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Workshop: Building Collaboration Networks to solve the IT Talent Pipeline Shortage: Where are the Women?

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Workshop Proposal

Building Collaboration Networks to solve the IT Talent Pipeline Shortage: Where are the Women?

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Background

As companies increasingly face challenges finding sufficient numbers of skilled IT workers, regions around the country have attempted different strategies to address the gap. In Northeast Wisconsin the primary strategy has been the formation of a formal organization, the NEW IT Alliance, charged with attracting, developing, and retaining IT workers in Northeast Wisconsin, funded by local companies and universities, and employing a full-time director. At the same time, a large number of other organizations have worked on various initiatives to help solve the problem. Many of the initiatives in the region have recognized the lack of female participation in IT and have focused on attracting more women into IT.

In this workshop, we will:

- Discuss the IT Talent Shortage.
- Explore the gap between male and female interest in IT careers.
- Explore the role of gender bias in IT.
- Identify the collaboration network and IT alliance formed to address this issue.
- Understand the theoretical support for network formation, maturity, and the relationship to innovation.
- Discuss solutions to these challenges.

By attending this workshop, you will:

- See how one region has tackled the IT Talent shortage through extensive collaboration throughout the region and the formation of a formal alliance between companies, universities, and schools to coordinate efforts.
- Get inspiration for activities to undertake in your region to increase the number of IT graduates
- Develop a network of like-minded people to help support creating and advancing collaborative networks in regions throughout the Midwest.

HISTORY OF IT EMPLOYMENT

As companies increasingly face problems finding sufficient numbers of skilled IT workers, the lack of female participation in the IT workforce becomes an obvious place to focus attention (Kiely et. al 2019). Figure 1 shows that the number of degrees conferred has increased significantly since the 1970s. However, whereas the number of women earning degrees has remained relatively steady since 1982-83, ranging between about 7,000 and 15,000 degrees per year, the number of degrees conferred to men has vastly increased during that same period from 20,000 to 57,000. So, while the total number of degrees has increased significantly to meet the demand for IT professionals, the demand has been met almost exclusively by men. The percentage of computer and information science degrees conferred to women topped out at 37.1% in 1983-84 and has steadily declined since then, until it settled around 18% in 2006-07.

At the same time, demand for IT employees has increased significantly. A study in 2015 conducted in Northeast Wisconsin predicted a talent gap of 3,000 IT workers in this one region. Similar results have been reported from other parts of the country and the world.

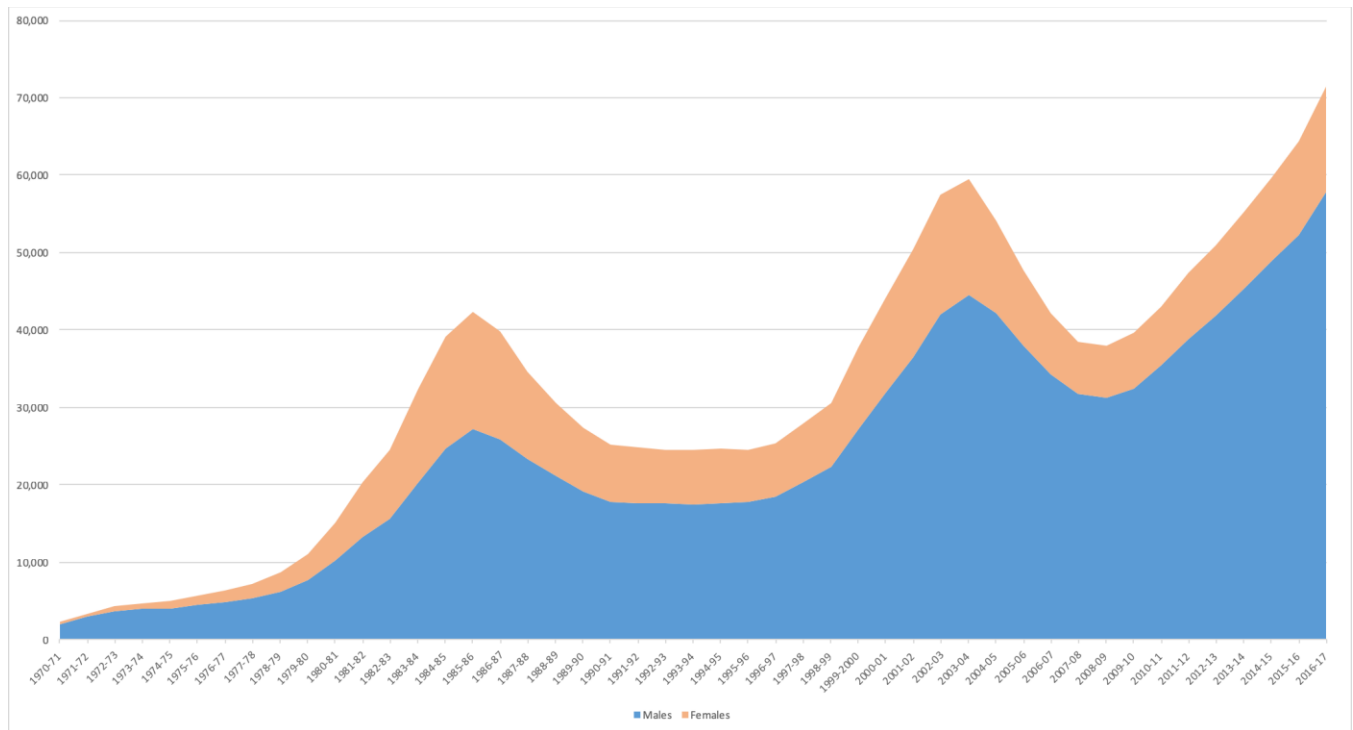


Figure 1: Number of Bachelor degrees in computer and information sciences conferred by gender - 1970-2017. Source: National Center for Education Statistics - https://nces.ed.gov/programs/digest/d18/tables/dt18_325.35.asp

As an interesting thought experiment, if we were able to return to the previous high point of 37% female degrees, the total number of CS and IS graduates would increase from about 71,000 in 2016-17 to about 91,000, representing an increase of about 22% in the total number of graduates. This would go a long way towards solving the IT talent shortage, but how realistic is it to achieve this strategy?

THEORETICAL BACKGROUND

Collaboration Networks

Researchers have identified an emergent collaboration maturity model (Morgan, 2013 & Schilling, 2015) for describing stages that for a collaboration ecosystem progression. This maturity model, shown in Figure 2, offers a historic context and future path to addressing the talent-pipeline challenge at a regional level.

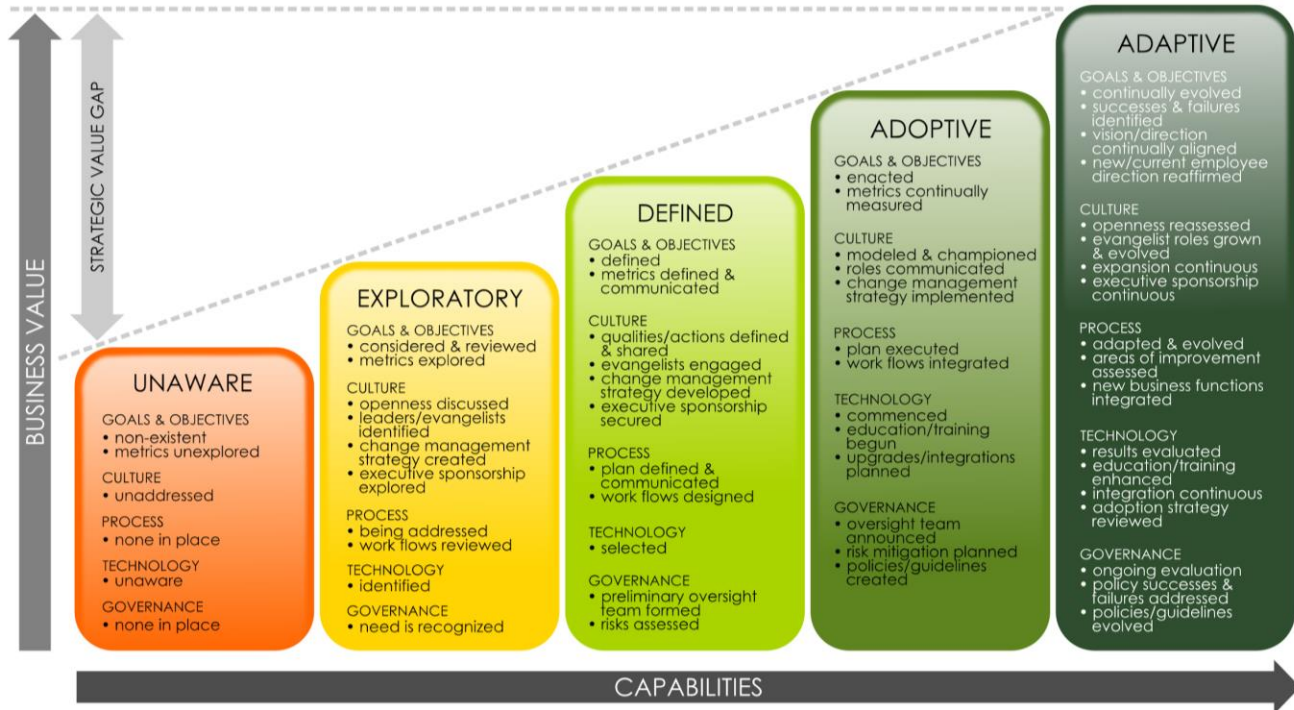


Figure 2 - Emergent Collaboration Maturity Model. Source: Morgan, 2013.

In Northeast Wisconsin, over the past several years, the need for an increased number of technology-educated and technology-trained employees has been recognized. Several organizations started to explore this issue. There wasn't a central hub for this developing network and activities were not well coordinated.

Through the formation of the formal NEW IT Alliance with a dedicated full-time director, the region has been able to move up the levels of maturity to currently about the Defined level. The NEW IT Alliance now plays a central role in coordinating a number of activities as well as being a central hub for information about all the events in the region through a website, monthly newsletter, and robust social media presence.

Innovation Outcomes

Schilling (2015) identified the relationship between a technology shock, alliance formation, collaboration network and the resulting innovation outcomes (Figure 3).

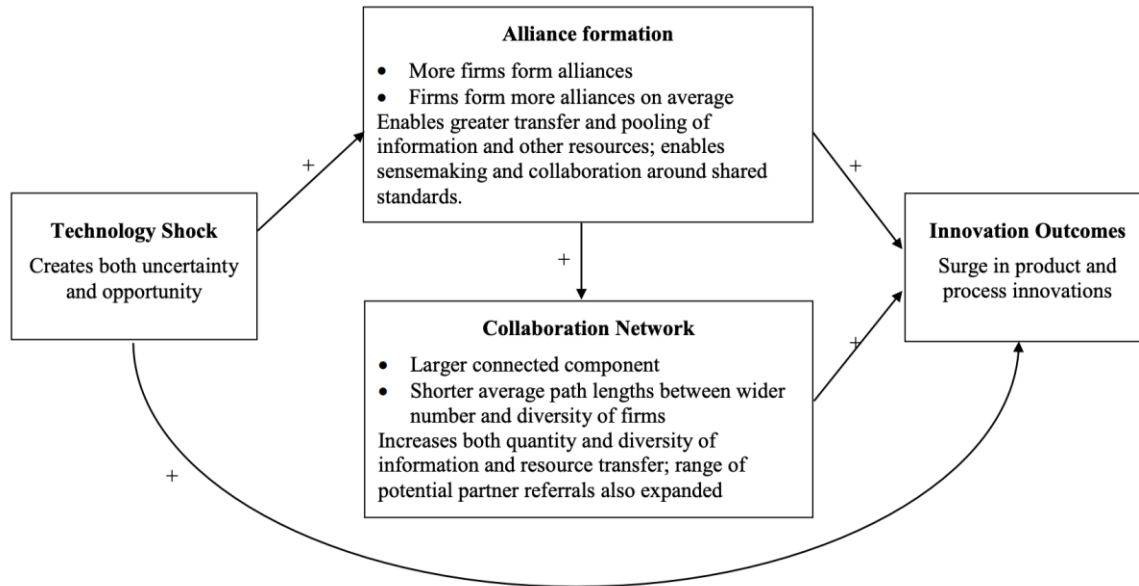


Figure 3 - Technology shocks, technological collaboration, and innovation outcomes (Schilling, 2015).

In Northeast Wisconsin, the trigger event was the exponential growth of job demand. We have already seen the development of a collaboration network and the formation of an alliance (NEW IT Alliance). We would expect to see an increase in innovative outcomes. Ultimately, we will propose a model as shown in Figure 4 where the Expected Innovation Outcomes includes both an increase in the number of IT talent available as well as companies actually producing new innovative products and services from having access to a larger and more diverse talent pool.

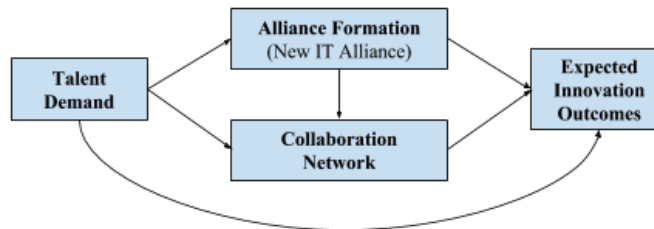


Figure 4 - Proposed Expected Outcomes Model

PROPOSED DISCUSSION QUESTIONS

Small groups will be formed. Each group will be assigned a question to discuss. Following discussion, each group will report-out their findings to the larger group. Discussion questions include:

1. What’s the interplay between collaborative networks, formal alliances, and the maturity of both?
 - a. Can an alliance be formed without a certain level of regional collaboration already in place?
 - b. Are regional collaborative efforts strengthened through a formal alliance?
 - c. Who are key players?
2. What types of activities aimed at increasing the number of graduates are more likely to lead to evening out the gender gap?
 - a. Activities aimed at girls-only vs. co-ed
 - b. In-school vs. out-of-school
 - c. Camps vs classes
 - d. K-12 vs. College level
3. How to measure the effect of activities?

Finally, each individual will be asked to reflect on the following two questions:

1. How can you contribute to a network in your area?
2. How can we continue our work here today to build a larger midwest-based network?

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