

# Bridging the Gap Between IE Qualifications and Employers Requirements: lessons from Palestinian IE Programs



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## Introduction

- There are many potential opportunities for further growth of the industrial sector in Palestine, such as the abundant human resources and the absorptive capacity of the market [1].
- This further growth will require an expansion of industrial engineers' skills towards services in maintenance, technology management, quality engineering, production technologies, and proactive policies to support education and training in such disciplines [2].
- Nevertheless, Palestine has a number of obstacles against growth [2]. For example, industry has institutionalized problems in terms of management, production, quality, competition, and skills besides to other obstacles caused by the Israeli occupation and the extreme restrictions on imports and exports [3].



## Introduction

- It is evident that the majority of technical staff and industrial engineers lags behind in new technologies due to rapid changes. The problem is clearer in areas of application of modern technologies [4].
- On the other hand, the higher education institutions in Arab region have been undermined by a mismatch between education and training and the job market demands [4-6].
- It is that creating a customized curriculum in Industrial Engineering in parallel with an education & training centers can contribute in bridging this gap between Industry and Academia.



## Palestinian Manufacturing sector

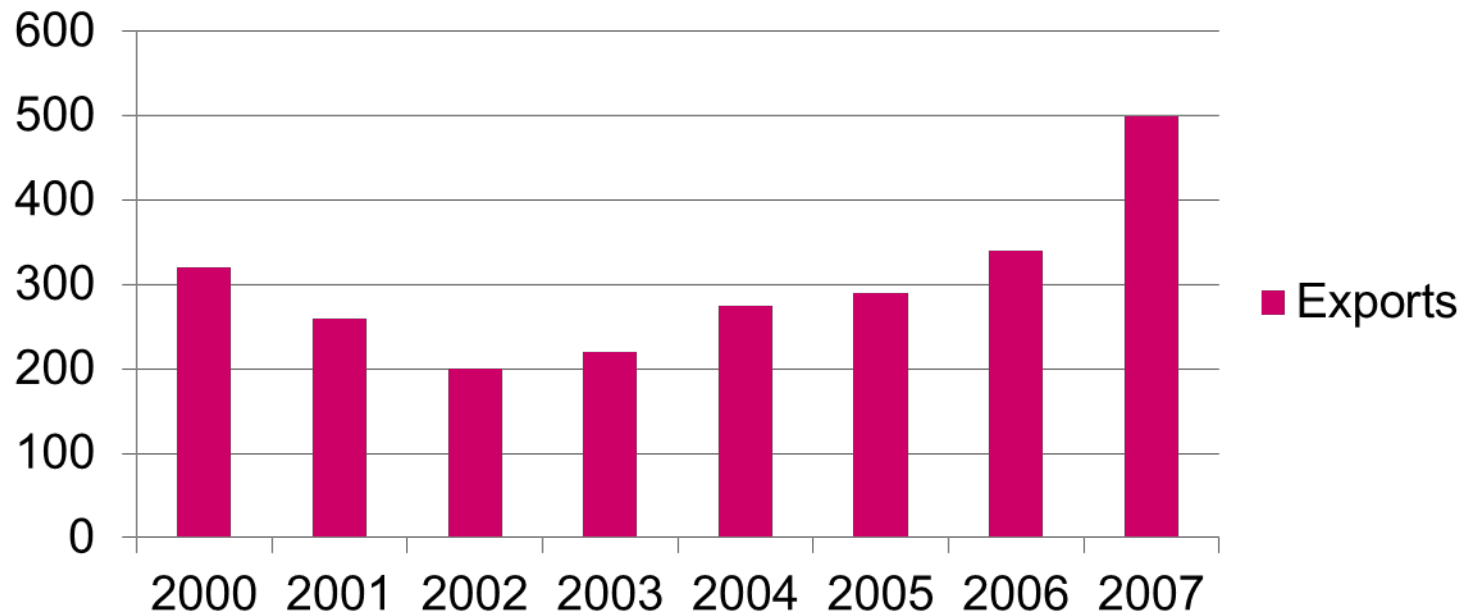
- The Palestinian manufacturing sector is considered as a diverse one amongst variety of products.
- One of the most important problems the sector faces is the lack of raw materials which reduces the sustainability of the sector. This problem is caused by the Israeli restrictions and rules.
- Although the lack of imported raw materials is a drawback for productivity, in certain cases it encouraged hard working and resilient business, and maximum utilization of the raw material, which are considered the main driving force of the Palestinian economy [7].



## Palestinian Manufacturing Sector....continued

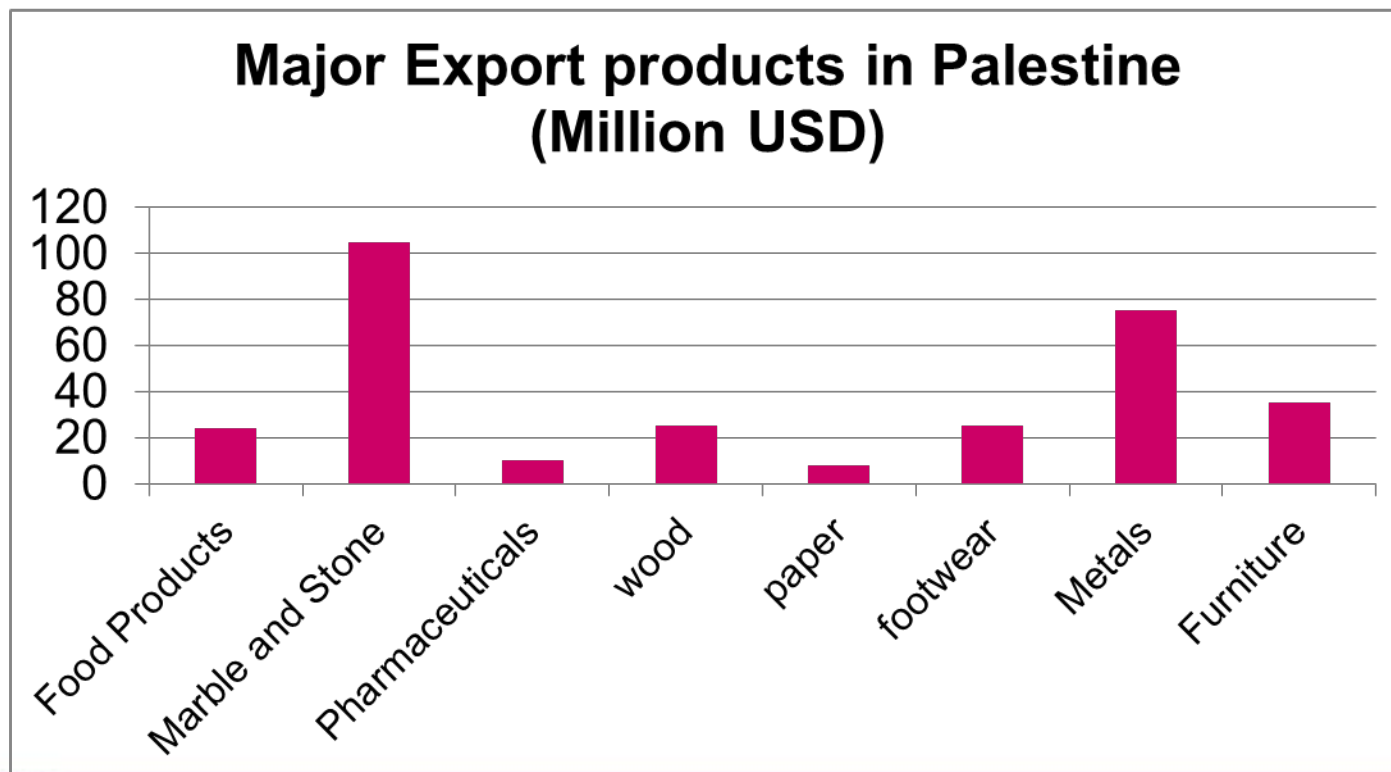
- Manufacturing sector in Palestine plays a great role in the national economy. It contributes in about 13% of the total employment and 16% of GDP.
- The highest indication for this contribution is the export rate which had a notable growth in the nineties [7].

### Palestinian Export Products in Million USD



## Palestinian Manufacturing Sector...continued

- The figure below depicts the distribution of exports of different products in Palestine. The figure shows that Stone and Marble sector has the highest contribution in production and export followed by metal industry [7].





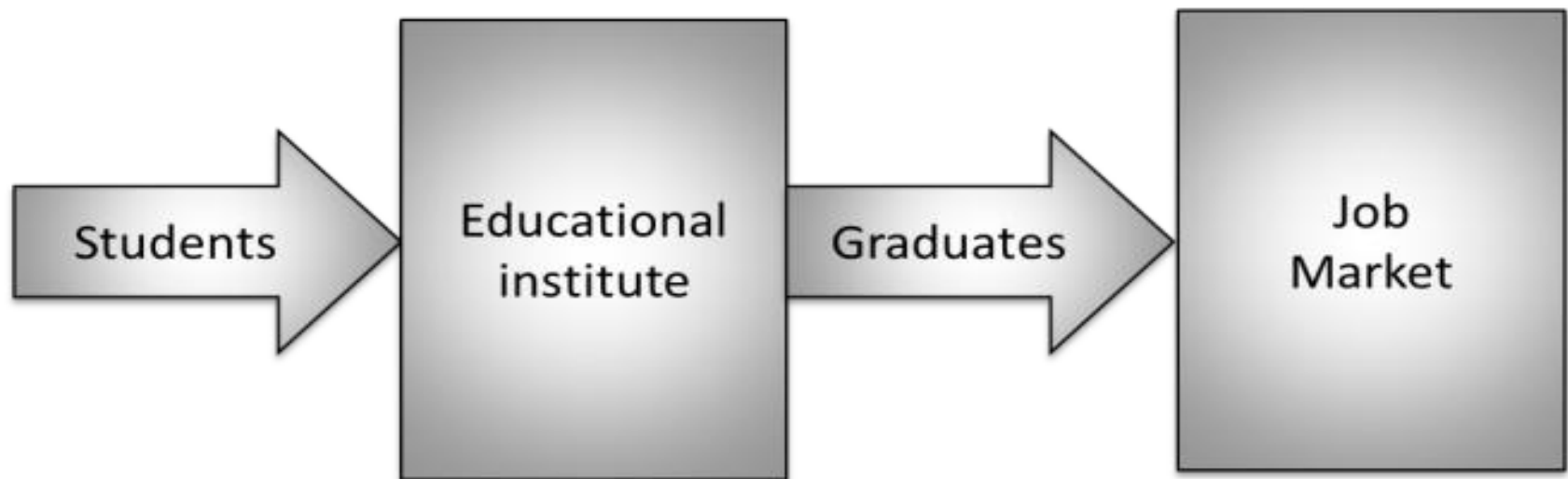
## Reforming Palestinian IE Programs

- To improve the manufacturing sectors it was believed that re-designing industrial engineering programs curriculums to match manufacturing priorities is a necessity.
- For this purpose, the Industrial Engineering Programs started to implement the requirements of international Accreditation Board for Engineering and Technology (ABET) to bridge this gap.



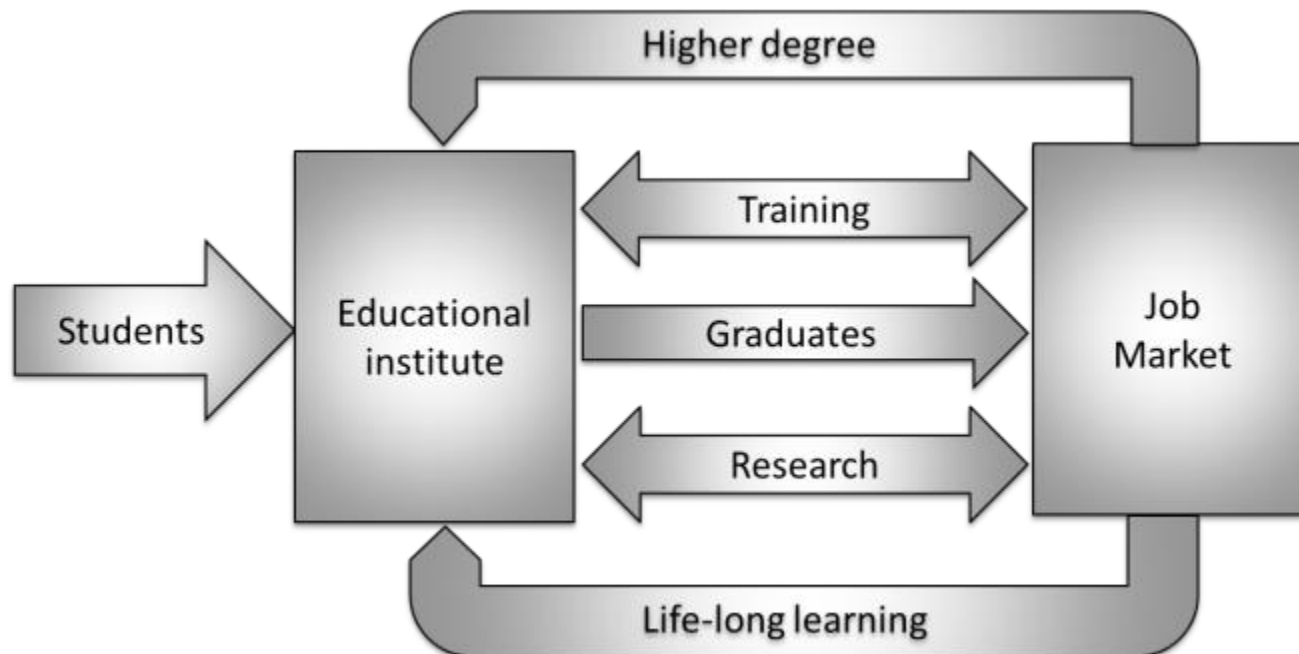
## Reforming Palestinian IE Programs.....continued

- To reform the Palestinian IE Programs curriculums, and to improve the relation between these programs and job market a depart was made from traditional one-way relationship model [8] as it is depicted in figure below:



## Reforming Palestinian IE Programs....continued

- Therefore, Palestinian IE Programs have started to adopt a new model of interaction with job markets [8]. This is better explained in the figure below:





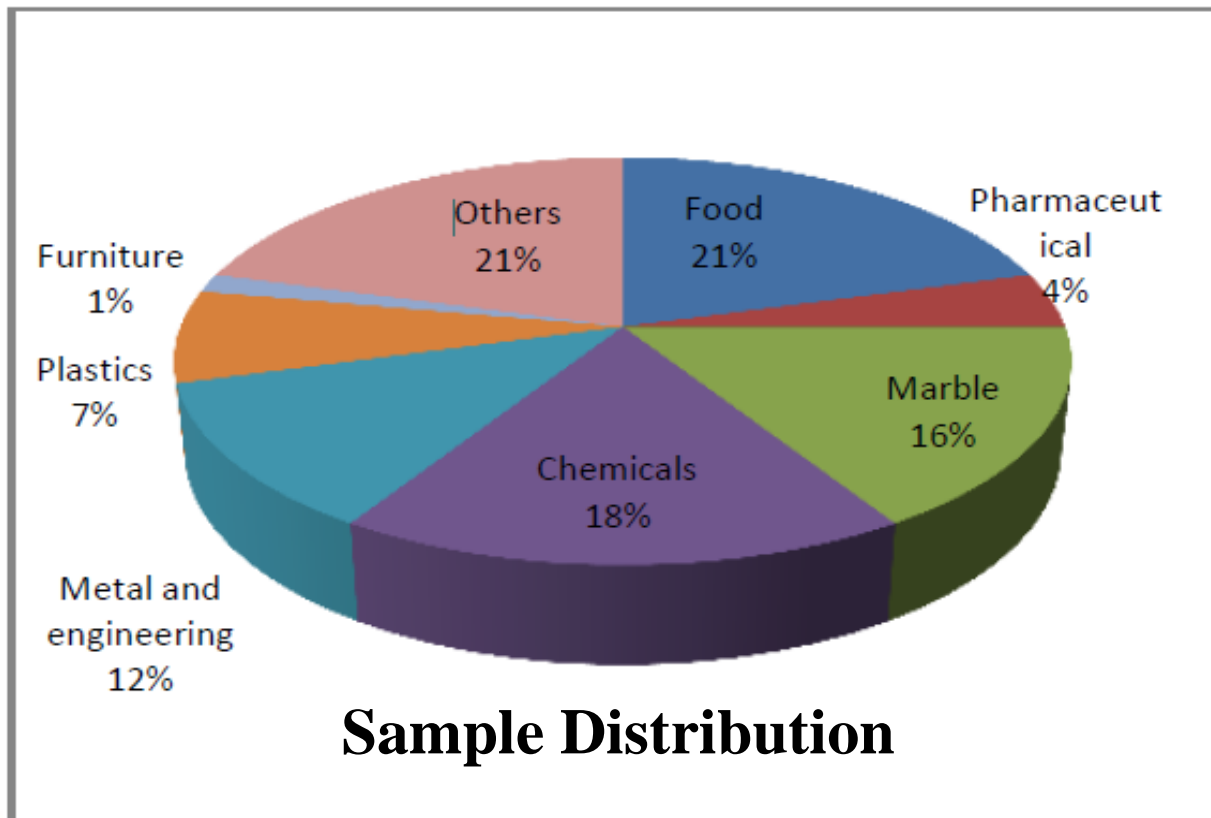
# Demining IE Qualifications Requirements

- The above model was supported by the establishment of a number of channels to interact with employers in the job market to collect information about their needs and requirements.
- These channels were according to the requirements of international Accreditation Board for Engineering and Technology (ABET). These channels of interaction were:
  1. Industrial Advisory Board
  2. Employer Survey



## Demining Qualifications Requirements...continued

- The employer survey 2014-2015 covered around 250 manufacturing firms in all governorates of Palestine. The survey covered topics related to Training needs, Production needs, Quality needs, and Sustainability needs.





## Demining Qualifications Requirements...continued

### Training needs of Manufacturing Firms:

- The analysis of the questionnaires showed that 27% of manufacturing firms participated in the survey has annual training budgets, which varied between \$1,400 and \$50,000.
- The training topics covered in the last year varies from General Training Needs to Technician Training Needs.



# Demining Qualifications Requirements...continued

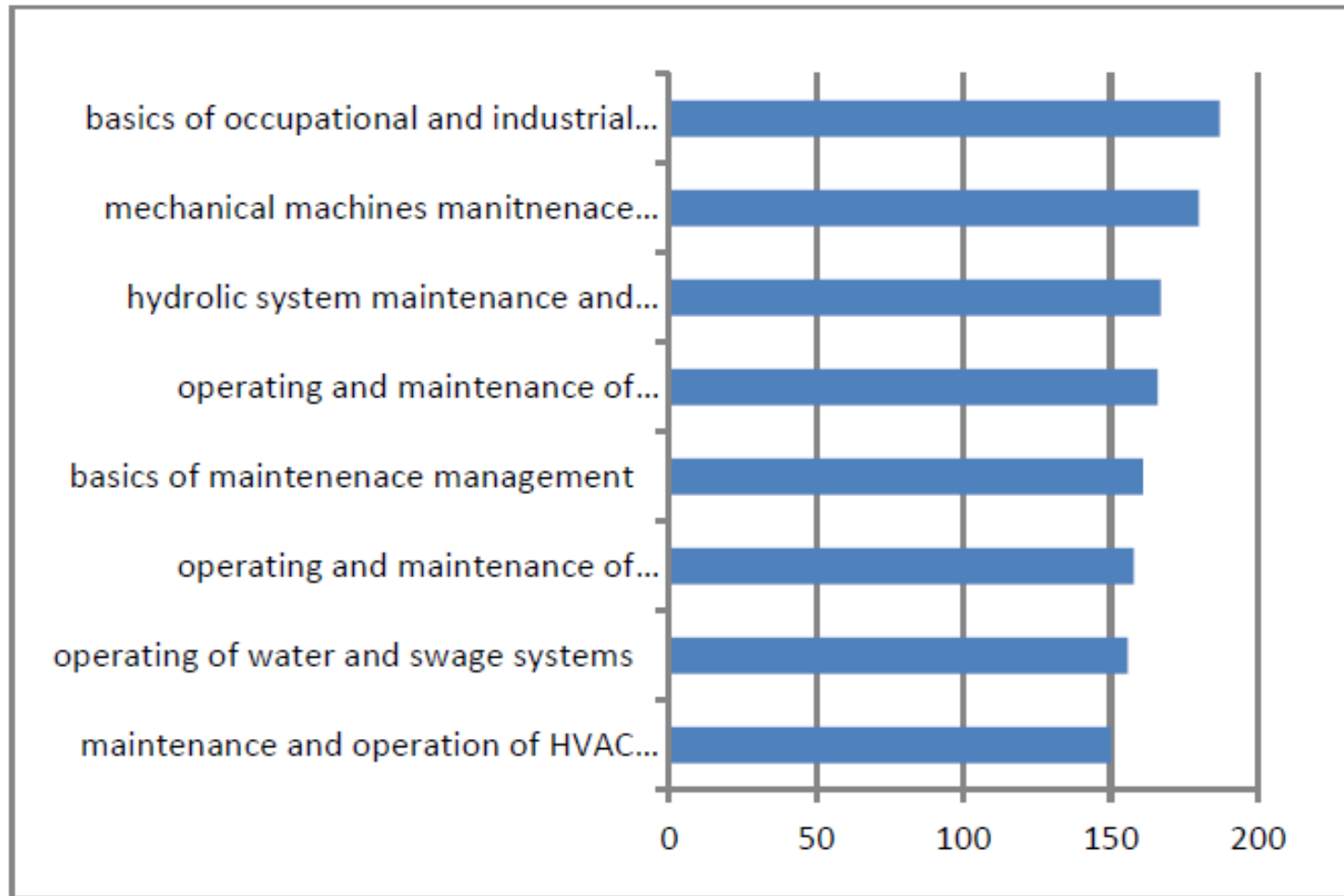
- **General Training Needs:**





# Demining Qualifications Requirements...continued

## ■ Technician Training needs





# Demining Qualifications Requirements...continued

## Production Related Topics

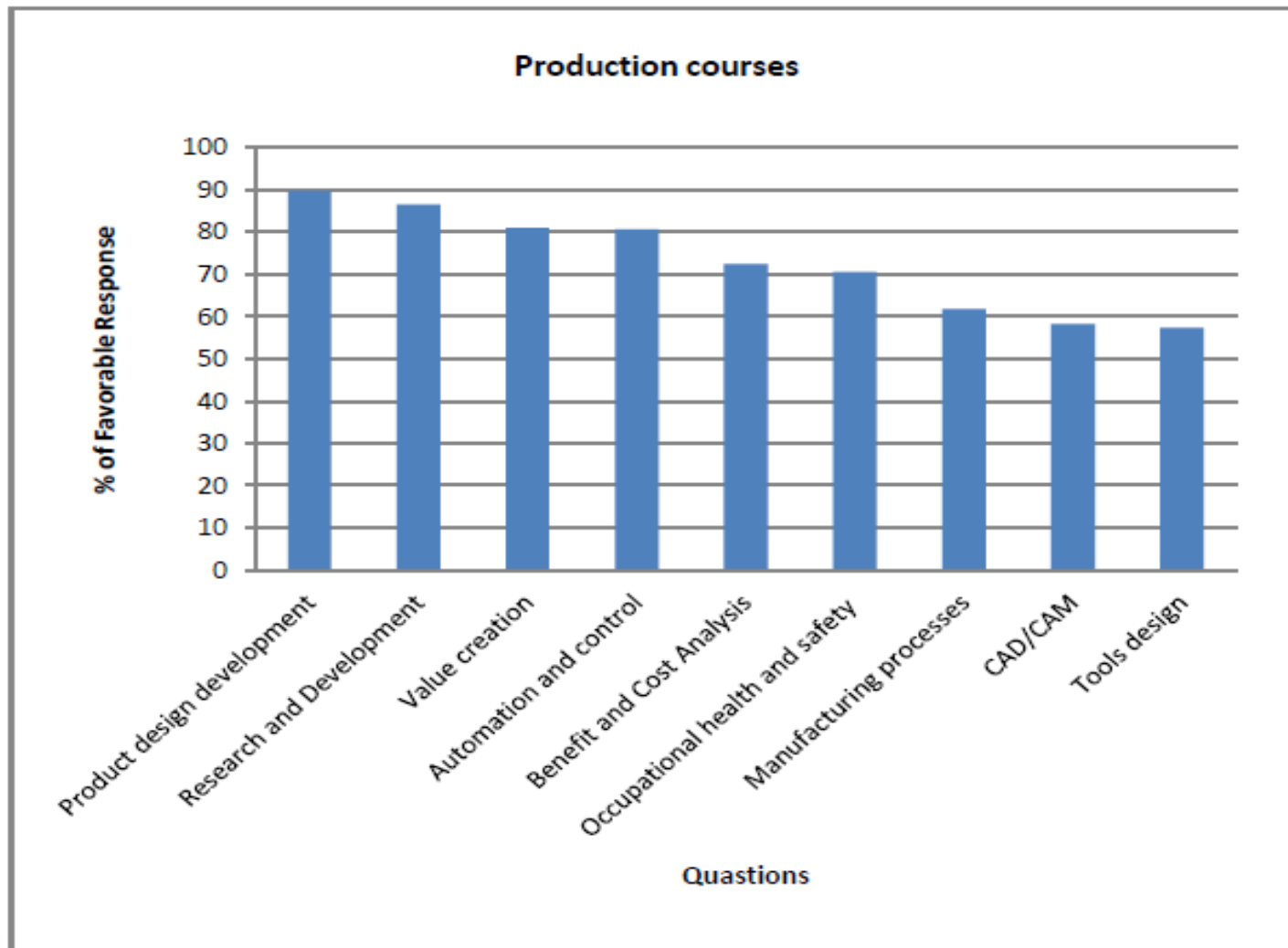
- the highest rank in the production related topics was the product design and development. R&D comes next and this illustrates the need to introduce new techniques to support the entire process of new product development.
- This emphasizes the contemporary awareness of the importance of innovation in manufacturing sector in Palestine.





# Demining Qualifications Requirements...continued

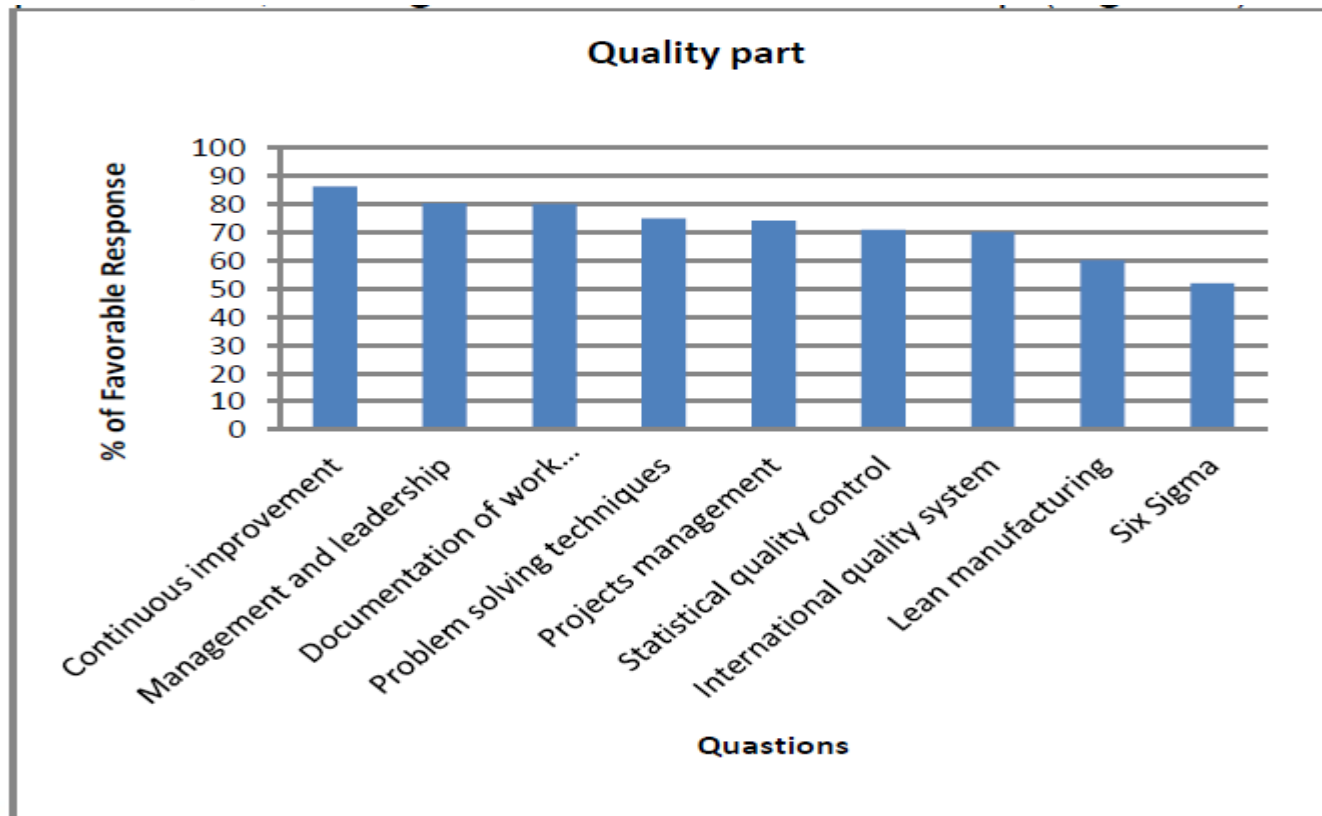
## Production related topics needs:



# Demining Qualifications Requirements...continued

## Quality Related Topics

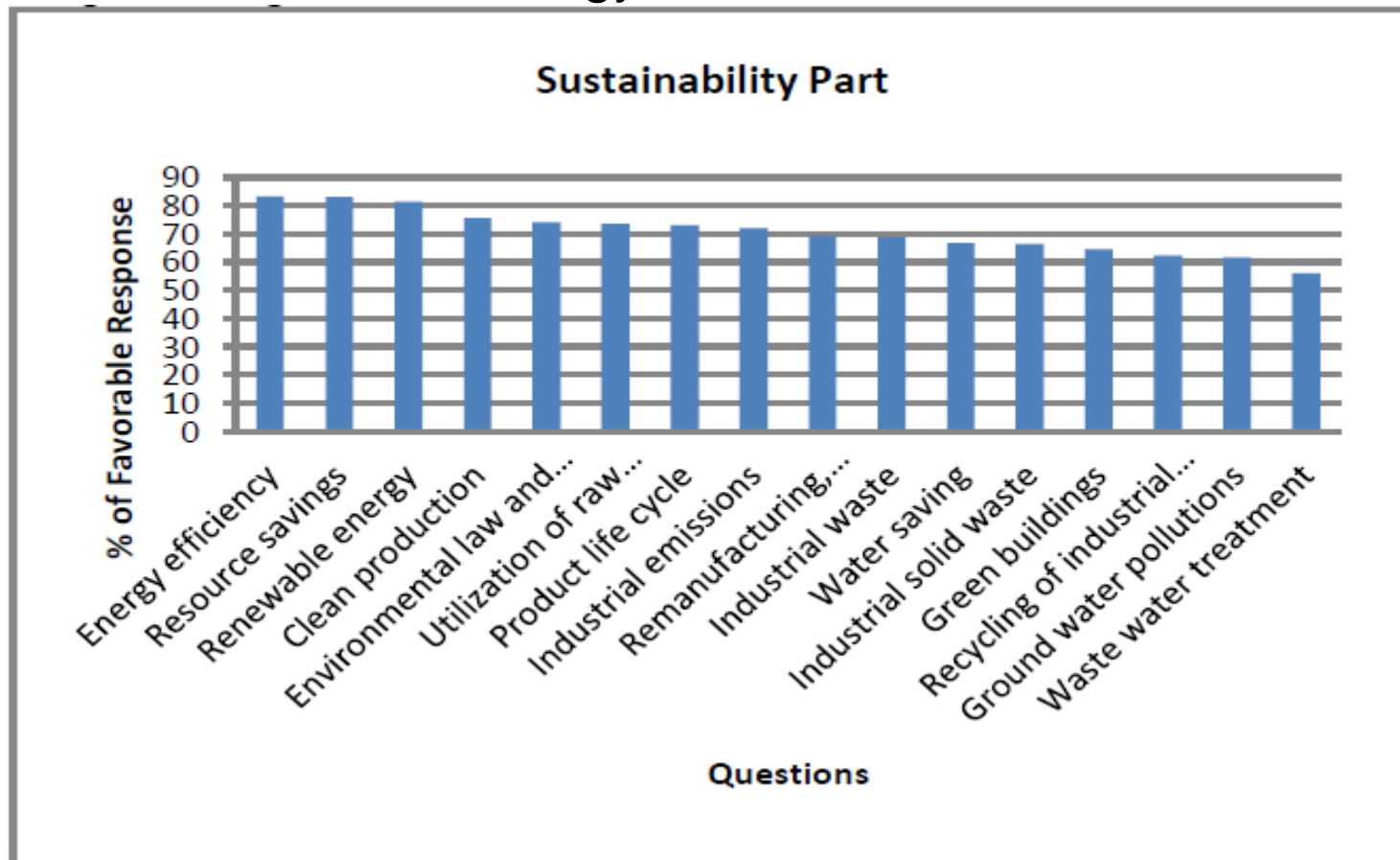
- Top rated topics were continuous improvement, documentation of work procedures, management skills and leadership



# Demining Qualifications Requirements...continued

## Sustainability Related Topics

- Top demanded topics were energy efficiency, resources savings, and use of renewable energy.





## Conclusion

- The IE Programs in Palestine have been undermined by a mismatch between education and training and the job market demands.
- The results of the survey showed low percentage of highly qualified IEs, although the need is apparent remarkably in the advanced areas such as new product development and sustainable engineering.
- customized curriculum in Industrial Engineering, based on employers and other stakeholders involvements, in parallel with an education & training centers can contribute in bridging this gap between Industry and Academia.



## Conclusion

- **The results showed that top demanded qualifications and skills in Industrial Engineering fields are:**
  - 1) Product design and development.
  - 2) R&D
  - 3) Value creation
  - 4) Automation and control.
  - 5) Continuous improvement.
  - 6) Documentation of work procedures.
  - 7) Management skills and leadership
  - 8) Energy efficiency.
  - 9) Resources savings techniques.
  - 10) Use of renewable energy.



Thank you





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