



Addressing the Mainframe Skills Shortage: What Happens When all the Boomers Retire?

The Problem

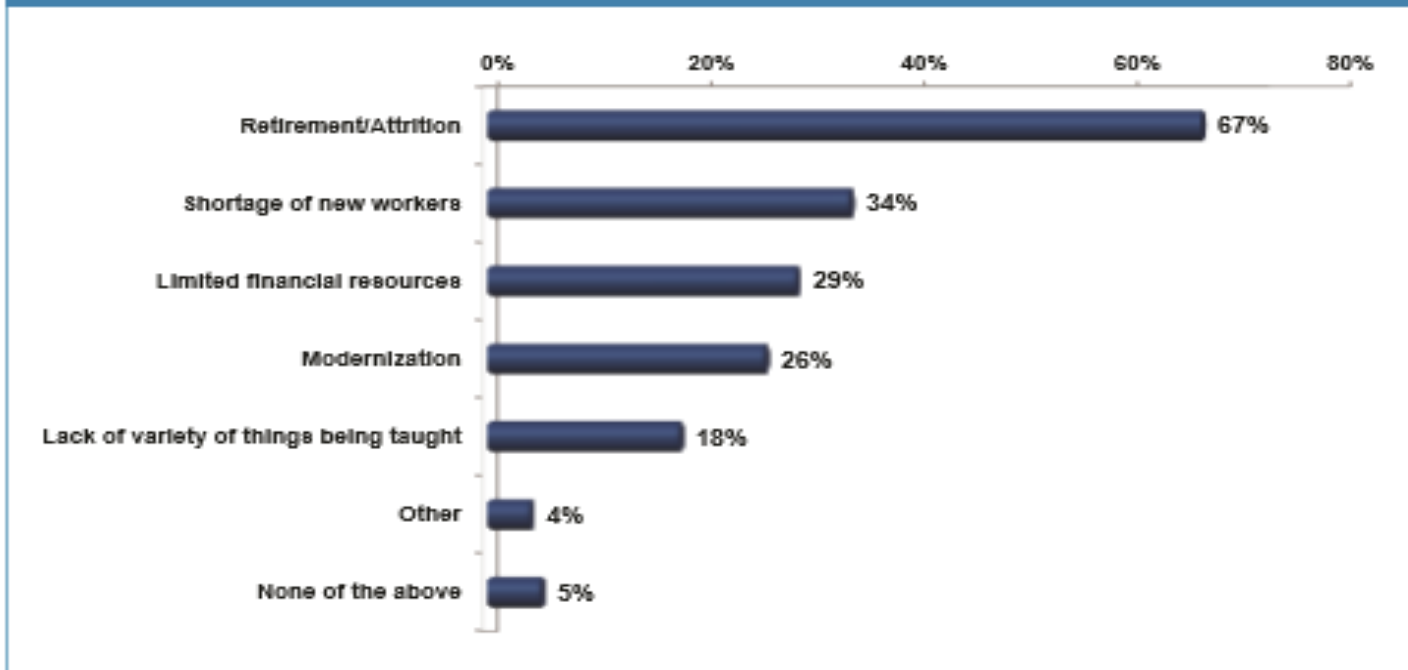
- 96 of the world's top 100 banks, 23 of the 25 top US retailers, and nine out of 10 of the world's largest insurance companies run IBM mainframes.
- Seventy-one percent of global Fortune 500 companies are mainframe clients,
- Nine out of the top 10 global life and health insurance providers process their high-volume transactions on a mainframe,
- IBM Mainframes process roughly 30 billion business transactions per day, including "most major credit card transactions and stock trades, money transfers, manufacturing processes, and ERP systems

The Problem (cont.)

- The oldest of the Baby Boomers reached the traditional retirement age of 65 in 2011, and approximately 10,000 Baby Boomers now turn 65 every day, according to the Pew Research Center.
- The percentage of the population aged 65 was just 4% in 1900, in 2010 is was 13.9% and by 2030 it will be 20.9%, according to the US Census.
- Some estimates say there will be more than 84,000 open mainframe positions by 2020, with nearly 5mil open general IT positions
- Many companies have ignored this problem, a few have been proactive.

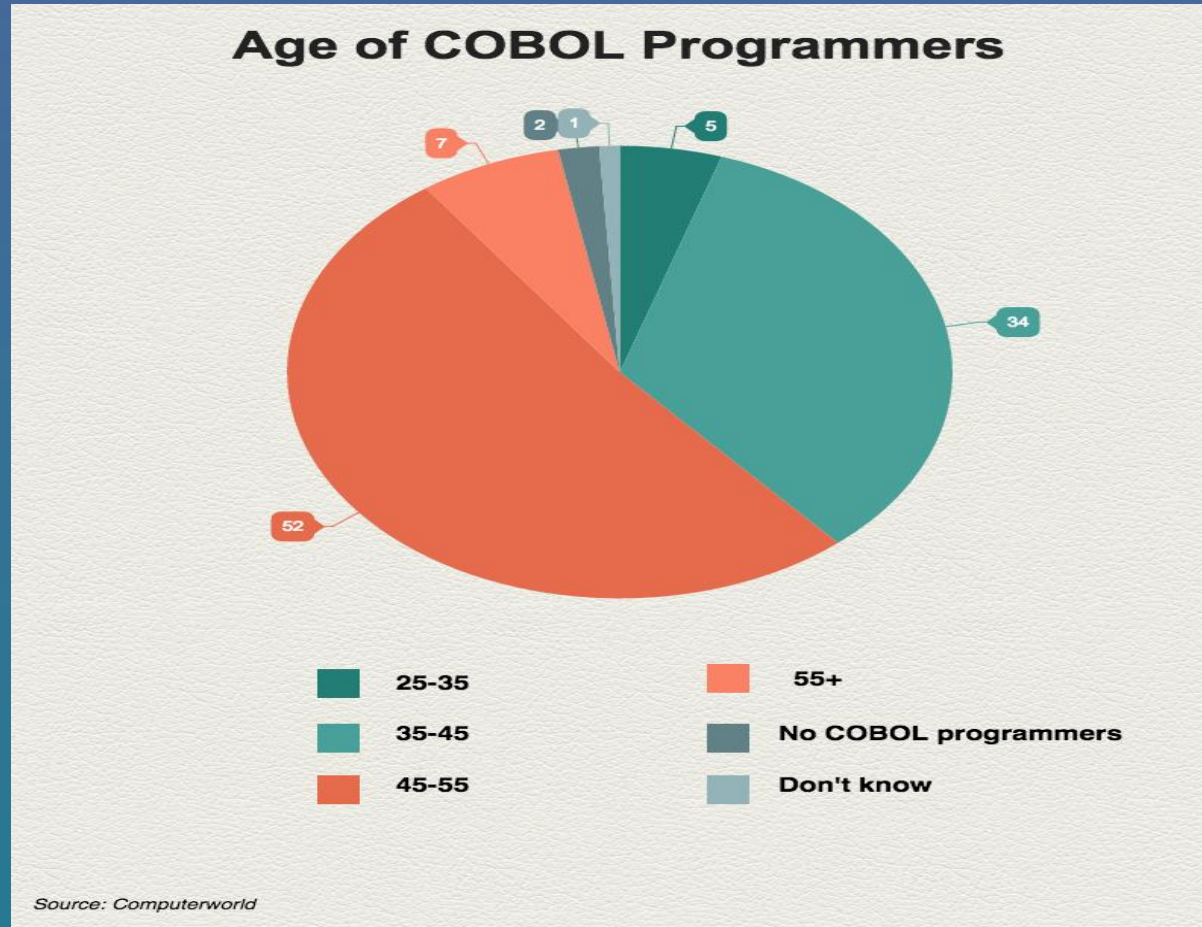
The Problem (cont.)

FIGURE 2 Top Challenges Within Company Regarding a Skills Gap



• Source: IBM Systems Magazine Survey

The Problem (cont.)



- Source: 2005 Computerworld customer survey

Developing Employees Mainframe Skills

“Top 10 Strategies to Ensure You Have Mainframe Skills Through 2025”

1. Work with human resources to determine how deficient your mainframe workforce might be and how soon.
2. Mine the z Systems Job Connector board.
3. Provision skills from third parties to fill gaps and supplement existing staff.
4. Get involved with IBM's Academic Initiative & Master the Mainframe programs.
5. Launch a formal intern or co-op program with one of your local schools.
6. Bring IBM's course material in-house and tailor it to do your own training.
7. Cross-train current staff.
8. Continue to automate wherever possible in order to reduce the need for labor.
9. Actively participate in user organizations, such as Share (z Systems user group), to nurture next-generation talent.
10. Selectively migrate away from products that there may be no way to support in the future.

Source: Gartner <https://www.gartner.com/doc/3143717/top--strategies-ensure-mainframe>

Possible Solutions

1. Migrate to distributed systems
2. Hire additional experienced mainframe staff or use third-party consultants
3. Developing internal employees mainframe skills
4. Outsource the mainframe

Developing Employees Mainframe Skills

1) Train existing staff on mainframe systems

or

2) Recruit new employees and train them

Developing Employees Mainframe Skills



Training the workforce of tomorrow with today's high schools is like trying to teach kids about today's computers on a 50-year-old mainframe.

— *Bill Gates* —

AZ QUOTES

Developing Employees Mainframe Skills

Various Resources:

- Free IBM Learning
- Open Badges & Talent Match
- On Demand Learning
- Classroom Learning
- Virtual Learning
- Mentoring, Internship & Co-Op Programs

Developing Employees Mainframe Skills

- 1) Communication of employees role & feedback loop
- 2) Defined career plans (recommended 2yrs w/milestones)
- 3) Assign a mentor as a goal
- 4) Use award programs and/or bonuses
- 5) Group new employees by stage levels
- 6) Invest by providing training & industry exposure (SHARE, zNextGen, IBM, etc)

Developing Employees Mainframe Skills

Training Options: Bootcamps versus Course Learning Plan

Mainframe Bootcamps (SysProg or AppDev)

- Pros:
 - Continuity, each weeks builds on each other
 - Building peer relationships
 - High levels of skills developed (individual needs addressed)
 - Can't be planned around a project or hiring plan
- Cons:
 - Time away from work
 - Higher cost than OJT & Mentoring

Course Learning Plan (attending several courses just-in time)

- Pros:
 - Flexibility & adaptability
 - Can utilize OJT & mentoring between classes (can lower cost)
 - Losing students to other opportunities
- Cons:
 - Lack of continuity class-to-class, less customization to student needs
 - Classes aren't always available as needed

On-Demand training should be utilized in either approach

Case Study #1: CA Technologies

- Associate Software Engineer (ASE), annual new hire training past 11 years
- 600+ hired/trained since inception
- 7 week training program starting with first month of joining CA
- All North America ASEs attend together in Pittsburgh, Europe in Prague and Asia in Hyderabad CA offices each summer
- Last year we combined MF with our Distributed new hires (Security, DevOps, non-MF BUs) to create an "Enterprise ASE Program"
 - First 3wks we cover Agile, SaFE, Interpersonal Skills, Team Building
 - Following 4wks, we dig into MF only
- Success stories... product sustainability, "maturing workforce" addressed... nice mix of early, middle and senior tenure expertise, invigorates entire office, skills transfer (senior to junior and even junior to senior with new technologies!)

Case Study #2: Large Insurance Company

- Run mainframe developer bootcamp every 12-18 months for last four years.
- Recruit new hires with non-IT degrees but high levels of intelligence & academic success.
- 8 week training program taught as a live classroom.
- Integrate self-paced, on-demand elearning as prerequisite learning for blended approach.
- Hands-on workshops covers COBOL, CICS, VSAM, DB2, IMS and various developer tools.
- High level of success with 95% finishing the program and becoming mainframe developers.

Case Study #3: Highmark Health

- Run several mainframe developer bootcamp on as-needed basis.
- New Hires with IT degrees, many coming from RMU (IBM Academic Initiative).
- Also train mainframe sysprogs with custom adapted 3-5 day workshops for IBM AI grads.
- Compliment classroom learning with formalized mentorship programs.
- Specialized two-week program to train Business Analysts on basic mainframe skills.

Case Study #4: Swedish System z shops

- Thorough needs assessment to develop a 35 day training plan over several weeks using a University approach thru an IBM GTP.
- Students from key mainframe customers, IBM Business Partners and IBM.
- Primarily Systems Programming with over 40 students, 490+ student days, 2 programs
- Little impact on “business as usual” with program spread over several weeks.
- Each customer was facing losing 6-8 employees each year with no replacement plan.
- Younger workers ramped up much faster with the supplemental education to OJT.

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Partnerships



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