Gendered Gatekeeping Dynamics and ICT: Sustaining Segregation through Digital Proxy and Surveillance in a Saudi University

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Abstract
This paper aims to attend to the role of information and communication technology (ICT) in organizational social and cultural issues. The study explores ICT gatekeeping dynamics, and does this in the context of gender-segregation in Saudi Arabia, and the current marginalization of the female workforce. The physical separation of men and women at work, and the utilization of ICT by competing groups to promote integrated practices provide an opportunity to understand power dynamics as enabled by digital technologies. Through empirical case analysis of an Oracle task management system, the study presents a number of findings emerging from the segregated context related to technology use. These findings are particularly relevant for network gatekeeping studies, and consist of identifying two ICT gatekeeping mechanisms (proxy and surveillance), and two types of change mechanisms (formative and dismantling). In addition to exploring the technological aspects of ICT use in segregated work, the study also attempts to document and evaluate some of the existing practices in terms of progressive change. The multi-layered male hegemony in Saudi, as imposed by governmental, cultural, and religious dominion, and the paradoxes arising from technology use that promotes female inclusion while simultaneously keeping segregation intact, makes this an issue riddled with extreme complexity. This study departs from attempts to classify technology as either a means of female emancipation or subjugation. Instead, by providing glimpses from a diverse cultural setting, the study highlights the inevitability of both enablement and constraint in technology use.

Keywords: Gatekeeping; Groupware; Technology; Gender; Segregation; Management

Introduction
The social consequences of Information and Communication Technology (ICT) are perhaps one of the most significant markers of our time. In the arena of societal challenges, technical innovation has become a precursor to change initiatives led by governments, organizations, and special interest groups. Middle Eastern and Arab countries are certainly not foreign to these effects. In the past decade alone, these countries have become frontrunners in reaping the benefits of technology, markedly in the democratization realm by increasing the influence of the public sphere, and as implicated in movements that advocate cultural progression particularly in relation to gender politics [1,2].

One arena in which technology has become influential is facilitating collaboration among segregated genders in the workplace. In Saudi Arabia, these practices began to transpire after the introduction of Internet and networking technologies and the gradual dispersal of ICTs. Today, ICTs have become integral to segregated work in the country, and are used to alleviate the complications of separate work environments, through inducing interactions between genders via email, groupware, video-conferencing, and instant messaging.

Among Middle East and Islamic countries, Saudi enforces gender-segregation in its strictest form, with the scope of it extending to all aspects of social life, in government, educational institutions, and work organizations [3]. For Saudi workers, the complications that result from distributed work environments and the physical separation from one’s co-workers is undoubtedly felt by both sexes [4], but this has particularly undesired repercussions on female workers. The reason for this can be found in the cultural roots of segregation. State imposed separation of genders is based on extremely conservative interpretations of Islamic doctrines, which dictate that women should not be seen by, or interact with, men other than close relatives. Any interaction that does occur is done from behind religious attire for women, usually a veil and face cover. Segregation is seen to protect women, and is accepted by a large sector of the population, even the less conservative, as it is considered just as much a cultural necessity as it is a religious one. Consequently, the need to veil women has led to female isolation. ‘Saudi society is divided into public and private worlds, men being concerned with the outdoor realm and women with what happens indoors’[5].

In the work field, the isolation of women due to segregation has led to limitations related to job opportunities and a marginalization of the female workforce [6]. The reason for this is that isolation is coupled with institutionalized female subordination, in both the legislative and organisational capacity. For female workers, this means that administrative hierarchies are inherently hegemonic and exclusionary, leaving women constantly under the authority of their male counterparts, and preventing them from reaching positions of power. Furthermore, and what makes the ‘issue of women’ a truly critical problem that has perplexed activists for decades, is its permanent entanglement in the socio-political tug of war between conservatives and liberals in the country.

In terms of previous studies on segregated work, the primary focus has been on the enabling capabilities of technology, and ICT’s potential to equalize the playing field for women [7-9]. This optimism is not unwarranted given the magnitude of possibilities that could emerge with the advent of powerful new ICTs. Yet the ways in which technology can be used to perpetuate existing practices and hinder...
progressive change must also be considered. In the case of Saudi, only recently have there been studies examining the social construction of new technologies that are designed to emulate the cultural norms of gender-segregation, but in virtual environments [10]. The issue is deserving of further research, and is explored here empirically to document and exemplify instances of this type of social construction.

Accordingly, the main objective of the study is to investigate the use of ICTs among workers in Saudi higher education organisations in order to understand changes in work practices among genders in segregated environments. This investigation also examines the role of technology in change processes, and how this relates to both the progression and/or regression of segregated practices. For this purpose, this paper presents a single case from a larger qualitative study on ICT in Saudi segregated work. The chosen case examines an Oracle task management system designed to foster collaboration between male and female workers, and its subsequent modification to strengthen segregated norms. The case also exemplifies the use of groupware, such as Oracle, to establish network gatekeeping mechanisms, and how this can be utilized by managers to monitor and control workers.

**Background: Gender-Segregated Work and ICT**

The Saudi context provides a case for examining culturally diverse forms of mediated communication in the workplace. In Saudi, ICTs are now used to achieve easily accessible and efficient modes of work in segregated environments. The lines of communication between genders have been established for over 3 decades through other forms of mediation, such as letters, telephones, faxes, and closed circuit television (CCTV). However, the communication provided by ICTs has been found to be superior to these mediums, facilitating distinctive spaces of interaction that have resulted in new modes of behaviour which can challenge existing norms.

In the Saudi workplace, gender-segregation is practiced due to the mixture of cultural and religious norms previously mentioned. Women and men work from separate facilities, with administrations typically set up to consist of two branches. Organisational structures in Saudi are hegemonic, with women holding a subordinate position to men. Ironically, this entails a high degree of coordination between segregated genders, and necessitates mediated communication.

Changes in communication started mainly with the advent of the Internet in the late '90s, and many saw this as a start of a new era in which technology would bridge the separation between genders in both the public and private spheres [8]. Since then, workers have developed ICT practices to alleviate the complications of segregation. Yet some of these uses may still be seen to conflict with Saudi cultural values. What is termed ‘gender-mixing’, i.e., face-to-face exchanges between unrelated genders, is considered taboo, especially if mixing is one-on-one or unmonitored. Therefore, any communication leading to this is generally distrusted and considered inappropriate.

To better understand the various dispositions regarding ICT use in segregated work, and the role of cultural factors, it is useful to turn to the socio-cognitive literature on schemas or frames. Schemas are a common set of beliefs and assumptions, held by a specific group to guide to the socio-cognitive literature on schemas or frames. Schemas are a common set of beliefs and assumptions, held by a specific group to guide social interactions [11]. The examination of schemas has been used in IS studies to provide valuable insights into the usage and interpretation of technologies within a specific context [12]. Here, it provides a backdrop of the Saudi culture, and has been instrumental in organising the findings of this study.

From the case study, the primary schemata guiding technology usage was found to be ideologically/culturally rooted. These schemata reflect the general ideologies prevailing in Saudi, and represent widely held classifications of cultural views: conservative, moderate and liberal. Conservatives adhere to extreme religious doctrines that oppose gender mixing, and dictate that communication is carried out by formal methods alone. The moderates may have some reservations about ICTs, but pragmatically, will still use them if they consider this beneficial for their work. In their view, genders can communicate with any medium, as long as this remains culturally appropriate. As for the liberals, this group encourages communication and interpersonal relations between genders, and promotes using a wide range of mediums. Liberals are the change advocates and the technology enthusiasts.

The Saudi context has been invaluable for this cultural study, as it provides an opportunity to understand the technology practices of a diverse culture and examine unexplored aspects of a specific technology. The case selected for this paper has uncovered a number of findings relating to gatekeeping mechanisms and ICT. Therefore, before outlining the case, it is useful to provide some background on the concept of gatekeeping in the following section.

**Network Gatekeeping**

Gatekeeping in the IT context, or Network Gatekeeping, is understood here based on the theoretical framework proposed by Barzilai-Nahon [13,14]. She defines Gatekeeping as ‘the process of controlling information as it moves through a gate or filter… and is associated with exercising different types of power’ [14]. Her framework provides a comprehensive vocabulary for understanding gatekeeping, and makes an important distinction between two key constructs: gatekeepers and gatekeeping mechanisms. A gatekeeper is defined as an entity that carries out gatekeeping through a gatekeeping mechanism, the mechanism being a ‘tool, technology, or methodology’ [13]. In addition, the framework critically examines gatekeeping rationales from past literature, providing a typology for the motivations that underlie a gatekeeping dynamic, i.e., the purpose for instigating a gate.

The observations from the case study regarding ICT gatekeeping and gender-segregated work can add new insights to the literature on network gatekeeping. At the onset of this research, there were strong assumptions that in segregated work, IT served mainly as a bridge connecting workers, and facilitating unrestricted information exchange and collaboration. What has emerged from the empirical data has pointed to other uses of IT, specifically for gatekeeping: to filter, monitor and circumscribe gender interactions. The dynamic is not new to the Saudi segregated context, and has existed prior to the advent of ICTs, often being instigated as a result of liaising between male and female members of opposing branches who are in positions of authority. Conventionally, heads of counterpart branches (male and female deans, supervisors, front line managers, etc.) form an alliance in order to streamline work between branches. Through liaising, these individuals/gatekeepers come to represent their branch, and become responsible for controlling information passed on to and from the other side. For female gatekeepers in particular, this is (in most cases) an empowering position, especially with regard to the decision making process. This is because a female gatekeeper is often the only female who interacts with the male superiors, and therefore has a monopoly over framing issues and passing on information to and from her branch. More recently, the implementation of new forms of ICT has provided mechanisms to create or alter gatekeeping dynamics, as will be shown in the following case.
**Methods**

Research for an extensive study on segregated work was conducted in a higher education university in Saudi Arabia. The research site provided an opportunity to examine the practices of gender-segregated workers that collaborate solely through mediated communication. Data collection was carried out through ethnographic methods, namely interviews and non-participant observation. Fieldwork was carried out over a 1-year period by a female Saudi researcher who has over 8 years' work experience at the university under study, and has held administrative roles including supervisor of the ITC (female branch) for 5 years. This experience provides necessary insights into the research context, such as first-hand accounts of the events that took place during the implementation of the technologies under study. The researcher was on an extended leave from her job post at the university during the time fieldwork was conducted, and was identified as a visiting researcher. As such, she took a peripheral membership role, and did not take part in any of the activities observed, while still having an insider's perspective on working in a segregated environment [15].

Participants for the study ranged from deans, heads of administrations/academic departments, managers, academic staff, and employees. Participants were enlisted using a snowball sampling strategy. Given that the fieldworker is female, observation sessions were restricted to the female campus, wherein women were observed collaborating with the male side through mediated communication and ICT collaborative tools. Observation was over, and all participants agreed to, and were aware when they were being observed. The researcher has taken ethical considerations into account to ensure the anonymity of participants. Interviews were semi-structured, and sought to uncover the social dynamics underlying ICT collaboration, with a specific focus on cultural attitudes regarding gender. Overall, a total of 37 interviews and 9 observations were conducted, each lasting between 1-2 hours. Observations were recorded by note-taking. Interviews were audio recorded, transcribed, and translated from Arabic to English by the researcher.

From the data, 9 cases of mixed-gender teams were examined, one of which is used to illustrate the findings of the current study on gender gatekeeping. Analysis was conducted in 2 stages. First, the interview and observation data was analysed to understand the technologies in practice for each team, with a focus on the purpose of collaboration, capabilities/constraints, ideological schemas, and change in comparison with previous practices. In this stage, the ICTs and applications used by each team were identified. From the work teams examined, 3 different collaborative technologies were found, including the Oracle task management system outlined below. In the second stage of analysis, data was re-examined to arrive at a set of recurring concepts and themes, derived either from the literature or from the data. Data was then codified by the researcher to develop descriptive accounts for, and compare between, each similar set of technologies in practice [16]. A total of 20 codes and 102 related quotes resulted from the data analysis of the overall dataset. Of these, 4 codes were generated specifically from the Oracle case with 34 related quotes. For the analysis, Anthony Giddens [17] theory of structuration was identified as an appropriate lens, with the IS specific model, the practice lens by Orlikowski [18], guiding the analysis on technology practices and organisational change. This literature was reviewed prior to the fieldwork, and continued to be examined throughout the research as data collection and analysis indicated its theoretical relevance.

**The Empirical Case: Oracle Task Management System**

The Oracle case involves the work practices in one of the university’s main deanships, which is referred to here as deanship B. Deanship B can be described as centralized in its management, with strictly defined rules for members contacting each other. The deanship is comprised of male/female counterpart branches, with each branch consisting of a main office and three functional units. Each main office has supervisors in charge of all units, and each unit is headed by a unit manager. For this case, the researcher interviewed 2 female supervisors, 5 unit managers (2 male, 3 female), and 3 unit workers (2 male, 1 female).

Despite being corresponding female/male units, management has discouraged members contacting the other side. Therefore, collaboration between genders is kept to a minimum. A number of reasons have been presented for this ‘limited communication between genders’ rule. One was given by the female supervisor, who stated that she had banned all contact between her female staff and the male side. She explained that in the past, excessive contact had resulted in problems. For example, she relayed an incident in which some of the male employees had received raises to their salary while the females had not. One of the men then contacted a female colleague and informed her of this, encouraging her and the rest of the women to speak up and confront management with the differences in salaries. This had caused conflicts between management and staff, and led the women to lose trust in their superiors. Therefore, the female supervisor was of the opinion that controlling communication would help minimize these types of conflicts in the future.

The female unit managers were displeased with this ‘limited communication’ rule. They argued that collaborating was crucial to their work, especially since the male branch was considered headquarters, with much of the decisions and new projects originating from there. The female unit managers blamed the male side for this, and felt that they were not really concerned about what happened in the female branch. They explained that the men usually ignored their email requests and telephone calls, except in urgent situations. Although the decision to limit communication was issued by both male and female supervisors, the female unit managers were oblivious to this, and resented the male supervisors for the decision. They also expressed disappointment with their male colleagues for ‘taking the rule too seriously’, instead of ignoring or challenging it as they wished to do.

The male department presented a different perspective. The unit managers felt that the two branches were independent of each other, and that there was no need for communication between them. They felt the women were competent, with plenty of experience in the field, and were therefore capable of running things on their own. The men also stressed that, contrary to what the women have reported, there was absolutely no contact between the two sides.

From the interviews, it was found that an Oracle module was developed specifically for the deanship to create a task management system that could support collaboration between the two sides. The system was implemented with the purpose of tracking service requests received by the deanship, which are to be carried out by the three units. Most importantly, the system enables management to monitor work that requires coordination between male and female units. Each service request is entered into a recording sheet, and continually updated until it can be marked ‘task complete’. The recording sheet includes drop down menus that detail information about the department requesting the service, employees delegated the task, as well as important dates and deadlines. However, the sheet leaves little space for comments or logging.
When asked about the Oracle system, a female employee reported she was quite happy to have this link to the male side:

‘At least now we have this link with the men, this point of reference, to find out what’s been accomplished regarding specific services we’ve requested. Before, we’d have to keep checking up with them, and reaching them by email or telephone was very difficult. This way we don’t have to keep asking, have you finished this request? What have you done regarding so and so?’.

On the negative side, she explained that the limited space for comments meant there was minimal interaction between the two sides. Also, more often than not, she had no idea who was reading her entries or filling in the sheets on the male side. Yet she still felt this was an improvement to the situation prior to the use of the system. The head female supervisor—who had authorised the ‘no communication rule’—was also pleased with the system. She explained that it was mainly for monitoring purposes. The male supervisor could now be kept up to date about the females’ work simply by logging on to Oracle. To her, this also meant that there was an increase in her team’s visibility, as their hard work and efforts could now be ‘observed’ by the male supervisor. When questioned about her reasons for restricting communication between genders, she stressed that this had nothing to do with negative cultural implications:

‘It’s just not necessary. The girls have absolutely no need to contact the men. They have me here, and I’m authorised to contact the male supervisor to relay any problems. Everything else is handled through the system. Why would there be any need to contact them?’.

Thus, the general supervisors expressed extreme interest in limiting direct communication between genders, and the system was instrumental in maintaining separation by gatekeeping, and rendering direct contact unnecessary. The interviews also uncovered other instances of ICT collaboration, such as the use of remote networking tools, but this was only acknowledged by females. The male employees denied this claim, insisting that work was coordinated solely through the branch supervisors, who serve as middle managers between the two sides. These conflicting accounts may be an indication that collaboration did occur outside the Oracle system, but was later denied by the men out of fear from management.

Analysis: The Emergent Technology in Practice and Changes to Work Norms

The technology used for mixed-gender collaboration at Deanship B is the Oracle task management system. Through the system, the top managers enacted a gatekeeping/monitoring technology-in-practice. A main function of the deanship is to provide services for all university divisions. These services are authorised and fulfilled through the male branch. Therefore, requests from the female side require extensive coordination with male headquarters. At the time of implementation, and to complicate matters further, the deanship had recently applied rules to limit communication between genders in order to avoid managerial conflicts, and maximise control over information exchange between branches. The technology examined here, the Oracle module, was designed by management with an unprofessed role in mind: as a provision to ensure employees abide by the ‘no contact between genders’ rule. Hence, after distributing Oracle, management made it clear that communication was permitted only through the system. In practice, the technology aided in this by acting as a gatekeeper, and providing an interaction space that could be monitored, and in which both sides coordinate and work on joint tasks without the need for direct communication. In other words, the system allowed management to maintain integrated, yet segregated practices between branches. It can be said that the use of the Oracle task tracking system followed a script devised by both male and female managers. This script was intended to ensure workers compliance with the ‘no communication between genders’ rule.

The implementation of the Oracle task management system has resulted in significant changes in practices and gender collaboration at deanship B. However, it would be a mistake to attribute these changes solely to system use. In this case, the role of management, particularly the two chief supervisors/gatekeepers, played a pivotal role in change processes. Before implementing the Oracle system, work at the deanship had a flexible hierarchy, with female unit managers accountable to corresponding male managers on the other side. During this time, genders took part in different forms of cooperative work together, and communicated widely through various communication mediums and ICTs. The introduction of the Oracle system was driven by a change in managerial attitudes, and a shift towards centralization. The two chief supervisors (male and female) had come to the conclusion that excessive interaction between branches was the reason behind employee backlashes and conflicts. Rules to control future interactions were put into place. In addition to these rules, supervisors designed the Oracle module with a specific intent in mind, to limit the need for direct communication between genders. To enact this technology-in-practice, managers drew on technical knowledge-their own as well as IT specialists-to add/customize Oracle modules, and their knowledge regarding task tracking and archiving systems. They also drew on the technological facilities available, namely the deanship’s customizable version of Oracle. The use of the task tracking system had a number of consequences for management, both intended and unintended. Processual consequences include task tracking functions, as well as workflow monitoring that enabled managers to stay in the loop about workers’ progress. Considerable technological changes to the Oracle system were also discerned. A module was created to organise collaboration between units, consisting of task recording sheets, functions to track and alert workers of urgent or delayed tasks, as well as message logging. Use of the system also led to an expansion of the deanship’s data archives, detailing completed tasks and summary reports of any problems encountered. With the use of Oracle, a number of significant structural changes have also been found. The electronic monitoring of tasks made it possible to streamline male supervision of the female side. Thus, the supervisory role of male unit managers was terminated, leaving all female managers accountable solely to the top male supervisor who was now monitoring the system. Hence, the previously flexible gender hierarchy has now been transformed into a centralized management structure.

Gendered Gatekeeping Dynamics and Managerial Control

To elaborate on the dynamics found in segregated work, the two constructs of gatekeeping rationales and gatekeeping mechanisms are used based on Barzilai-Nahon’s [13,14] network gatekeeping framework. Table 1 provides a description of the framework’s specific typologies that are relevant here, and which have been augmented based on the previous case analysis to include two additional mechanisms: Proxy and Surveillance. Proxy is considered a delegation mechanism in which technology acts as a stand in and interceptor for direct interactions between the gated. Surveillance, on the other hand, not only involves monitoring the gated to control information, but depends on the gated being aware of this surveillance, and consequently adhering
to authoritative rules [19,20]. Also, an overarching distinction has been found with regards to the role ICTs play in network gatekeeping. Findings from the case indicate two types of change mechanisms: formative or dismantling. A formative mechanism is a function served by the technology that acts to create and sustain the gatekeeping dynamics, whereas a dismantling mechanism is one that causes the collapse of an existing gatekeeping structure (Table 1).

Among the technologies examined in the extensive case study, the Oracle system was utilized to create the strongest gatekeeping network. The gatekeepers in this case, the male and female supervisors, were able to circumscribe interactions between genders by mandating the use of the task tracking system and barring all other forms of interaction. The rationales for gatekeeping are numerous here. Most importantly, the dynamic prevents genders from gaining direct access to each other, while simultaneously allowing gatekeepers to serve as the primary link between their internal branch and the corresponding one. The gate also protects information deemed sensitive by the gatekeepers, such as the information regarding employee salaries that led to conflicts arising. Finally, this case exemplifies what has been termed agenda setting and shaping of social behaviour [21]. The two gatekeepers, upon first being assigned to their posts as supervisors, entered into an administration that placed no restrictions on gender collaboration, and was comprised of decentralized units freely interacting amongst themselves. This unencumbered structure was seen as a threat to supervisor authority. Thus, the need for changes to segregated work arrangements arose. By implementing new policies, and devising a system to control gender interactions, the gatekeepers were able to script the acceptable forms of collaboration in their units. Of course devising a script and mandating system use does not necessarily mean that employees would comply (as they did in deanship B), as there is always the possibility of resistance in IS implementations. Still, in this case, employees abided and the result was a transformation in communication and behaviour.

In the Oracle technology-in-practice, IT enabled gatekeeping through four mechanisms. It served as a technological infrastructure for mediation between gatekeepers and the gated. The complete scripting of the task tracking procedures via the recording sheets prescribes acceptable forms of gender interactions, and in this sense Oracle serves as a regulation mechanism for behaviour. The comprehensiveness of this script means that almost all the collaborative needs of the employees are contained within the system. Thus, Oracle’s function is not limited to mediation, but also acts as a stand-in for gender interactions, which flags new tasks for workers, delegates, and reminds of unfinished tasks. Functioning as a proxy, the system renders communication between genders (the gated) almost unnecessary, thereby providing an additional mechanism to prevent interaction between the gated. Lastly, the capacity to monitor the flow of work provides gatekeepers with a tool that surreptitiously acts to regulate and control behaviour. By informing users that all interactions are surveilled, the system administrators are able to achieve a Panopticon effect [19,22]. This means that the mere awareness of surveillance creates compliance to interaction rules, and the desired behaviour is internalized by the gated. Together, the 4 mechanisms used in the Oracle case have aided the gatekeepers in creating and maintaining a strong gatekeeping dynamic. Table 2 summarises the main points of the previous discussion, highlighting the gatekeeping rationale, ICT gatekeeping mechanisms, and change induced by the Oracle technology-in-practice (Table 2).

**Conclusion**

The scope of ICT influences on cultural factors in the workplace still remains a relatively unexplored topic of research. This study addresses the issue by investigating ICT use in the Saudi gender-segregated context, and attempts to diverge from past studies by looking into counter-progressive practices. The empirical exemplification has revealed ICT practices intended to maximize managerial control, which coincidently reinforce gender segregation and actually contribute to further marginalisation of women. The study also presents a number of findings on the use of groupware to create gatekeeping dynamics, and identifies two ICT gatekeeping mechanisms: proxy and surveillance. It is hoped that by presenting this narrative, discussions will continue to
ensue on ICT use in Saudi segregated work, as well as other culturally diverse technology practices.

References