

WHAT "HUMANWARE" FOR MASS CUSTOMIZATION?

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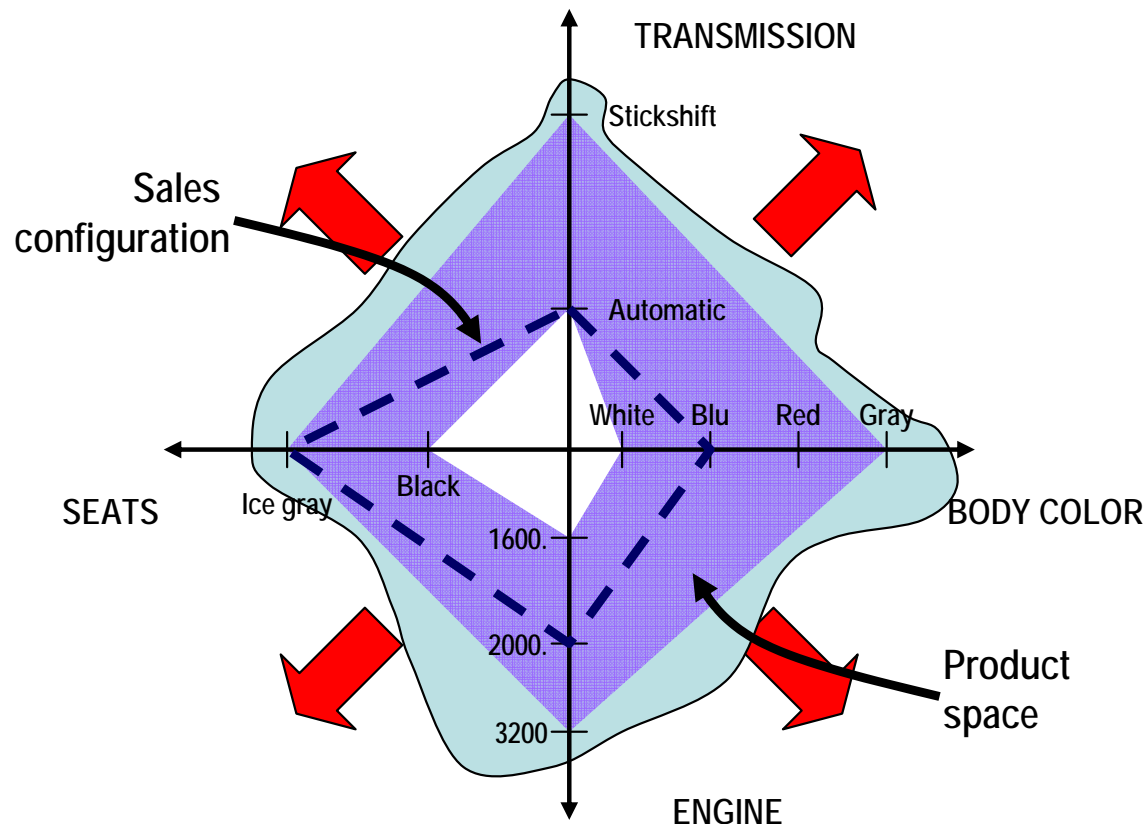
AGENDA

1. **Basic idea**: why people may support mass customization?
2. **Conceptual framework**: how individual competences lead to the company-wide mass customization capability
3. **Method**: sample, respondents, etc.
4. **Individual competences for mass customization**: Critical roles, attitudes and abilities to mass customize
5. **Conclusions and open issues**

MASS CUSTOMIZATION ... WHY PEOPLE?

The systems that allow a company to mass customize are often socio-technical systems, so we need to understand what are the specification of the system “**peopleware**”, i.e. their **individual competencies** (→ **PRODUCT SPACE EXPLOITATION**)

Product space is not a totally static concept ...

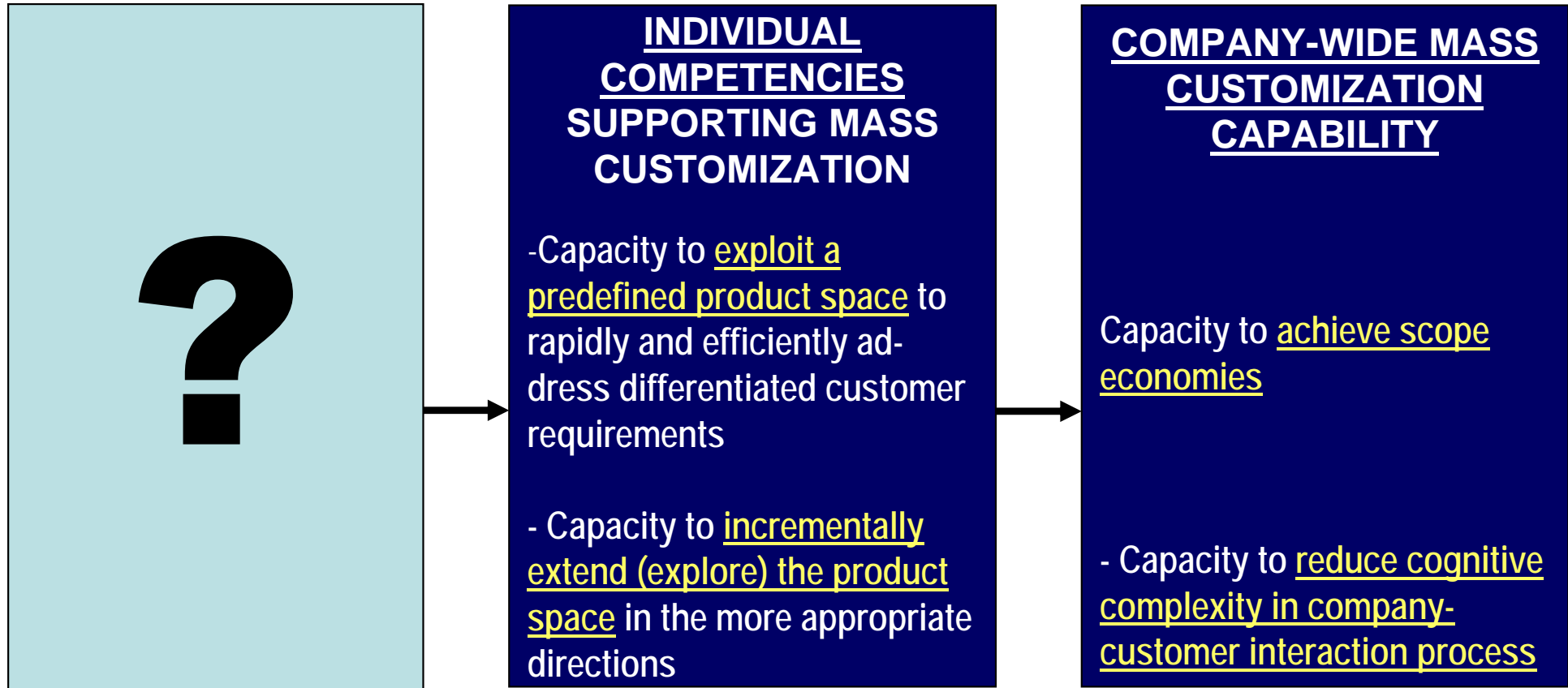


Customers ask sometimes for things that cannot be related to a product space

Tecnologies and markets relentlessly evolve... so does the product space offered by a company

There is a limit to our capacity to predict these evolution, so systems can adapt only op to a certain point... the **human factor** thus becomes even more critical (→ **PRODUCT SPACE EXPLORATION**)

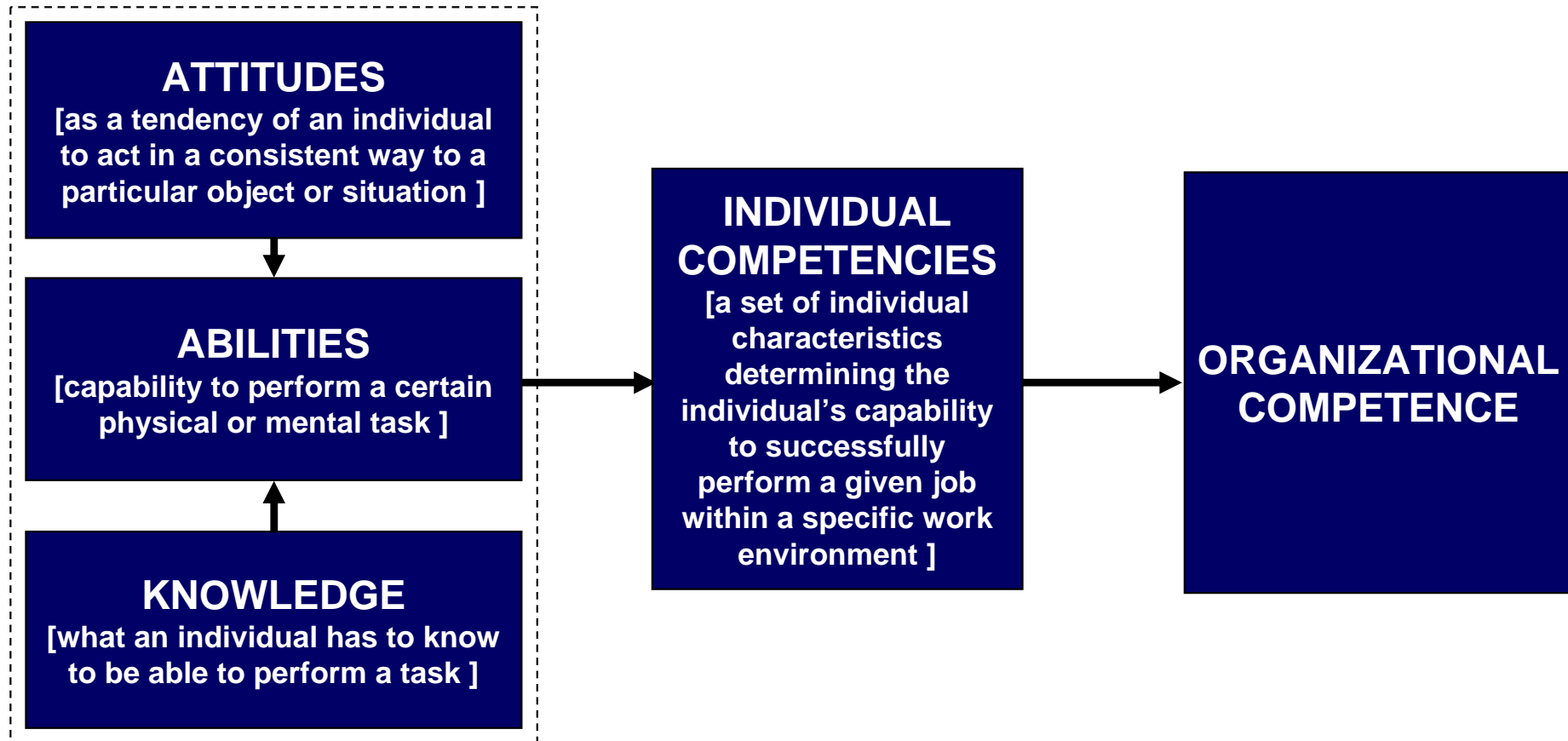
FROM INDIVIDUAL COMPETENCE TO MASS CUSTOMIZATION...



RESEARCH QUESTIONS

- ☒ What are the critical professional roles that support a company-wide mass customization capability?
- ☒ What individual competences does a company need in order to deploy a mass customization capability?
- ☒ What are implications of “managing for people” for mass customization research and practice?

RESEARCH FRAMEWORK



- ☒ Based on CEDEFOP terminology and competence framework
- ☒ Compatible with practitioner (see Spencer & Spencer, 1984) and academic literature on competencies (see Tett, 2000)

QUALITATIVE RESEARCH DESIGN

☒ Sampling criteria

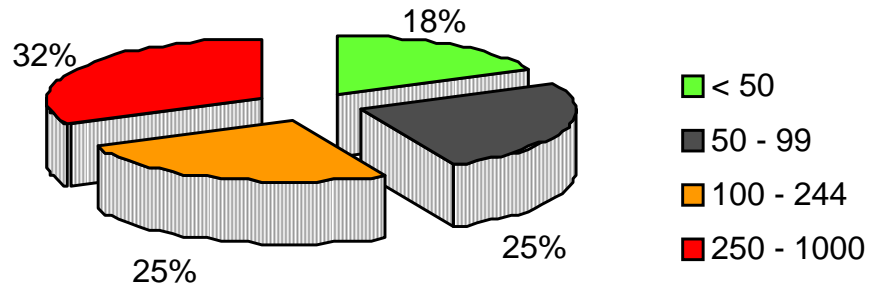
- ➔ 5 Countries
- ➔ Manufacturing companies
- ➔ Customization performed at different stages (engineering, fabrication, assembly)
- ➔ Different companies (industry, size, production volume, product value)

☒ Interview protocol

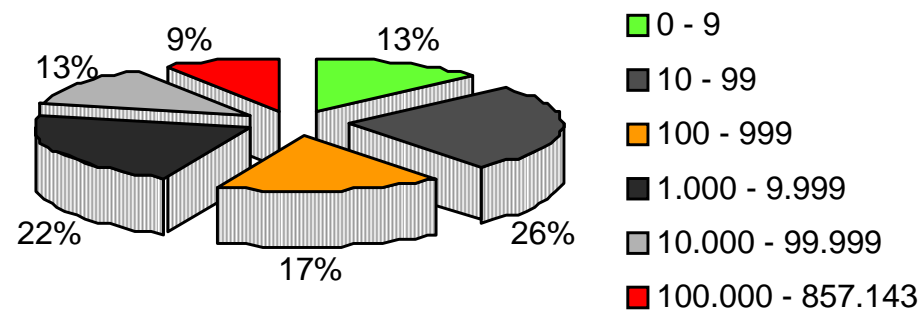
- ➔ Key questions (5), quasi-unstructured interview
- ➔ Interview process: face-to-face
- ➔ Pre-defined formats to report interview data

SAMPLE OF INTERVIEWED COMPANIES

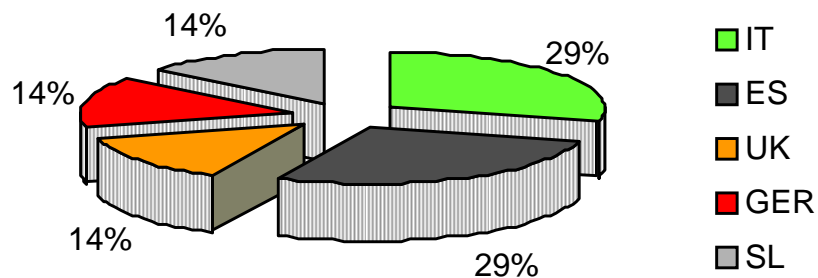
NUMBER OF EMPLOYEES



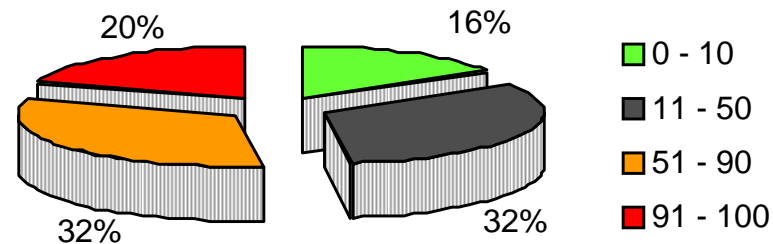
PIECES PER PERSON (ANNUAL)



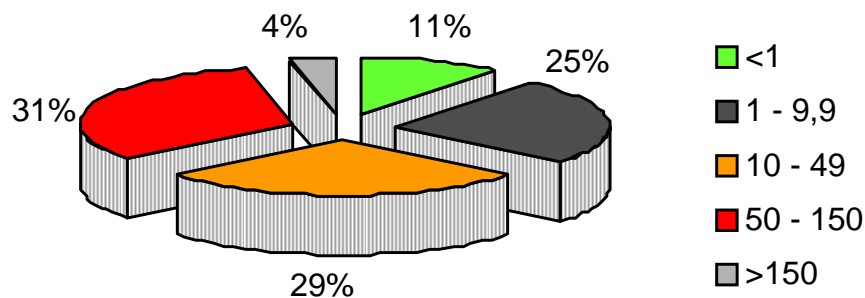
COUNTRY



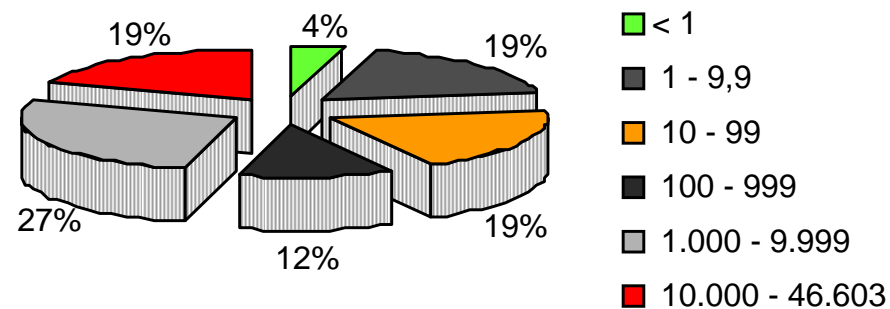
% TURNOVER FROM PERSONALIZED PRODUCTS



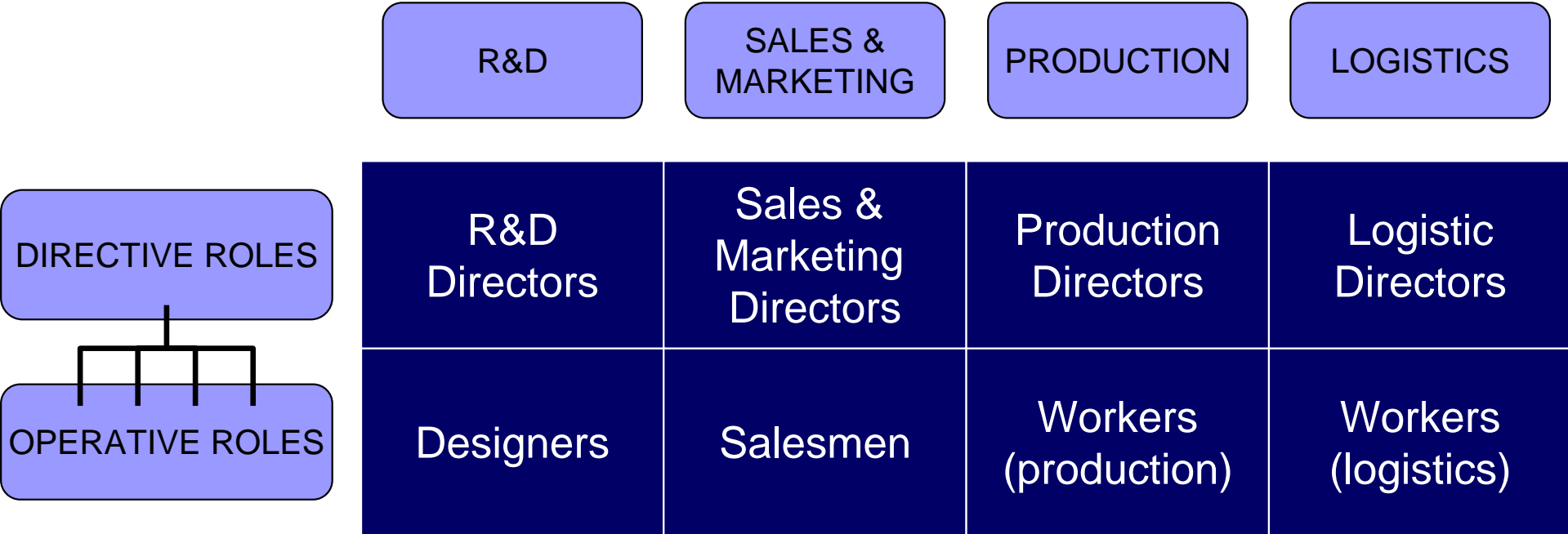
NET SALES (MILLIONS €)



EURO PER PIECE



COMPETENCIES ... OF WHOM?

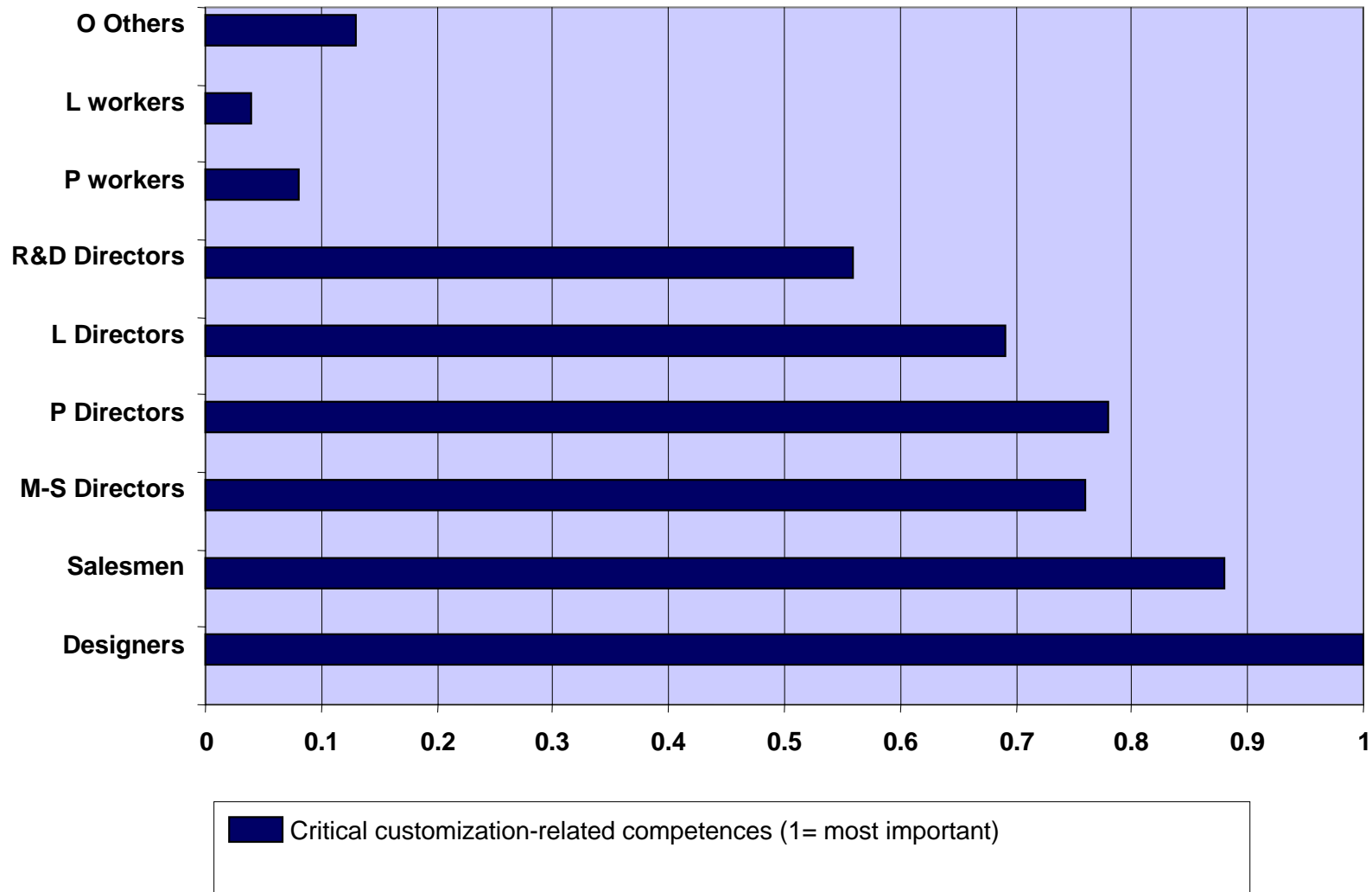


☒ Roles denominations tend to be country-specific and company specific:

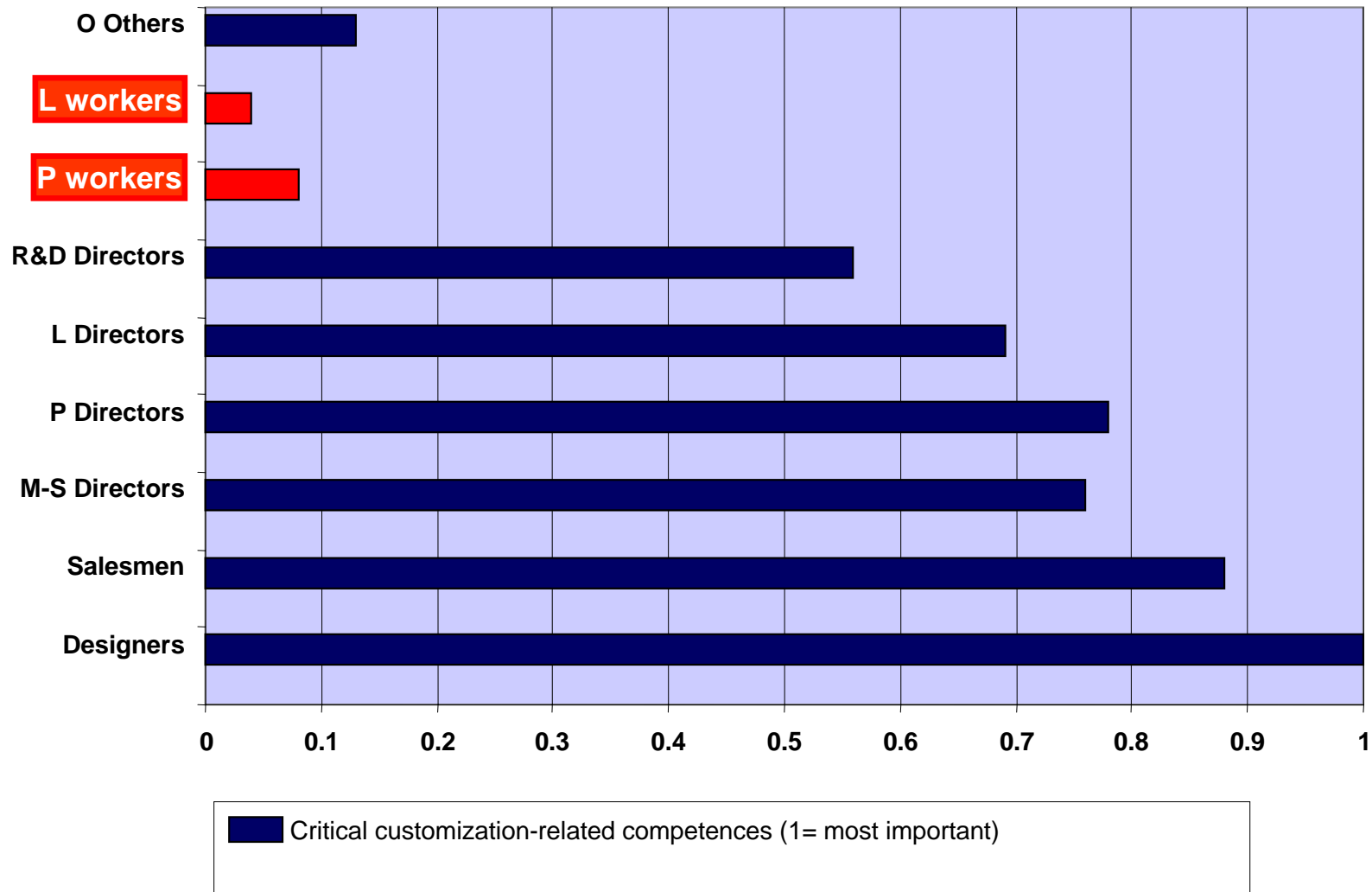
- ➔ **Sales & Marketing area:** Marketing manager, Marketing, Technical Marketing Manager, Communications Manager, Sales Mgr, Head of sales department, Sales Admin, (sales) director, Commercial manager, Salesman, Sales Representative, Sales, Commercialist, Area manager & salesman, Commercial Representative, Sales Engineer, Product area manager, Product manager, Product planner, Sales-field support engineer, Field support engineer, Assistant marketing manager, Applications engineer, Product configurator helpdesk, Production estimator, Post sales assistant, Customer services, Customer Liaison Mgr.
- ➔ **R&D area:** Head of strategic development, Head of technical office, R&D manager, Technical coordinator, Project manager, R&D project, Senior Special Project Mgr, Project manager, Project team manager, Special Project Coordinator, Special Products Design Manager, Senior product design engineer, R&D design technician, Designer team leader, Technologist, R&D technician, Special product design engineer, Special Project Engineer, Project Team Engineer, Project engineer (HQ), Process design engineer, Industrialization technician, Production designer.
- ➔ **Operations area:** Production manager, Supervisor, Supervisors, Production supervisor, Production technician, Maintenance technicians, Manufacturing Engineer, Head of tools workshop, Machine preparers, Mechanical engineer, Production planning manager, Production Planning Mgr, Head of production planning an control, Logistic manager, Logistics manager, Logistics Mgr - Logistics, Purchasing manager, Purchasing, Purchasing manager, Head buyer/technical, Distribution manager, Warehousing.

What are the **critical professional roles** that support a company-wide mass customization capability?

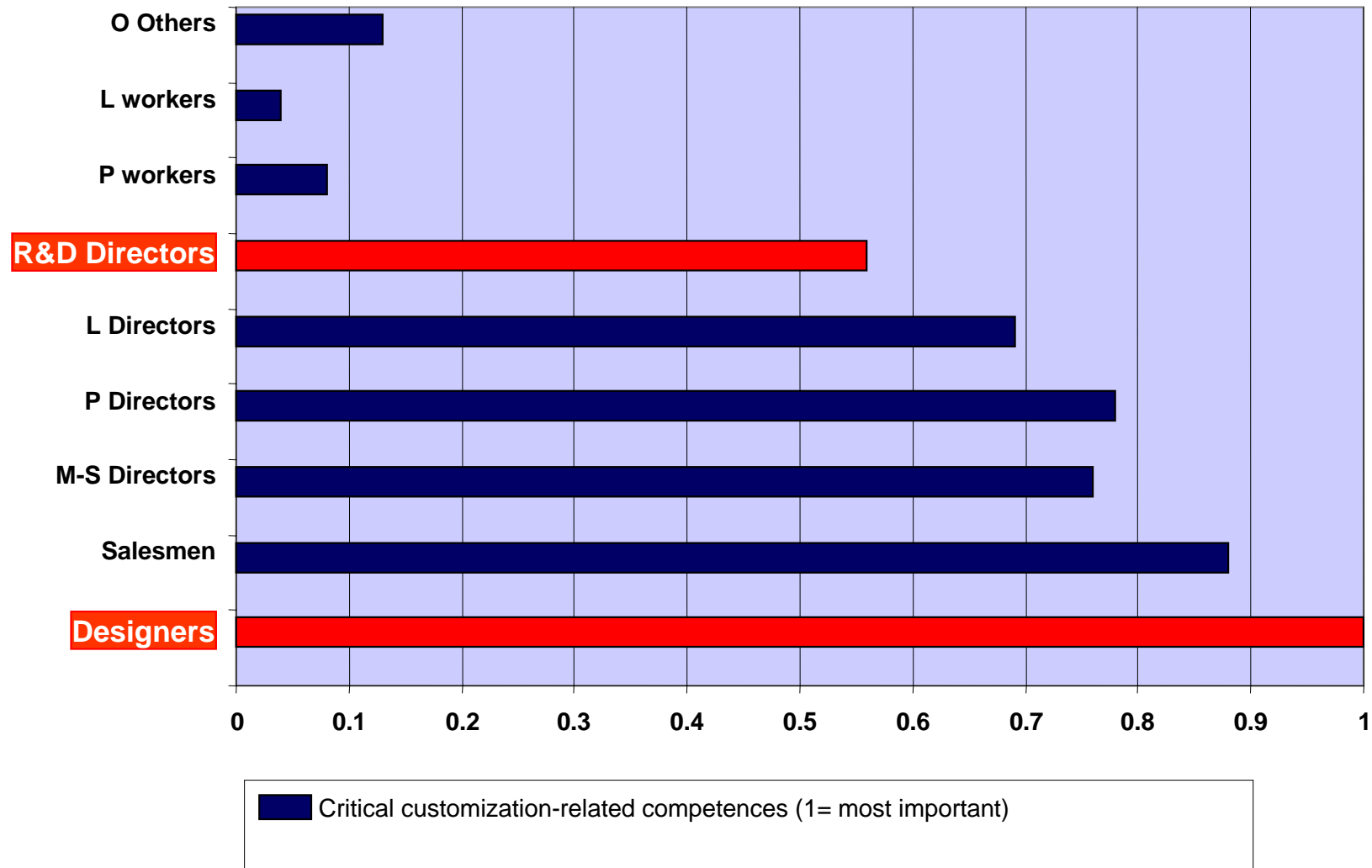
AFFECTED ROLE SETS



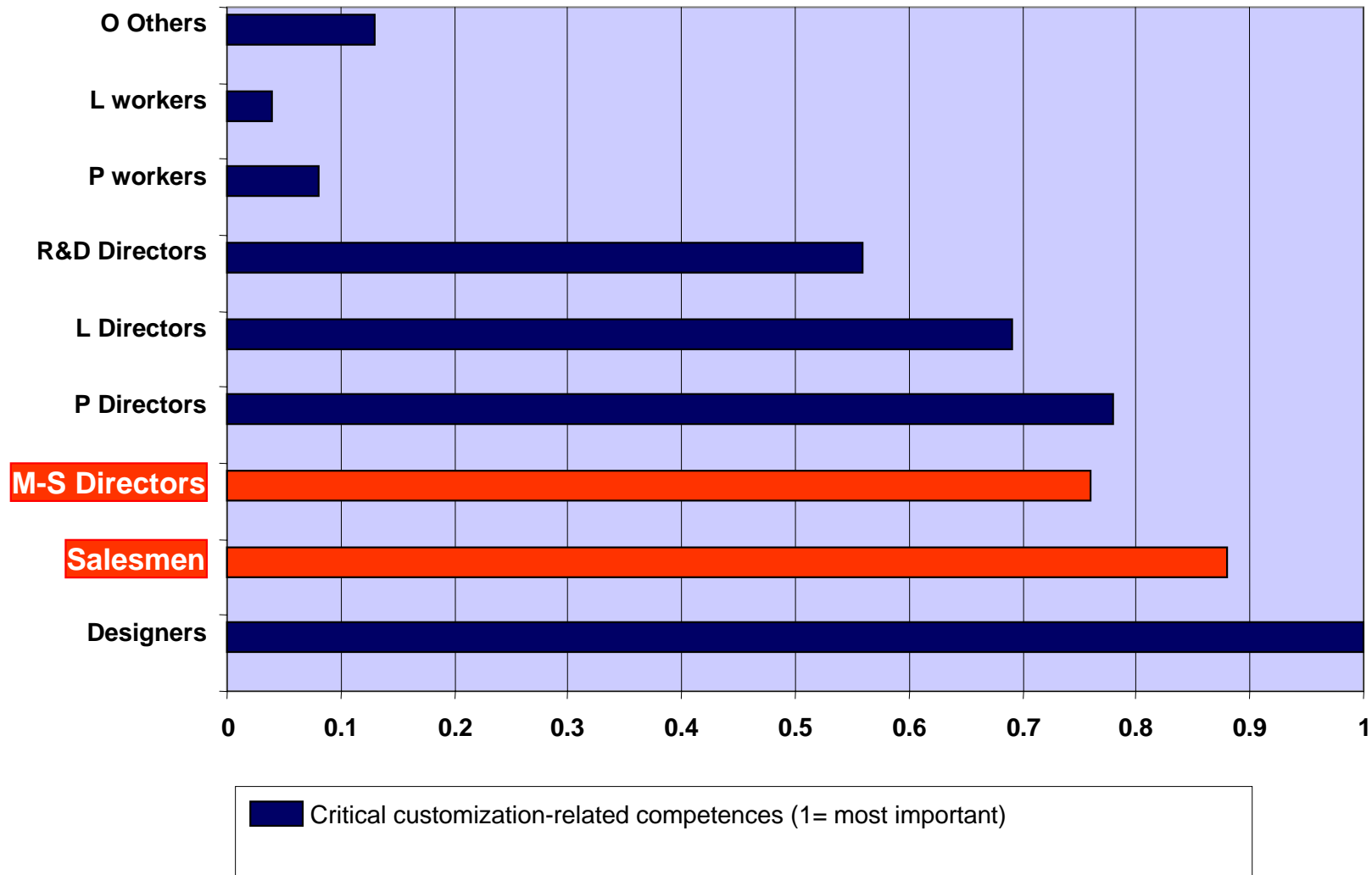
AFFECTED ROLE SETS



AFFECTED ROLE SETS



AFFECTED ROLE SETS

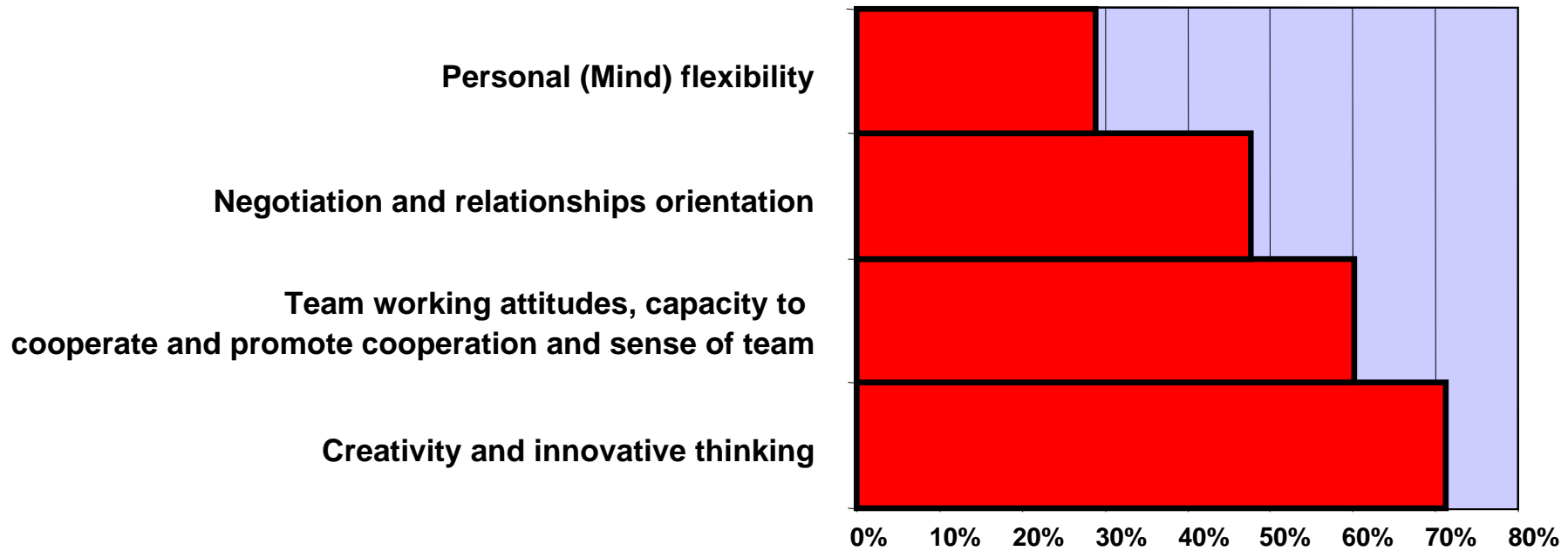


AFFECTED ROLE SETS - SYNTHESIS

- ☒ Production and logistics workers not really affected
- ☒ Sales area is the most affected
- ☒ Designers are, individually, the role more heavily affected by mass customization, more than R&D directors

What **individual competences** do a company's employees need in order to deploy a mass customization capability?

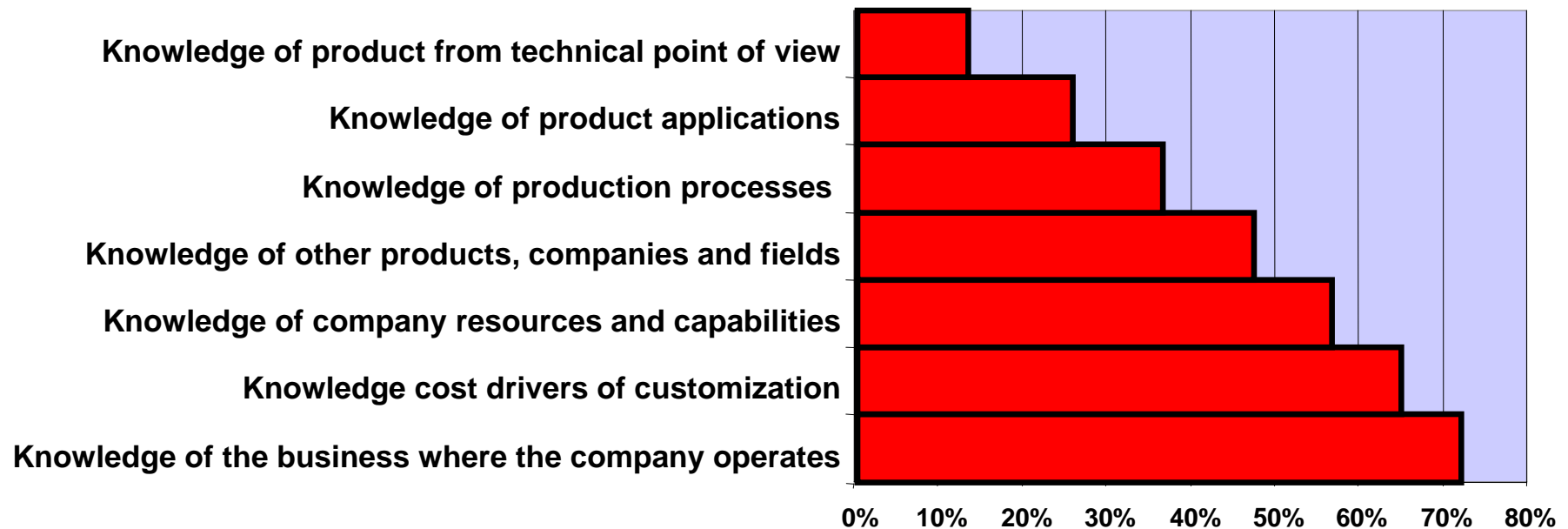
AFFECTED COMPETENCIES - ATTITUDES



➔ What is left out of the Pareto analysis:

Open mind-ness and learning attitude, Interpersonal understanding, Self confidence and proactive attitude, Problem solving orientation, Systematic and analytical thinking, Developing others and coaching

AFFECTED COMPETENCIES - KNOWLEDGE



➔ What is left out of the Pareto analysis (“methods knowledge” in blue):

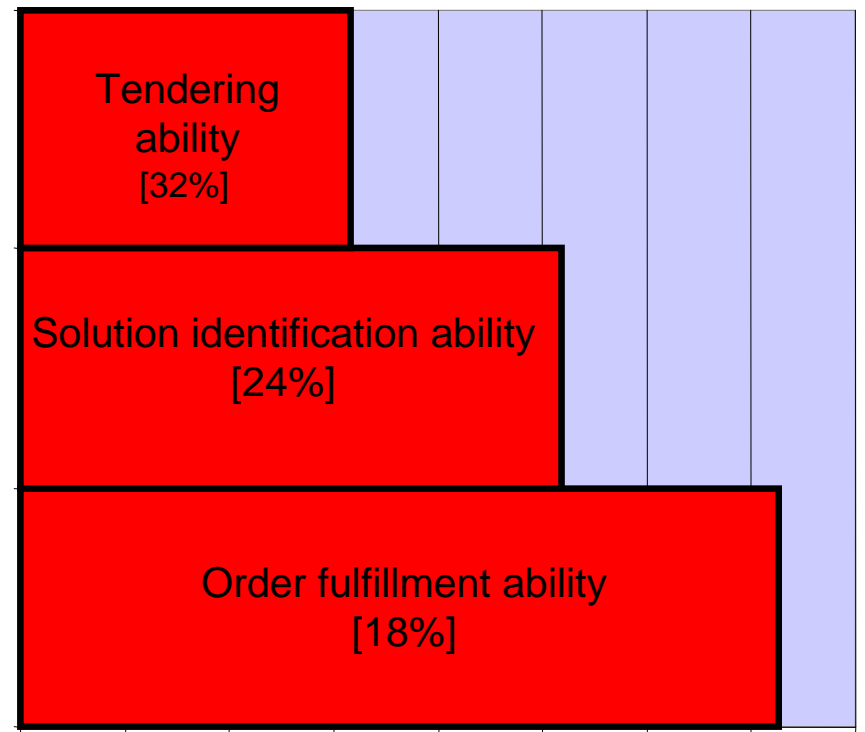
Methods for using resources in a flexible way, methods to monitor quality and time reliability, Knowledge of company-customer interaction processes, methods and principles to obtain production and logistic flexibility, methods to evaluate the need and the convenience of customizing, methods for modularity, use Information Technology to manage customization, Knowledge of specific commercial/marketing issues, methods to personalize product distribution, methods to develop flexible supply network, methods for setting up machine quickly and reduce set up times, methods to anticipate technical problems, postponement approaches, product configuration approaches, quotation methods

AFFECTED COMPETENCIES - ABILITIES

Capability of obtaining collaboration
Able to plan, coordinate and organize
Able of using resources in a flexible way
Able to act monitoring quality and time reliability

Ability to rapidly and correctly understand the economic situation and requests of a specific customer
Ability to act considering technical and production implications of the solution being offered to the customer
Ability to act evaluating cost and financial implications of the solution being offered to the customer
Ability to plan, coordinate and organize

Ability to elicit, interpret and understand customers' needs
Ability to clearly explain the product and its value
Ability to anticipate technical problems
Ability to evaluate the need and convenience of customizing



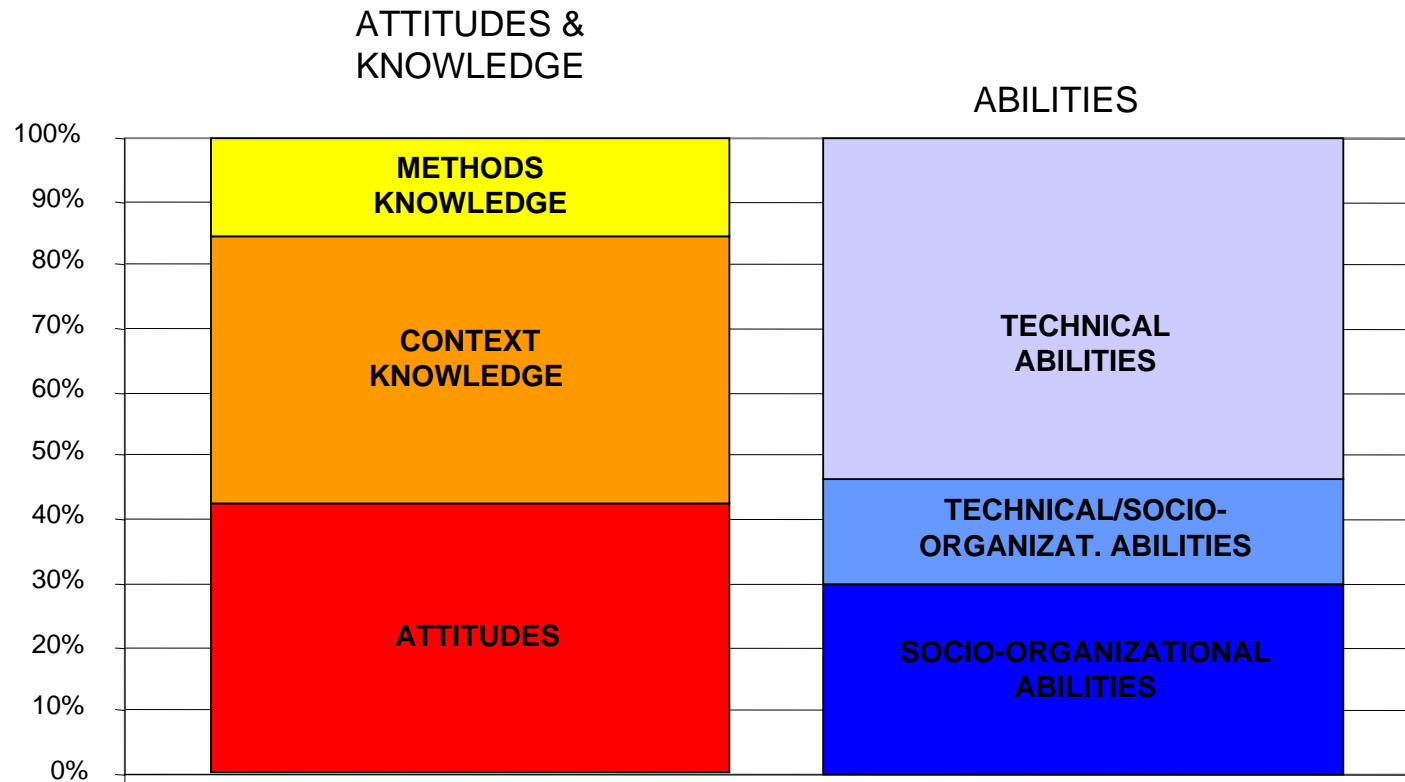
0% 10% 20% 30% 40% 50% 60% 70% 80%

➔ What is left out of the Pareto analysis:

Able to clearly explain the product and its value, Able to cope with uncertainty in customer requests or supply by accepting changes and using resources in a flexible way, Able to act taking into consideration implications on production and logistic flexibility, Able to use the concept of modularity, Able to provide technical support, Able to study the market from each interaction, Able to apply product configuration approaches, Able to use Information Technology to manage customization, Able to provide quick and efficient responses, Able to personalize product distribution, Able to develop flexible supply network, Able to setting up machine quickly and reduce set up times, Able to judge the content of a quotation, Able to give up selling something not needed by (or which does not solve the needs of) the customer, Able to apply postponement approaches,

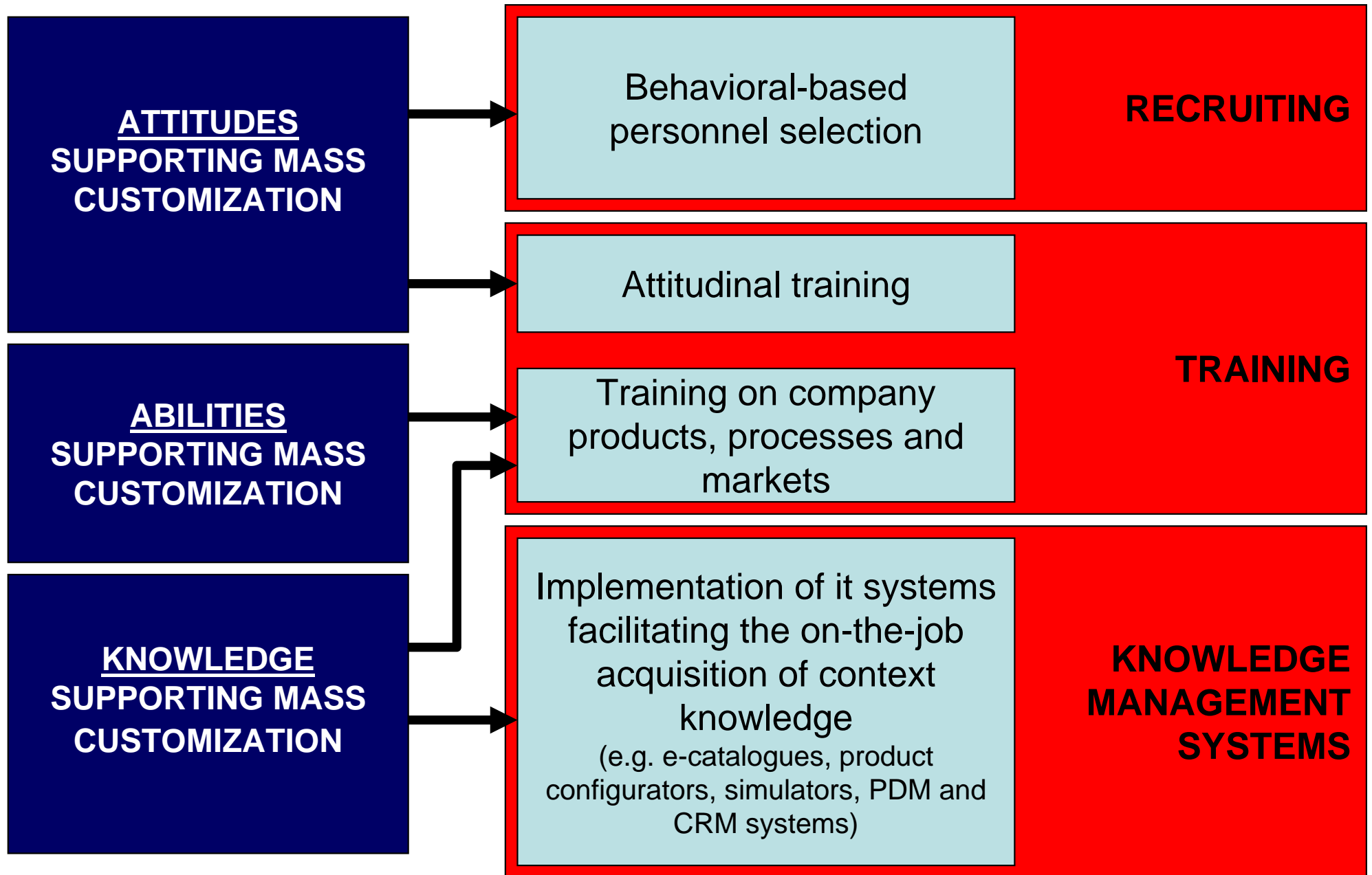
What are implications of “managing for people” for mass customization research an practice?

AFFECTED COMPETENCIES: RELATIONS AMONG ATTITUDES, KNOWLEDGE & ABILITIES



- ➡ Attitudes very important, together with context knowledge
- ➡ Technical abilities very important, but not dependent upon methods knowledge

HRM POLICY FOR MASS CUSTOMIZATION



CONCLUSIONS / 1

- ☒ Identified an individual's mass customization competence in terms of specific **attitudes** (mental agility and relational attitude) **knowledge** (profound product knowledge, broad business knowledge and robust product costing knowledge) and **abilities** (solution identification ability, tendering ability, order fulfillment ability).
- ☒ Highlighted the importance of knowledge management systems as a tool to increase the employees' context knowledge
- ☒ Methods for MC, virtually the sole area where MC literature has been focusing, perceived as not critical by interviewees. Competitive explanations:
 - ➔ **“Competence Myopia” hypothesis**: directors do not consider methods as useful as they do not know them
 - ➔ **“Attitude Prevalence” hypothesis**: directors do consider attitudes as what really makes the difference in supporting the company capability customize efficiently

CONCLUSIONS / 2

- ☒ Behavioral component very important to explain differences between competence profiles of different role sets.
- ☒ Designers appear to be a critical element into the development of a capability for efficient customization.

OPEN ISSUES

- ☒ Sample biased towards small and medium enterprises. What may change when considering specifically the issues of large corporations?
- ☒ What is the real value of methods? Are they so much less important than attitudinal profiles? Or it is just that many managers may not be aware of them?
- ☒ How to choose the right balance of investment in training, behavioral recruiting, and systems for the acquisition on-the-job of company-specific knowledge? To what extent are these investments non substitutable?
- ☒ What about the long term implications of a mass customization strategy centered on leveraging people as a key asset?