)defined the jobs belonging to these categories.

3. ECVET compatible qualification framework

ECVET is a European credit system for vocational training. It supports the mobility during training and employment and makes qualifications comparable. In order to work out the qualification framework competence analyses were made.

Competency analysis and profiles have a rich literature. (Bergenhengouwen, Horn & Mooijman, 1997; Meiner, 2001, Sandbeg, 2000, Sanghi, 2004, Halasz, de Mola & Carterd, 1993).

There are different models for competency analysis. One of the most commonly used grouping is into skills, abilities (KSAs) (Veres, Locklear & Sims, 1990). An example for general competences required in supply chains can be seen in Table 2. (Kovács, Pató, & Szabó, 2012a, 2012b):

Table 2. General competencies of freight forwarder by CENTRAL project.

Knowledge	Skills	Competence
He / she knows:	He / she is able to:	He / she is competent to:
<u>Unit 0 – General knowledge and skills, personal and social competencies, attitudes and attributes</u>		
<ul style="list-style-type: none"> • Cost-calculation • The logistics market: transport modes, services and actors • Contracts and main aspects of related regulation • INCOTERMS • Quality assurance • Goods, packaging, warehousing technology, logistics controlling • English language • Relevant documentation • The range of services offered by their company and its structure and business 	<ul style="list-style-type: none"> • Use the company's ICT systems, standard software and workplace-specific software • Assist in implementation of QA methods • Correspond and communicate with business partners in English, process English language documents • Consider cost- and time-effectiveness when planning and organizing his/her work • Apply research methods 	<ul style="list-style-type: none"> • Make well-informed decisions swiftly • Organize his / her work and the work of others in an efficient and effective way • Communicate effectively with customers and other departments • Coordinate work with the rest of the team and other departments • Act as an “entrepreneur” when conceiving new business plans and networking outside the company
Specific areas of		
<ul style="list-style-type: none"> • Traffic geography • Supply-chain management and logistics • International trade • Legal aspects of business transactions • Finance (bank-related operations) 		

Qualification frameworks were worked out for two selected jobs: warehouse operator and freight forwarder. These are presented below with corresponding competencies.

3.1. Warehouse operator

Short CENTRAL definition of warehouse operator is:

“The warehouse operators may work in a particular area or may be classed as multifunctional. They normally receive deliveries of goods and check them against the relevant documentation, which may include scanning incoming goods. They may use a forklift truck to load, unload and move goods and have responsibility for replenishing stock. The work may also include order picking, inspection, weighing and packing ordered goods.” (<http://www.logisticsqualifications.eu>) Groups of required activities can be seen in Figure 1.

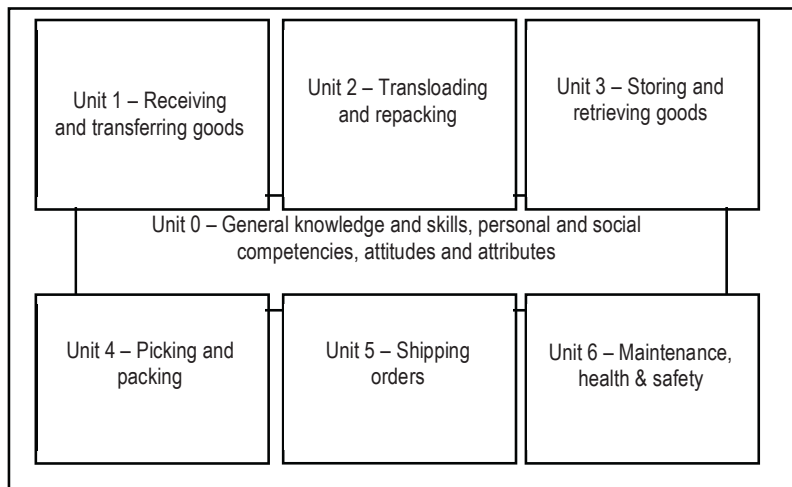


Figure 1. Required competences of warehouse operator.

Different training modules serve to acquire these competences. Table 3 contains the structure of a possible training program.

Table 3. Qualification framework for warehouse operator.

EP	LO	N° TU	Training unit (TU) Title	Duration	classroom	Work based activities*
4	0	TU 1	General concepts of logistics and health and safety	108 h	84 h	24 h
	6					
5	1	TU 2	Material handling	124 h	68 h	56 h
	2					
	5					
3	3	TU 3	Warehousing and storage facilities	76 h	44 h	32 h
3	4	TU 4	The composition of orders	72 h	40 h	32 h
			Sub TOTAL	380 h	236 h	144 h
			Final evaluation	20 h	8	12
			TOTAL training	400 h		
LEGEND: EP: ECVET points LO : Learning Outcomes TU : Training Unit						

This framework is the suggested European standard. Each training unit consists of training modules. An example for training module can be seen in Table 4.

Table 4. Example for training module.

ID	MODULE TITLE	CLASSROOM
TU2 M1	The flow of goods	8 h
TU2 M2	Communication	32 h
TU2 M3	Handling goods and materials	20 h
TU2 M4	Manual handling and the use of equipment to handle goods	4 h
TU2 M5	Handling goods and materials using a forklift truck	60 h
TU2 M6	Fixed systems for handing goods and materials	4 h
TU2 M7	Flexible systems for handling goods and materials	4 h

The content of each training modules is also worked out. An example for training module “The flow of goods” can be seen in Table 5.

Table 5. The content of “The flow of goods” module.

TU2 M1	The flow of goods
DURATION	8 HOURS
OUTLINE	This section introduces the main concepts related to the flow of goods. The characteristics of both incoming and outgoing goods. It also introduces replenishment and stock control, picking areas and the function of different storage facilities and how ICT is used in different organizations.
TOPIC AREAS	Goods in and goods out The transportation of goods The storage of goods Stock control Replenishing goods to other parts of the organization

3.2. Freight forwarder

Freight forwarder is one of the most complex jobs in supply chain. They arrange transport, storage and custom process of cargo on behalf of shippers. They provide a full range of services including: tracking inland transportation, preparation of shipping and export documents, warehousing, booking cargo space, negotiating freight charges, freight consolidation, cargo insurance, and filing of insurance claims. Freight forwarders usually ship under their own bills.

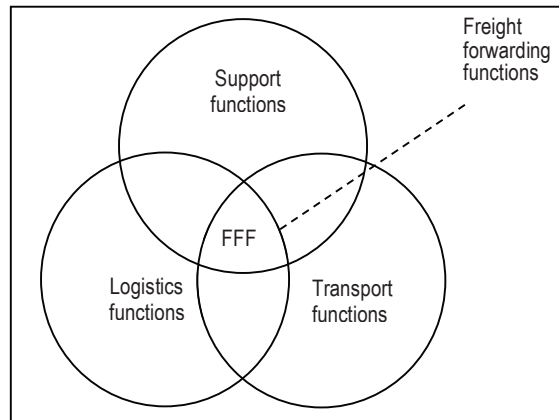


Figure 2. Freight forwarder as the combination of functions.

Virtually freight forwarder is a multifunctional job. Its CENTRAL definition is:

“The forwarding agent plans, organizes, controls, monitors and administers the load and shipment by choosing the best solution in term of cost, time and safety, on his own name or on behalf a company. They may also collaborate with transport companies and organize the consolidation, storage, handling, packing or distribution of the goods as well as ancillary and advisory services.” (<http://www.logisticsqualifications.eu>) Main groups of activities requirements are in Figure 3.

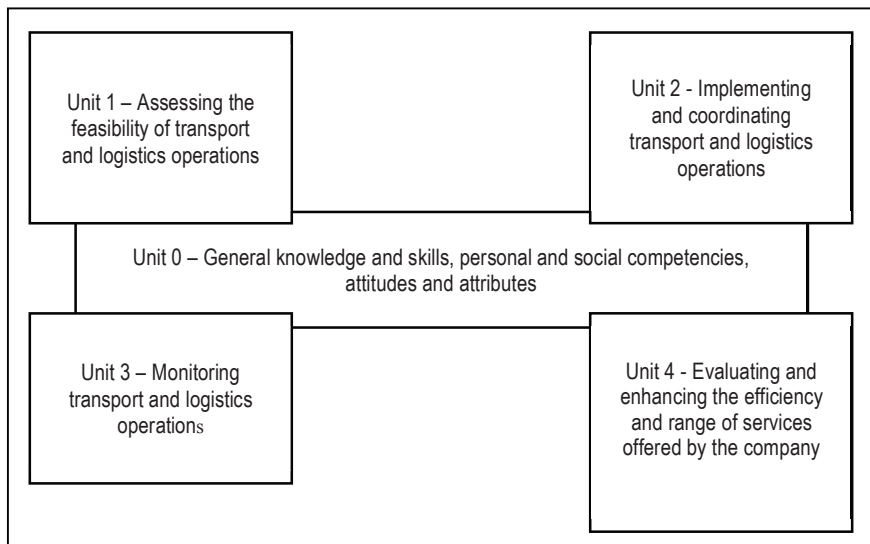


Figure 3. Competence groups of freight forwarder (CENTRAL)

Due to the complex job the qualification framework is longer than is in the case of warehouse operator. (Table 6.)

Table 6. Training units for freight forwarder training.

EP	LO	N° TU	Training unit (TU) Title	Duration	classroom	Work based activities*
12	0	TU 1	General concepts of business management and logistics, basic ICT and English	220 h	160 h	60 h
		TU 1a	Main concepts of business sectors and the economy	40 h	40 h	
		TU 1b	Introduction to legislation and regulation	8 h	8 h	
		TU 1c	English language	50 h	50 h	
		TU 1e	CT: Use of Excel and Access spreadsheets and databases	54 h	54 h	
		TU 1f	Employability skills	8 h	8 h	
15	1	TU 2	Transport legislation and regulation	130 h	90 h	40 h
		TU 3	Arrange the transportation of goods and materials	80 h	55 h	25 h
		TU 4	Costing transportation services	40 h	30 h	10 h
15	2	TU 5	Management of the supply chain	115 h	80 h	35 h
		TU 6	Transport planning	125 h	85 h	40 h
9	3	TU 7	Monitoring transportation: use of ICT	98 h	68 h	30 h
		TU 8	Health, safety, security and insurance	47 h	32 h	15 h
9	4	TU 9	Methodologies for analysing and assessing service provision	145 h	100 h	45 h
			Sub TOTAL	1000 h	700 h	300 h
			Final evaluation	80 h	50	30
			Visits	20 h		
			TOTAL training	1100 h		
LEGEND						
	EP: ECVET points	LO : Learning Outcomes	TU : Training Unit			

An example for training modules and content can be seen in Tables 7-8.

Table 7. Modules in "Arrange the transportation of goods and materials" training unit.

MODULES	MODULE TITLE	CLASSROOM
TU3 M1	The layout of warehouse and storage facilities	8 h
TU3 M2	Warehousing and storage systems	36 h
TU3 M3	Stock control	32 h

Table 8. Content of “Warehousing and storage systems” module.

TU3 M2		Warehousing and storage systems
DURATION	36 HOURS	
OUTLINE	<p>This section introduces the systems, for example, racking, cages, and defined and controlled areas for storage of goods and materials. It also covers the tools and equipment used for particular areas in the warehousing and storage facility.</p> <p>It is expected that the practical placement of goods takes place in the warehouse and storage facility, and is assessed and monitored in the workplace.</p>	
TOPIC	Different types of warehousing and storage systems	
AREAS	Automated systems Use of specific means of warehousing and storage for particular goods and materials Use of tools and equipment appropriate to different types of warehousing and storage facilities	

4. Conclusion

Qualifications in training systems are widely varied in the European Union. To establish a common qualification framework is vital for a flexible labor market. A credit system is tool which may standardize competencies across border. Results from the CENTRAL project show a possible solution for standardize two jobs: warehouse operator and freight forwarder. The qualification frameworks were tested in different European countries by students, trainers, logistics experts and social partners, the feedback was very positive.

Next steps are to make the necessary changes in national systems towards the common framework. More information can be obtained at <http://www.logisticsqualifications.eu>, or from Julie Murat (juliemurat@aft-iftim.com, phone: 0033 3 44 66 37 66).

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