



Presenter: **Ken**



Analysis of University Engineering Program Skill Effectiveness in Research & Development Companies

Principal investigator: **Professor Kenneth David STRANG**

W3-Research, USA <http://kennethstrang.com>

professor@kennethstrang.com

Co-author: **Dr. Narasimha Rao VAJJHALA**

New York University at Tirana, Albania

narasimharaonarasimha@gmail.com

<http://www.narasimharao.net>



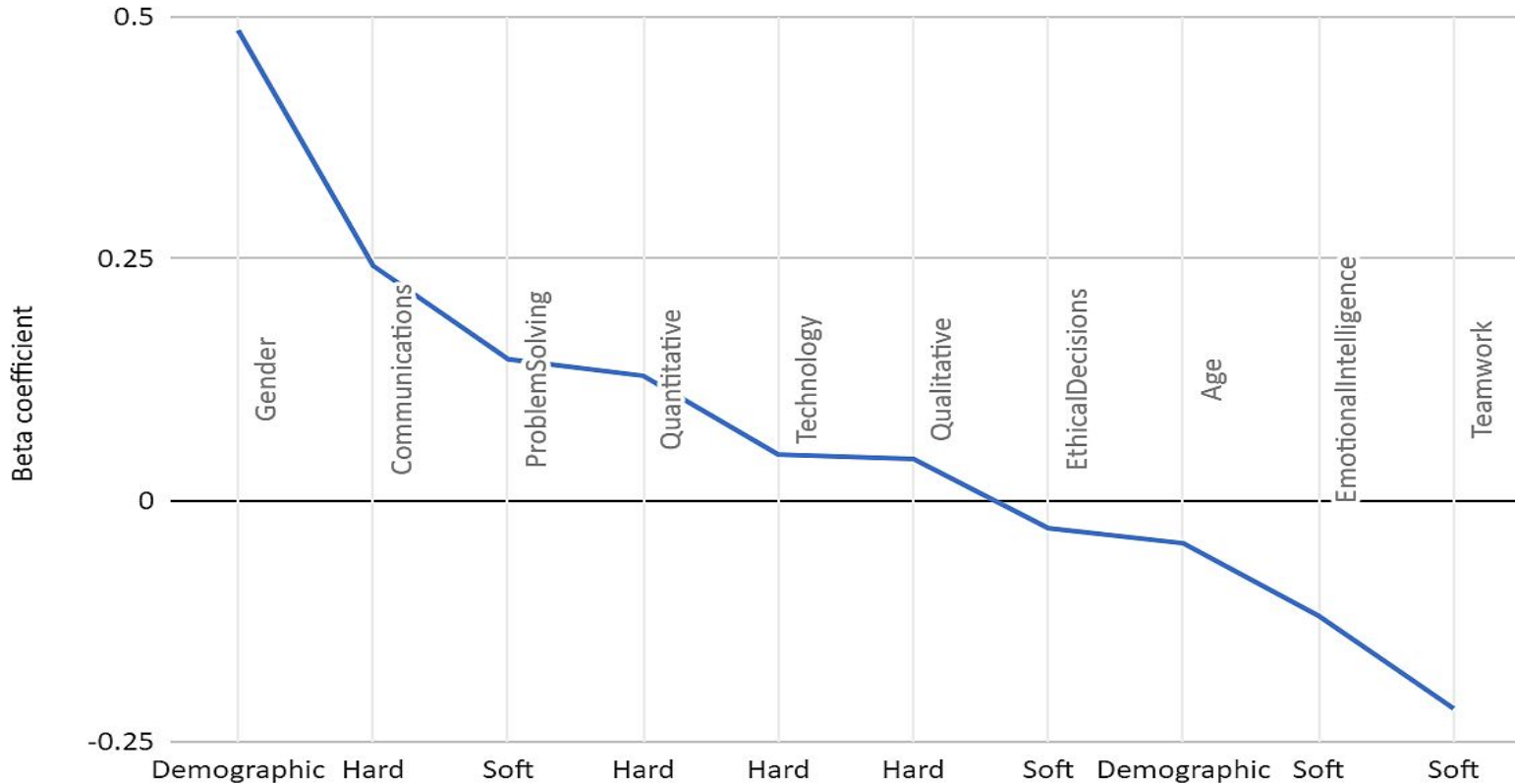
- Researchers/Principal Investigator backgrounds
 - Ken: USA, Australia, others; Rao: Albania/EU, Nigeria, India
 - Multi-disciplinary: Computer science (IS, IT, ICT), management information systems, business; IEEE/ACM/PMI +++ members
 - 50+ years of combined business/IT experience, 300+ papers
- Rationale for conducting current study
 - R&D employers complained college graduates lack skill sets
 - Lacking **soft skills**: problems, ethics, team, emotional intelligence
 - Lacking **hard skills**: quantitative, qualitative, communication, ICT
 - Coronavirus epidemic + migration to online learning - is it effective?
 - RQ: Did college soft and hard skills transfer to R&D employment



- Ideology of researchers: Post-positivist quantitative design
 - Extended prior study: Strang, K. D. (2023). How effective is business education in the workplace: Structural equation model of soft and hard skill competencies. *SN Business and Economics Journal* 3(28), doi:10.1007/s43546-022-00404-1
 - Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology was used to review the literature.
- Population: graduated students, non-random sample N=567
- Survey (with ethical disclosure/consent + IRB approval)
 - Demographics (age, education, gender) + Likert survey items + SDI
 - Social desirability indicator (SDI) to detect lying, inserted in survey
 - Catching up on my sleep during class or lab work [soft skills];
 - Applying statistical software to cheat on tests or exams [hard skills];Honest students expected to answer **Strongly Disagree** to above.



Hypothesis Test Results: Regression Betas





Discussion and Conclusion



- Most important skills impacting **job skill performance** (multiple regression dependent variable), according to beta coefficient: **communications, problem solving, quantitative, technology, qualitative** (descending order of unstandardized betas, data scale = 1-5).
- Gender was a significant differentiator mainly due to the characteristic of the R&D engineering profession which is dominated by males (note the positive beta, data coded 0=female, 1=male).
- Ethical decision making was not significant which indicates more analysis may have to be done on this skill as it ought to be relevant in the R&D field.
- Teamwork, emotional intelligence, age were negative - authors attributed these to situational constraint that engineers work independently, less teamwork, younger? **More research needed!**

Type	Factor	Importance
Demographic	Gender	0.48623
Hard	Communications	0.24271
Soft	ProblemSolving	0.14582
Hard	Quantitative	0.12879
Hard	Technology	0.0473
Hard	Qualitative	0.04263
Soft	EthicalDecisions	(not significant)
Demographic	Age	-0.044556
Soft	EmotionalIntelligence	-0.11974
Soft	Teamwork	-0.21558