

Thesis Project Portfolio

Developing a Project Management Tool for Network Migration to Improve Transparency between Enterprises and Network Experts

(Technical Report)

Reducing the Mobile Internet Gender Gap for Women in Rural Bangladesh

(STS Research Paper)

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Sociotechnical Synthesis

Remote working as well as expanding use of technology and the internet by companies has caused a need for increased network management and maintenance. Traditional management of networks uses a hub and spoke model non-automated version of Domain Name System, Dynamic Host Configuration Protocol, and IP Address Management, collectively known as DDI, as a management system. For large companies that are growing at increased rates, this traditional approach has become inefficient and increasingly more difficult. Small and medium sized companies do not have the resources or employee expertise to properly implement and manage an on-premise DDI system themselves. For any type of enterprise that has DDI management product, using a cloud-managed solution allows the resources to be centrally administered and enterprises can deploy exactly what they need when and where they want.

Migrating an enterprise network DDI management system to a cloud-based platform can help a company realize the benefits of increased automation, security, scalability, and usability. However, properly completing the migration can be tedious and time-consuming, and requires an experienced network engineer. Since cloud-based migration is only completed once, companies of all sizes opt to hire a professional network engineer as a consultant to gather all the details of the network and the data needed to successfully migrate to the cloud-based system. During the migration process, companies often face communication challenges with the hired consultant. The technical portion of this paper describes the design of a project management tool for cloud network migration to be used as an interface between the enterprise and consulting network engineer. Its design was based upon an extensive evaluation of information and functional requirements, and the establishment of the user flow. The design of the user interfaces implements three novel features: a task-based structure that centralizes resources, a graphical

map for evaluating the status of dependent tasks, and embedded learning resources for furthering knowledge of networking. In this way, the design of the interface seeks to effectively bridge gaps in communication between enterprises and network engineers.

As seen with the expansion of DDI management, the mobile internet has become increasingly global in its accessibility and affordability. The socio-technical portion of this paper explores how the expansion of the mobile internet has unequally benefitted males in low-and-middle-income countries (LMICs), specifically rural Bangladesh. In rural Bangladesh, the ability of women to access the internet, as well as maintain their personal privacy and safety, is significantly more difficult than their male counterparts. As a historically patriarchal and Muslim country, Bangladesh's social norms have led to gender inequality throughout its communities. Sociocultural norms have led to men exercising near-exclusive control of a family's property, including phones, computers, and any other technology in the household. Coupled with the patriarchal control men exert over women in these communities, access to technology and the mobile internet by women in rural Bangladesh, without the permission of a male, has remained nearly impossible.

I am exploring the current state of patriarchal norms in rural Bangladesh and how they impact the state of internet access, privacy, and safety for women in those communities. Before providing recommendations that address the challenges posed by the prevailing sociocultural characteristics in rural Bangladesh, an understanding of the region's existing gender gap in internet accessibility is required. Part of this understanding is identifying the network of relevant actors within rural Bangladesh and the manner through which their interactions inhibit women's access to the mobile internet. The actors include daughters, wives, husbands, mothers-in-law, and women whose marriages have ended by widowhood or divorce. I then evaluate women's

mobile internet use in rural Bangladesh in light of the lens of the local actors and the effect that the network of these actors has had in leading to the mobile internet gender gap.

The idea of a feminist rebellion and changing the social structure of rural Bangladesh is inherently a Western ideological fixture, and not something the women in Bangladesh desire. The societal burdens I discuss that these women endure do not have a simple fix that providing technology will solve. However, the goal of this paper is to bring forward details of the relationships between actors in rural Bangladesh to highlight how choices made and the structure of the relationships impact the mobile internet gender gap. Overall, the importance of closing the mobile internet gender gap in rural Bangladesh, as well as across the world, continues to grow as the opportunities and resources that come with the internet continue to expand.