Organizational, economic or cultural? Firm-side barriers to employing women in Saudi Arabia ☆

Claudia Eger [a], Thiemo Fetzer [b], Jennifer Peck [c,*], Saleh Alodayni [d]

[a] Department of Management, Politics and Philosophy, Copenhagen Business School, Denmark
[b] Department of Economics, University of Warwick, United Kingdom
[c] Department of Economics, Swarthmore College, United States
[d] Department of Economics, College of Business Administration, King Saud University, Saudi Arabia

ARTICLE INFO

ABSTRACT

All-male firms are common around the world, particularly in the Middle East, North Africa, and South Asia, where local norms often favor gender segregation. The integration of women into these previously all-male firms is an important driver of growth in economic opportunity for women. However, the determinants of firm integration decisions are complex and engage a broad set of issues including leadership priorities and beliefs, physical workspace constraints, organizational structure, regulatory compliance, and labor costs. We systematically analyze the results of a survey of firm owners and hiring managers in Saudi Arabia on the barriers to integrating women into the workplace. We show that personal opinions and manager demographics are of core importance: the features that are best able to identify firms that employ women are the respondent's perceptions of women's personal qualities, the cultural appropriateness of professional tasks, and the respondent's own demographic characteristics. Other tangible costs or operational constraints to female hiring are second-order in a statistical sense. Firms that employ women are much more likely to view female employees favorably, and this seems to be the result of experience with women in the workplace rather than a manager's broad attitude toward employing women.

1. Introduction

All-male firms are common around the world, particularly in the Middle East and North Africa (MENA) and South Asia. In these regions, 48.1% and 49.9% of medium manufacturing firms (20–99 employees) and 22.7% and 28.6% of large manufacturing firms (100 + employees) are all male.[1] These all-male firms are more common than female employment rates would imply, and previous research suggests that this is due to *integration costs*: fixed, one-time costs associated with hiring women for the first time (Miller, Peck, & Seflek, 2022b). Barriers to hiring women may have signifi-

cant implications for female labor demand, and present a first-order constraint to increasing economic opportunity for women. Addressing these barriers is key to advancing gender equality in the labor market, where gaps in employment outcomes have been particularly persistent (Klasen, 2020).

There are many types of costs that firms may face when employing women for the first time (International Finance Corporation, 2013; World Bank, 2018). These include capital investments as well as organizational restructuring, learning by doing, and changes in corporate culture. Firms may face costs associated with learning to comply with gendered regulations around women's work (see for example Hyland, Djankov, & Goldberg, 2020; Islam, Muzi, & Amin, 2019). There may also be costs associated with accessing a new segment of the labor market: non-integrated firms may need to adapt their recruiting strategies and develop new HR policies to support an integrated workforce. Firms may also need to adjust their organizational structure in order to accommodate women. This could include restructuring tasks across job titles, adjusting working hours to comply with gendered regulations, or adjusting their targeted qualifications to include degrees and experience available to women. Integration costs appear to be particularly important in countries with strong

norms around gender mixing (Hyland et al., 2020). In these contexts there may also be costs associated with providing gender-separated physical workspaces as well as responding to the preferences of female staff. These factors all generate a set of costly investments that firms must undertake to gain the *ability* to hire and retain female workers. These costs create barriers to hiring (more) women for all-male firms but not (or to a much lesser extent) for firms that have already integrated.

In this paper, we examine firm-level integration in Saudi Arabia, a place where norms around gender segregation are particularly explicit and where women's employment has been historically very low. In this context, strong cultural preferences for gender segregation make navigating mixed-gender workplaces difficult for firms. Laws around women's employment and mixed-gender interactions have also created barriers to integration.[2] Since 2011, however, a slate of legal and social reforms have corresponded with remarkable growth in women's employment. Policy initiatives like the *Nitaqat* nationalization quotas yielded large increases in the Saudi private sector workforce, with significant employment effects for Saudi women (Peck, 2017). The Retail Employment Decrees and the *Hafiz* program have also drawn large numbers of women into the private sector (Evidence for Policy Design, 2015).[3] Updates to guardianship norms and a lifting of the female driving ban in 2018 have made women more mobile and increased access to public spaces (Embassy, 2019). As a result, Saudi firms have begun hiring women in unprecedented numbers over the last decade, with private sector female employment increasing from just 71,000 in mid-2011 to 592,000 by 2018. Much of this increase was driven by previously all-male firms hiring women for the first time (Miller et al., 2022b). Nonetheless, many firms face significant barriers to hiring women, and all-male firms are still very common: around 40% of Saudi private sector firms have no female employees.

There have been significant legal reforms around women's rights in the workplace over the period following our study. Between August 2019 and the end of 2020, legislative reforms significantly expanded women's mobility, increased access to public services, eliminated sectoral restrictions on women's work, allowed night shift work, prohibited dismissal of pregnant workers, criminalized sexual harassment and guaranteed equal pay and retirement benefits (World Bank, 2020; World Bank, 2021). The World Bank's *Women, Business and the Law* Index, which measures gender equality of legal rights related to work, increased Saudi Arabia's indicator from 25.6/100 in 2019 to 80/100 in 2021, one of the largest global increases over the period (World Bank, 2021). While the pace of legal reform has been remarkably fast, social norms tend to be slower to adjust (see for example Islam et al., 2019; Hyland, Islam, & Muzi, 2020). Gender norms also play a key role in shaping attitudes toward women's empowerment more broadly, especially with regards to access to employment (Eger, Miller, & Scarles, 2018; Eger, 2021).[4] Even with these recent legal updates, it is likely that barriers associated with social norms and cultural expectations will persist.

This study explores the main barriers to hiring women through a survey of owners and hiring managers in Riyadh, Saudi Arabia. The survey was designed based on the findings of extensive qualitative fieldwork and collected data on a variety of firm features and manager perceptions, including interest in hiring women, perceptions of women as employees, issues in recruiting and retention, and organizational strategies for integrated workplaces. Managers were also asked about the role of government in regulation and support for employing women. The survey instrument was developed around this broad employment journey and the various stages of the recruitment process.

There were many areas of consensus across surveyed firms, revealing both support for women's employment as well as a remarkably consistent reflection of prevailing gender norms. We find that almost all firms face significant workforce issues, and that many are interested in hiring (more) women. Firms were more or less evenly split on the overall costs of employing women on a per-worker basis: almost all firms agreed that wages were lower for female employees, but many also expected increased costs associated with childcare. Respondents were uniformly concerned about retention of female employees, and many expected that these workers were likely to be recruited away by other firms.

There was strong agreement across firms about what types of tasks were appropriate for female employees and what personal characteristics were important for women. These opinions were consistent with the cultural context, and while many tasks were considered acceptable most tasks that involved unrestricted gender-mixing were seen as inappropriate. Firms reported struggling to provide acceptable workspaces for their Saudi employees. Although fully gender-segregated workplaces had been a standard model in the past, most felt that complete gender segregation was neither necessary nor desirable. Firms appear to navigate the regulatory landscape around mixed-gender workspaces well. While integrated firms reported feeling somewhat burdened by workspace regulations, most reported that this did not present problems. Firms did not report an out-sized number of inspections (or indeed any fines) related to employing women.

We analyze the key differences between integrated and non-integrated firms in the survey data using a hands-off approach. Conceptually speaking, we want to assess to what extent the structure of the responses that we received from the respondents enable us to distinguish between those firms that employ women and those that do not. We find that the features that are best able to identify firms that employ women are measures of the respondent's perceptions of qualities or traits of women, the perceived cultural appropriateness of specific tasks to be performed by women, and the respondent's own demographics. Features that may more directly speak to the tangible costs to firms of employing women appear to have much weaker statistical power. Though this evidence is not causal, these patterns suggest a role for policy interventions aimed at alleviating or moderating some of the (potential) tangible female integration costs may be less effective in increasing female employment than interventions that shift the perceptions of (human resource) managers toward women or encourage demographic change in the management of companies.

In the rest of the paper, we first present the conceptual framework and associated literature (Section 2) and then describe the development of the survey and the data collection process (Section 3). We present some of the main results of the survey in Section 4, focusing on key areas of agreement across firms and outlining the scope for managers to navigate gender norms in the context of their own firms. Section 5 describes the algorithm we use to systematically identify the key patterns of responses that differentiate integrated and non-integrated firms. These results are discussed in Section 6, followed by the conclusion.

---

[2] In early 2019, for example, MLSD released a "Women in the Workplace" initiative providing a series of clarifications and updates to women's employment regulations, some of which presented new organizational barriers to employing women (Arab News, 2019). The initiative explicitly allowed mixed-gender work shifts only if at least two female employees were present. The regulation excluded women from jobs deemed dangerous, provided updated curfews for night work, and prohibited work at male-only facilities and in certain types of jobs (e.g. housekeeping) at mixed-gender facilities. The law further required that employers ensure female employees were comfortable in the workplace, provide separate cubicles for women if desired, provide separate toilet areas and prayer rooms for women, and provide adequate personal security for female workers.

[3] Though, as Elamin and Omair (2010) note, gender bias can increase when Saudi women compete for jobs against Saudi men rather than against expatriates.

[4] Evidence suggests that norms persist also in times of economic change (Luke & Munshi, 2011).

2. Conceptual framework and literature review

Different authors have called for a theorizing of equal opportunity in Muslim-majority countries (Hennekam, Ali, & Syed, 2018; Syed & Ali, 2019; Özbilgin, Syed, Ali, & Torunoglu, 2012). This requires both an engagement with the legal frameworks and organizational practices as well as the societal norms and values which, in turn, shape organizational outcomes. Özbilgin et al. (2012) focus on the international transfer of gender equality policies and practices in the context of Muslim-majority countries. They highlight the importance of obtaining empirical evidence to inform gender equality reforms at the local level. One of their key findings points to the fragmented nature of legal frameworks and organizational practice related to women's integration in employment, as well as the limited attention given to the importance of cultural transformations. Syed (2008, p. 141) argues "[b]ecause of a variety of interpretations and practices of the Sharia, we witness a conflict between legal instruments and religious customs and traditions, which culminates in the female disadvantage." Normative pressures have an impact on how employees behave in organizations and from this perspective, Islam provides a regulatory framework that transcends family and work relations (Syed & Ali, 2019). This does not preclude the varied meanings and interpretations of Islam across regions and confessional groups. Rather, it requires an openness to moral arguments derived from Islamic teachings and employee's way of understanding and practicing traditions and values (Syed & Ali, 2019).

The mapping of gender norms into individual attitudes, behaviors, and actions is a key area of study. Connell (1987) refers to the gender order to explain how gender norms and stereotypes become engrained in attitudes of what is perceived norm-conform versus transgressive behavior for women and men in society. Over time, the gender order becomes institutionalized through structural provisions expressed through policies related to the family and employment, which, in turn, mark gendered entry modes into jobs such as banking (Tienari, Quack, & Theobald, 2002). This has come to the fore through the norm of gender segregation, which has been practiced as an ideal form of space management across different countries in the MENA region (Syed, 2008). While change efforts within organizations are generally believed to be gender-neutral, these "often entail a redefinition of the gendered divisions of labour and assumptions about women's and men's work roles in the organization" (Tienari et al., 2002, p. 250). Institutionalized discriminatory practices start to be seen as normal and dissipated into organizational practice to ensure legitimacy, rather than organizational efficiency (Özbilgin et al., 2012). Recent reforms of the organizational workspace in Saudi Arabia have the potential to engender a reinterpretation of gendered divisions of labor, though this will also require accompanying changes in gender attitudes to pave the way for broader acceptance of changes in collective social arrangements.

This work adds to the broader literature on how social and cultural norms can constrain women's employment opportunities, particularly in countries with strong preferences for gender segregation (Jayachandran, 2021; Jayachandran, 2015; Nillesen, Grimm, Goedhuys, Reitmann, & Meysonnat, 2021; Seguino, 2011). There is considerable evidence on how gender norms shape labor supply (e.g., Fernandez & Fogli, 2009; Alesina, Giuliano, & Nunn, 2013; Fernandez, 2013; Ashraf, Bau, Nunn, & Voena, 2020; Dildar, 2015), and recent work on how these norms can affect labor demand (Miller et al., 2022b; Eger, 2021). In Saudi Arabia, Bursztyn, González, and Yanagizawa-Drott (2020) show that husbands underestimate the share of their peers that support women's formal employment; correcting these misperceptions leads to increased support for their own wives joining the labor force. LeRoux-Rutledge (2020) argues that traditional gender narratives

can be leveraged to advance women's empowerment. Dildar (2015), however, shows that patriarchal norms can have a significant negative effect on women's labor force participation in a study on female labor supply in Turkey. In Norway, Dahl, Kotsadam, and Rooth (2018) show that increased exposure to integrated workplaces can change gender attitudes and build support for mixed-gender teams. This study indicates that changing these perceptions can be materially important for increasing labor market opportunities for women, particularly for those in key gatekeeping positions.

The paper also relates to a small strand of literature across disciplines that has studied gender segregation in the workplace. While occupational gender segregation is very common globally (see for example Cohen, 2013; Ecklund, Lincoln, & Tansey, 2012; Cha, 2013; Levanon & Grusky, 2016; Skuratowicz & Hunter, 2004), physical segregation in the workplace is quite specific to the MENA region and has been the focus of mostly interdisciplinary work so far. Salem and Yount (2019) use semi-structured interviews in Qatar to explore attitudes toward employment, specifically those related to gender mixing in the workplace. The focus is primarily on understanding female labor supply decisions with the acceptability of gender mixing strongly depending on characteristics of the working woman, the characteristics of the male colleagues and the physical organization of the workplace. A key factor that induces women to seek to limit interactions with men is the overarching objective to protect their reputation, which is seen as critical to maintaining their families' support and their own marriageability.

Gender segregation and modesty have been discussed as central to the gender order and how work is organized in Muslim-majority countries, impacting on women's negotiation of work roles and identities (Özbilgin et al., 2012; Syed, 2008; Syed & Ali, 2019). Eger (2021) explores how, in the context of Morocco, women's access to employment is negotiated through an honor respect and shame continuum, which is premised upon a conceptualization of gender (in)equality based on respect that circumscribes individuals' agency. Eger (2021) further notes the limited attention that has been given to studying the interconnection between religious law and gender dynamics in organizations, supporting Van Buren et al.'s (2020) argument that religion is often perceived to be a taboo subject in organization studies. Metcalfe (2007) and Metcalfe (2008) use survey data and semi-structured interviews to qualify to what extent Islam has shaped gender and human resource management policies, suggesting that gender planning should be key to human resource development strategies in the region (Achoui, 2009; Metcalfe, 2011). Empirical data on this topic and analyses, although of central importance to policy development, are scarce. This study provides a unique insight into the features that distinguish firms that employ women relative to firms that do not. Moreover, limited attention has been paid to how this shapes managers and co-worker attitudes when working in mixed-gender settings. The arrangements that emerge from these settings shape organizational life and can function as "identity markers" (Elsbach, 2004), as well as a stratifying process (Wasserman & Frenkel, 2015), exposing the ways in which space becomes complicit in (re)producing power relations.

3. Survey design and data collection

3.1. Survey instrument development

The survey was designed based on the findings from fieldwork conducted in 2017 and 2018. This fieldwork consisted of both individual interviews and focus groups: researchers interviewed 54 managers and employees in 33 semi-structured interviews for approximately 75 min. These interviewees were selected by purpo-

sive sampling and snowballing techniques, with a focus mostly on firms that already had female employees. These interviews were bookended by two focus groups that occurred in 2017 and 2018. These groups were composed of 12 and 20 managers and were each approximately two hours long. Managers came from firms in a variety of sectors, with the first session focusing on medium and large firms and the second on SMEs. The content from the interviews and focus groups were subsequently analyzed using thematic analysis (King & Horrocks, 2010) and the findings were used to inform the construction of a comprehensive survey instrument. The survey was designed to capture the main themes and specific issues identified in this qualitative work. This responds to recent calls for combining different methods, including in-depth interviews and survey data analysis to advance policy-relevant research (de Haan, Dowie, & Mariara, 2020).

3.2. Survey data collection

The data for this project come from a survey of hiring managers and business owners of private sector firms in Riyadh. The survey instrument, made available through the replication archive, provides a set of questions governing various dimensions that may impact firm-level decisions to hire women. We collect data on a set of features, focusing on the managers' perceptions of the barriers to hiring women in their firm. Firms answered questions about their interest in hiring women, their impressions of women and men as employees, issues they faced in recruiting and retention, suitability of various workplace tasks and organizational strategies to navigate an integrated workplace. Firms were also asked about the role of the government and regulators, both in terms of support for integration and the potential for costly inspections and fines.[5] Nillesen et al. (2021) note the sensitive nature of collecting reliable survey data on gender norms and attitudes. They highlight that developing unambiguous questions is key to avoid erroneous interpretations when collecting data on gender attitudes. We took particular care in assessing the potential understanding and interpretations of the survey questions through testing the survey with organizational actors in two repeated rounds to further refine and improve the clarity of questions. Nevertheless, respondents might also feel uncomfortable when reporting on their own perceptions and experience of gender integration in their firms in view of existing laws or perceived social norms. Hence, we cannot rule out that we might face a certain degree of social desirability bias. However, the combination of the survey instrument with an in-depth qualitative study conducted prior to and forming the basis of the quantitative study increased our sensitivity to such likely biases and informed our iterative development of survey questions and the testing thereof.

The data collection was implemented between April and June 2019 by a professional survey firm that interviewed representatives from 410 firms in Riyadh.[6] The sample was constructed to include both all-male and integrated firms across four industries: manufacturing, construction, retail, and business services (banking, insurance, and financial services) and in three size categories: micro (1–9 employees), small (10–49 employees) and medium (50–499 employees).[7] The survey firm maintains a database of firms across Saudi Arabia, with 2,960 firms in our identified industry and size groups located in Riyadh. This sample was combined with the business directory from the Riyadh Chamber of Commerce to create a representative sample of Riyadh firms in these categories. Most participants (292) were randomly selected from this existing pooled database of firms, with the remainder selected using a snowball sampling technique.[8] Surveyors interviewed owners and managers in face to face appointments of 30 to 60 minutes using a computer-assisted personal interview technique. The survey instrument was available in both Arabic and English but almost all interviews were conducted in Arabic. The surveyor collected business cards from all interviewees and provided these (along with interview geolocations) to the research team. Participants were compensated with a gift card worth approximately 35 USD for completing the survey.

3.3. Summary statistics

Table 1 presents some summary statistics and simple tabulations of the survey sample. Because the sample was constructed to represent both integrated and non-integrated employers, firms with female employees were over-sampled relative to the general population of firms, particularly in the construction industry and in the smaller size groups. Firms with female employees tend to be larger and have a larger Saudization share. This is true in the overall data and within industry by size cells: firms that employ women have eleven more employees on average and an eleven percentage-point higher Saudization rate than other surveyed firms in their cells. Consistent with Miller et al. (2022b), we see that firms with *any* female employees often have large numbers of them: 23% of employees at these firms are women, and firms in the sample have as many as 80% female workers, with a median share of 12.5%. The last column compares our sample with the full set of Riyadh firms in these size and industry groups in the Saudi General Organization for Social Insurance (GOSI) social security data in 2015. The firms in our sample are larger than the average firm, and have a larger share of Saudi employees (45% vs 25%) and a similar share of female workers.

Interviewees tended to be mid-career Saudi men with relatively high levels of education. All but one of the survey respondents were male and nearly all (96%) were Saudi citizens. The average age of a respondent was 41, and ages ranged from 24–59. The average tenure at the firm was six and half years. The majority of respondents had bachelor's degrees (55%) or technical or professional degrees (26%); while 19% had secondary-level schooling.

Respondents self-identified as being moderate to open minded, with only 8% describing themselves as conservative. They were very supportive of women entering the labor market from an economic perspective, with 96% agreeing that this would make Saudi Arabia a more productive society. They were supportive of women as business leaders (85%) and moderately supportive of women in government (54%). Interestingly, support for gender mixing in particular was much more muted, with only 14% agreeing that gender mixing would improve productivity and 34% disagreeing (Fig. 1).

4. Survey results

There were many areas of consensus across surveyed firms. These revealed support for female employment alongside a sense that it was necessary to integrate women into the workplace in a way that was culturally sensitive and comfortable for managers and employees. Responses demonstrated areas of strong agreement about prevailing gender norms and barriers to workplace

---

[5] Firms with no female employees were asked to respond to some questions as hypotheticals. For example, when firms with an integrated workforce were asked whether "Providing a workspace considered acceptable to women is costly for my firm", firms with an all-male workforce were asked whether "Providing a workspace considered acceptable to women would be costly for my firm".

[6] We limited the sample to 410 firms to meet the financial constraints of our grant.

[7] Large firms (500+ employees) were excluded from the sample because it is unusual for firms this large to have no female employees.

[8] Snowballing was used to reach our desired number of interviews in each cell for male-only and integrated firms. Snowballing was conducted cross-sector, with all references to snowballed firms coming from outside their industry group.

Table 1
Sample Summary Statistics.

	Firm status			Population
	Integrated	Non-Integrated	Overall	
Number of Firms	128	282	410	36,875
Total Employees (Avg)	71.2	38.8	48.9	30.6
Share Saudi Employees	0.51	0.43	0.45	0.25
Share Female Employees	0.23	.	0.07	0.09
Number of Firms by Size:				
Tiny (1–9 employees)	37	110	147	16,235
Small (10–49 employees)	66	143	209	14,981
Medium (50–499 employees)	25	29	54	5,659
Number of Firms by Industry:				
Business Services	19	42	61	4,522
Construction	17	47	64	11,775
Manufacturing	26	45	71	2,902
Retail	66	148	214	17,676

Note: The table presents summary statistics by firms' female integration status. Integrated firms are larger than non-integrated firms by 32.4 employees on average (p-value< 0.001) and have a larger share of Saudi employees by 0.08 (p-value= 0.03). Comparison statistics for Riyadh firms in these size and industry groups are provided for 2015 in the last column using data from GOSI.
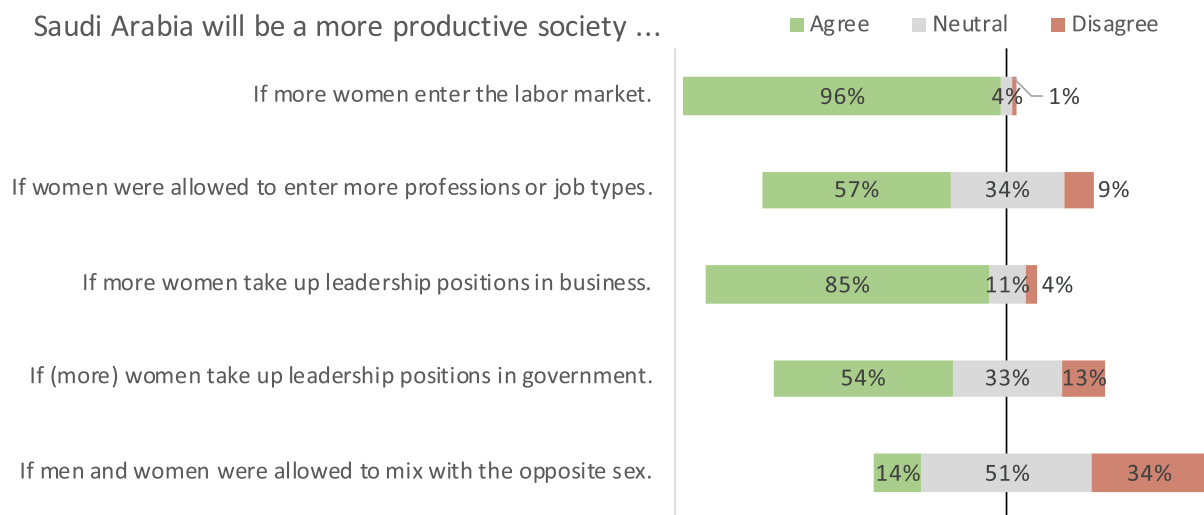
Fig. 1. Respondent Attitudes about Gender Equality and Integration.

integration, but also outlined areas where interpretations were more nuanced and subject to manager discretion. The findings contribute to research on the malleability of gender attitudes (Dasgupta & Asgari, 2004; Nillesen et al., 2021), further indicating a significant scope for managers to interpret relevant gender norms in the context of their firms.

First, we find that many managers have an interest in hiring women, and that manpower issues are a key obstacle to growth for nearly all firms: 90% reported that difficulties recruiting and employing effective workers were either a major (51%) or minor (38%) constraint on their growth. The perception of this problem is the same for integrated and non-integrated firms (Appendix Table A4). This is similar to the share that report problems with government regulations (91%) and licensing (92%) but greater than the share that complain of infrastructure issues (69%) or financial constraints (39%). Firms that employed women were significantly more likely to report concerns about licensing and infrastructure than other firms in their industry and size categories that did not employ women. 11% of firms that did not employ women reported that they had specifically tried to hire Saudi women. This may be because women are seen as lower cost employees: almost all firms agreed that wages were lower for female employees, with some of these savings perhaps offset by

increased childcare costs (Appendix Table A6). Firms were, however, also uniformly concerned about retention of female employees, and many expected that these workers were likely to be recruited away by other firms (Appendix Table A7). This may also be due to career concerns for women at firms with segregated workspaces: about 60% of firms felt that this limited within-firm advancement opportunities for female employees.

There was strong consensus across firms about what types of tasks were appropriate for female employees and what personal characteristics were important for women. These opinions were consistent with the cultural context: managers reported that it was appropriate for women to supervise other workers, make phone calls, and do clerical work. Most considered tasks that involved gender-mixing inappropriate: leading mixed gender-meetings, visiting outside clients, travelling to business meetings were broadly considered unacceptable (Table 2). Managers felt that it was important for women to be well-educated, professionally ambitious, and independent in making career decisions, and agreed that women should also have strong family values, dress modestly, and be religiously observant (Appendix Table A2).

Firms also reported struggling to provide acceptable workspaces for their Saudi employees. By and large firms were not specifically worried about investments needed to make the work-

Table 2
Task Appropriateness: Summary.

	Integrated	Non-Integrated	Within-cell difference (LPM)
Supervising workers/ other employees	0.09	0.13	−0.05 (0.03)
Phone calls to clients/partners/agents	0.00	0.07	−0.08***[ˣ] (0.02)
Doing physical work	0.98	0.93	0.04* (0.02)
Doing secretarial work	0.01	0.10	−0.11***[ˣ] (0.03)
Attending work meetings inside the firm	0.32	0.47	−0.14***[ˣ] (0.05)
Carrying out manual work and routine tasks	0.39	0.56	−0.17***[ˣ] (0.05)
Leading work meetings in mixed environment	0.97	0.94	0.03 (0.02)
Visiting clients/partners/ stakeholders	1.00	0.95	0.05** (0.02)
Traveling to business meetings	1.00	0.96	0.04** (0.02)

Note: The dependent variable is an indicator taking the value 1 if the respondent indicated that the task was unsuitable for female employees. The first two columns report the share of integrated and non-integrated firms that report finding the task unsuitable, and the last column reports the results of an LPM regression of the indicator on an integration indicator with within-cell fixed effects. Robust standard errors clustered at the group level are reported in parentheses, with stars indicating *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Statistical significance at the 10% level against the Bonferroni-corrected p-value indicated by [ˣ].

place acceptable to women in particular; the main concern was related to having an attractive workplace for Saudi employees: 93% agreed with the statement that "Providing a workspace that Saudi nationals find acceptable would be/ is costly for my firm" and only 14% agreed with the same statement about women (Appendix Table A1). Firms however did feel that physical workspace constrained hiring women: 87% reported that they wouldn't currently be able to accommodate more female employees in their current workspace, and 61% saw access to building facilities (restrooms, entrances) as impeding hiring more women. These physical workspace constraints varied significantly by integration status: integrated firms are more worried about accommodating Saudis, (statistically insignificantly) less worried about accommodating women, less committed to workplace segregation, more space constrained, and slightly more constrained by facilities.

Although fully gender-segregated workplaces had been a standard model in the past, most felt that complete gender segregation was neither necessary nor desirable, and this approach was felt to impede monitoring and communication within the firm. Overall, 77% of respondents felt that work facilities need not separate men and women. Most integrated and non-integrated firms thought that women could work alongside men without problems (91% and 73%) and that women were treated professionally in the workplace (98% and 88%) (Appendix Table A3). However, the majority of firms cited issues with having men and women in a mixed environment and in an integrated reporting structure. This culminates in very few firms feeling that men and women could work together productively in a firm: only 5% of integrated firms and 17% of non-integrated firms agreed with this statement. This suggests that concerns about the organization of work and effective gender-mixed co-working may be an important constraint for firms in employing women.

Regulatory compliance around mixed-gender workspaces was not usually seen as a burden: managers felt that regulations were enforced fairly, and that inspectors had a great deal of discretion in how to apply labor laws when evaluating their firms. Interestingly, complying with the letter of the law *was* seen as a burden at integrated firms, but respondents indicated that this did not present

problems for the firm – perhaps owing to the flexibility in the interpretation of regulations by inspectors (or perhaps a desire not to be directly critical of government regulation). Firms largely did not feel that hiring women put them at greater risk of inspection by government regulators, though they did tend to find these inspections burdensome. Non-integrated and integrated firms were surprisingly consistent in their impressions of regulatory costs, and none of the differences in mean agreement between the groups was statistically significant in the within-cell comparisons (Table A9). Firms appear to be correct in their assessment that hiring women does not make them more likely to be inspected (Fig. A2). Integrated firms were only very slightly (and statistically insignificantly) more likely to be inspected, and the average number of inspections was higher at non-integrated firms. Of those who were inspected only five had to pay a fine and all of these were non-integrated firms.[9] Overall, firms seem to feel that regulations around female employment are nominally costly to comply with, but the flexibility in enforcement means that they do not pose a challenge in practice.

What then do firms see as the potential policy solutions to barriers to hiring women? Firms were (perhaps unsurprisingly) in favor of financial incentives and cost-sharing to upgrade workspaces (Table 3). Despite the infrequency of fines above, firms were quite concerned about the potential of incurring fines, particularly if they employ women. Respondents were also by and large supportive of the (now implemented) abandonment of workplace segregation rules. This was more popular in non-integrated firms, perhaps because integrated firms see this as a fixed cost that they have already incurred, giving them a competitive advantage in this space. Non-integrated firms were also more interested in having their workspace pre-certified as female-friendly. Aside from this, most firms seem to appreciate having more autonomy in interpreting and implementing mixed workspaces even at the cost of less clarity from the government on how this process should work.

The survey results broadly indicate that firms struggle with workforce issues and are often interested in hiring women, but face significant organizational and logistical challenges in integrating female employees into their workplaces. Firms have a remarkably consistent sense of the cultural and regulatory environment they inhabit. The model of full gender-segregation in workplaces is clearly out of favor, but firms have a nuanced view of what types of between-gender interactions are acceptable and productive in the workplace. Despite considerable agreement among respondents at different types of firms, there is a great deal of variation in *outcomes* when it comes to employing female workers. What can we learn from the differences between these firms? We next describe the empirical approach that we adopt to study systematically the different factors that appear to drive the variation across firms in whether or not they employ women.

5. Empirical approach

Our empirical goal is to identify which features that describe firms or respondents' attitudes more broadly make firms that employ women stand out relative to firms that have not done so. To do so, formally, we define an indicator variable

$$y_i = \begin{cases} 1 & \text{firm employs women} \\ 0 & \text{else} \end{cases}$$

For each firm i, the survey instrument allows us to construct a broad set of features or variables $\mathbf{x}_i$. We assess to what extent these features allow us to distinguish between firms that have success-

---

[9] Unsurprisingly, none of the fines were reported to involve the employment of women.

Table 3
Possible Solutions: Summary.

	Overall	Integrated	Non-Integrated	Within-cell difference (LPM)
Government should provide financial support to pay for workplace adjustment to create female sections.	0.92	0.96	0.90	0.06** (0.03)
Workplace inspectors should be given less autonomy to issue fines on the spot.	0.80	0.91	0.75	0.16***[*] (0.04)
Workplace segregation should be abandoned.	0.65	0.58	0.68	−0.11** (0.05)
Government should provide childcare facilities.	0.64	0.66	0.64	0.03 (0.05)
More stringent and consistent enforcement of female employment rules by MLSD is required to guide firms.	0.62	0.65	0.61	0.04 (0.05)
Government should give firms positive incentives to employing women (over men).	0.61	0.62	0.61	0.01 (0.05)
Workplace inspectors should not directly benefit from the fine.	0.60	0.65	0.59	0.06 (0.05)
Government should mandate quotas for employing women e.g. through Nitaqat.	0.59	0.63	0.57	0.06 (0.05)
It would be useful to be able to receive certification of a female friendly working environment.	0.59	0.51	0.62	−0.11** (0.05)
Employer and employees should self-regulate work relationships and arrangements.	0.58	0.66	0.55	0.10* (0.05)
Integrating women in the workplace requires firms to experiment and take some risks.	0.56	0.52	0.57	−0.03 (0.05)
Requirements for separate entrances and elevators should be lifted.	0.51	0.57	0.48	0.11* (0.05)
Government should provide clear guidelines about integrating women in workplace in each sector.	0.12	0.10	0.12	−0.02 (0.03)

Note: This table reports the share of respondents (overall and for integrated vs. non-integrated firms) that agreed with the listed possible interventions to increase female employment. The dependent variable is an indicator taking the value 1 if the respondent agreed with the listed possible interventions to increase female employment. The first three columns report the share of respondents (overall and for integrated vs. non-integrated firms) integrated and non-integrated firms that report finding the solution useful, and the last column reports the results of an LPM regression of the indicator on an integration indicator with within-cell fixed effects. Robust standard errors clustered at the group level are reported in parentheses, with stars indicating *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Statistical significance at the 10% level against the Bonferroni-corrected p-value indicated by [*].

fully integrated women vis-a-vis firms that have not done so. Formally, we estimate a large number of logistic regression models. We define $p_i = P(y_i = 1|x_i)$ as the probability that a firm i has hired women, conditional on the observed features $\mathbf{x}_i$ that we measured through the survey instrument.

We estimate variants of the following logistic regressions:

$$\log \frac{p_i}{1 - p_i} = \alpha_{fs(i)} + \beta \prime \mathbf{x}_i$$

Here, the $\alpha_{fs(i)}$ indicate fixed effects capturing the average propensity for firms to hire female employees within each sector and firm size bin. Adding this baseline control is necessary as our sampling was stratified by sector and firm size. We subsequently study which firm-specific factors $\mathbf{x}_i$ best capture variation in female integration status.

We consider a broad range of features that are constructed from the survey responses. These features are combined into groups of regressors that broadly capture different aspects and dimensions that may affect a firm's decision to employ women.

Best Subset Selection In order to systematically study which variables or features within individual variable groups seem best to capture what makes firms that hire women stand out relative to firms that do not, we leverage a simple machine learning method called "best subset selection" (BSS). The idea of BSS is to study the goodness of fit of all potential subsets of combinations of regressors that could be considered. For example, if a variable group contains p regressors, we would estimate all $\binom{p}{1} = p$ models that include exactly one regressor; all $\binom{p}{2}$ models that include two regressors etc., up to the single model that includes all p regressors $\binom{p}{p} = 1$. This implies that we estimate in total,

$\binom{p}{1} + \binom{p}{2} \cdots \binom{p}{p} = \sum_{s=1}^{p} \binom{p}{s} = 2^p$ different models. For each different value of s capturing the model complexity, we identify the single best model that achieves the highest goodness of fit as, for example, measured by the model that yields the lowest Akaike information criterion (AIC) or the highest pseudo R^2.

This produces a sequence of "best models" $\mathscr{M}_1, \ldots, \mathscr{M}_s, .., \mathscr{M}_p$ for every different model complexity s. The overall "best model" is chosen from this sequence of "best models". Mechanically, when comparing models that include a different number of regressors, naturally one has to penalize models that include more regressors. The AIC does just that: while the pseudo R^2 is monotonically increasing, the AIC includes a penalty to avoid overfitting. We identify the "best model" $\mathscr{M}_{s^*}$ from the sequence of "best models" as the one that produces the minimal AIC.[10]

We choose BSS for this exercise over other methods for several reasons. Our objective is to use the set of survey responses to build predictive models of integration status within thematic groups of variables. BSS is one of the simplest machine learning algorithms to be used for the purpose of building robust empirical models that perform well in out of sample prediction. BSS is, statistically speaking, the best variable selection method as, in essence, it assesses the performance of all potential models that can be estimated with different combinations of features. Here BSS is a more natural choice than something like principle component analysis, which

---

[10] Computationally, the BSS approach becomes infeasible given the exponential growth in the number of feasible models. In total, $\sum_{k=1}^{p} \binom{p}{k} = 2^p$ models are estimated. With $p = 30$ this amounts to estimating just over one billion regressions. The non-feasibility of best subset selection for large p in high dimensional data has led to machine learning research efforts focusing on developing algorithms that solve an approximation of the best subset selection optimization problem such as Lasso (see Hastie, Tibshirani, & Friedman, 2009 for an overview).

would be more appropriate for mapping a higher dimensional feature space, such as a set of survey responses, into a lower dimensionality representation that maximizes the variation, e.g. to combine responses into a single index combining these measurements. In this way, BSS is comparable to Lasso, which does a similar exercise but (unlike BSS) penalizes the sum of the absolute value of the individual coefficients, allowing for some of the coefficients to be shrunk to zero. BSS instead actually considers the sum of all coefficients that are not equal to zero. Lasso is less general than BSS, though typically computationally more feasible, especially for large sets of features. In our case we are able to use BSS because it is still computationally feasible with our relatively limited number of survey questions.

Variable groups To structure the analysis, we follow our survey structure that broadly organizes the firms' decision to employ women across key areas of consideration. The broad set of factors under consideration are variables measuring

- Perceptions of various attributes or characteristics of men versus those of women
- Demographic characteristics and attitudes of the respondent
- Broad economic and regulatory constraints
- Constraints in the physical work space or the physical working environment
- Perceptions of the legal and cultural environment
- Perceptions of social acceptance of economic roles for women in employment
- Perceptions of tangible economic costs of hiring women
- Support for policy changes to support women's employment

The categories of variables are described in detail in Table 4. For each group of regressors, we identify the best model $\mathcal{M}_{s^*}$. This then allows us to compare to what extent different groups of features are able to distinguish between firms that are employing and firms that are not employing women. This will help us quantify and qualify the extent to which different *tangible economic* or regulatory concerns seem to explain differences in the propensities of firms to employ women vis-a-vis less tangible features capturing *perceptions* of social or cultural norms.

One concern is that the degree to which groups of regressors are chosen by the algorithm will depend on how well the sets of questions match each topic. This is a key issue for this type of analysis, and a survey with poor coverage or questions of limited relevance will have a weaker performance when analyzed in this way. Our survey was built on extensive qualitative work, including individual interviews and focus groups (with transcripts analyzed using formal textual analysis) in order to ensure all relevant topics were covered in each category to the greatest extent possible.

6. Best subset selection results

We summarize our main findings in Fig. 2. The figure plots out the pseudo R^2 that is associated with the "best models" among different groups of regressors.[11] We use this graph to structure and organize the presentation of the results in this section. What becomes immediately clear is that the groups of variables that seem best in allowing us to identify firms that employ women capture broader perceptions or beliefs about innate qualities that women may have in the workplace; the perceptions of "appropriateness" of tasks being given to women in the workplace; the perceptions of traits of women; and the demographic characteristics of the respondent (who were primarily the owners, senior managers or

---

[11] The same figure is presented for the broad indicator of integration (integrated or actively seeking female employees) in Fig. A1.

Table 4
BSS Variable Groups.

Rank	Group Label	Description
1	Qualities of women	Respondents were asked whether they thought that on average men or women were more productive, had better professional skills, were more reliable, were better at multitasking, had a better work ethic, required lower wages or had lower turnover or whether they were equal. The independent variable is equal to 1 if men were perceived as better employees and 0 otherwise.
2	Task appropriateness	Respondents were asked whether the following types of tasks were suitable or unsuitable for women. Variables were set equal to 1 for respondents that found these tasks unsuitable.
3	Physical work space	Respondents were asked whether they agreed or disagreed with the following statements about constraints related to their physical workspace. Indicators were set to 1 for respondents who agreed that these issues presented constraints.
4	Subjective traits	Respondents were asked about whether the following traits were important or not important for women. Indicators were set equal to 1 if respondents said that these were very or somewhat important.
5	Respondent demographics	Respondents reported their own demographic information, including nationality, age, education, job tenure, income, and self-assessed personal attitudes. Age is reported in years, education and open-mindedness/conservatism indicated with categorical indicator variables.
6	Coworking challenges	Respondents were asked whether they agreed with the following statements about the challenges of coworking in a mixed-gender environment. Indicators were set equal to 1 if the respondent agreed with these statements.
7	Firm constraints	Respondents indicated whether the following presented constraints to the growth of their firm. Indicators equal to 1 indicated that these factors presented either a minor or major constraint to growth.
8	Organizational barriers	Respondents were asked whether they agreed that the following presented organizational barriers to integration. Indicators equal to 1 indicate agreement.
9	Operating costs	Respondents indicated whether they agreed with the following statements about the relative costs of employing men and women. Indicators equal to 1 indicate agreement.
10	Retention	Respondents were asked whether they agreed with the following statements about difficulties retaining female employees. Indicators equal to 1 indicate agreement.
11	Workplace regulations	Respondents were asked whether they agreed with the following statements about regulatory compliance around employing women and providing a mixed-gender workplace. Indicators equal to 1 indicate agreement.
12	Compliance costs	Respondents were asked whether they agreed with the following statements about the costs of regulatory compliance around employing women. Indicators equal to 1 indicate agreement.

human resource officials). These findings complement and add novel insights to prior research conducted in Saudi Arabia (Achoui, 2009; Elamin & Omair, 2010; Hennekam et al., 2018), showing that managers' attitudes toward women's participation in the labor force is strongly driven by their perceptions of women's perceived innate qualities and the "appropriateness" of work tasks for women. The detailed results are presented for each group of variables in Table 5
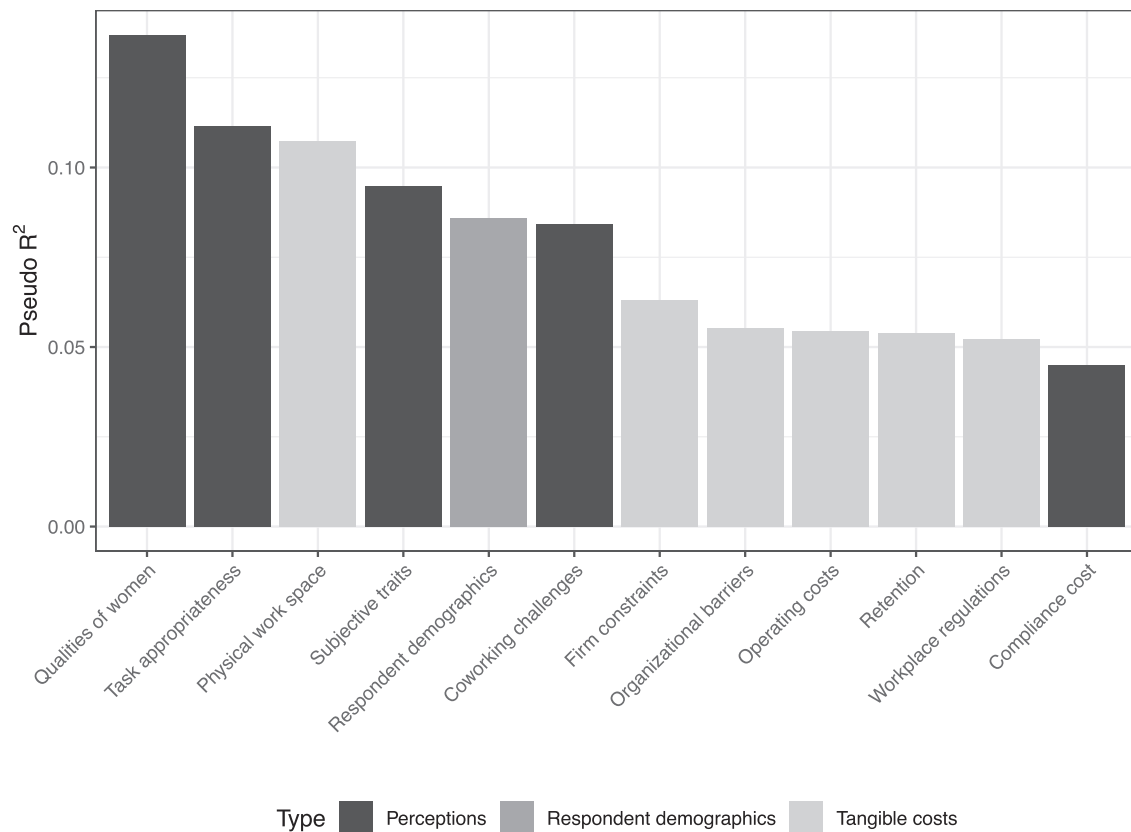
Fig. 2. Pseudo R^2 measuring the goodness of fit across various groups of features. (*Note:* Figure presents the pseudo R^2 measures associated with the statistically robust "best models" that can be built by combining variables capturing different concepts or factors that may drive the decision of firms to employ women. All regressions include firm-size by sector group controls to account for the fact that sampling was stratified at that level. "Best models" have been selected among all potential models using the Akaike Information Criterion. The dependent variable is equal to 1 if a firm has hired women. Appendix Figure A1 presents similar results where the dependent variable is equal to 1 if a firm has, at any point in time, attempted to hire women.).

and the full set of BSS tables is presented in Appendix C. We discuss these results in detail below.

Other variables that directly relate to broader economic concerns that firms may have, such as perceived differential operating costs (differential wages and benefits for female employees), broader firm-specific constraints (such as access to capital more broadly), or concerns around costs due to staff turnover or problems retaining employees, at least statistically, seem to play a second order role. These groups of regressors are discussed in Appendix A.

6.1. Beliefs about women as employees

Among the set of features that most clearly help in distinguishing between firms that employ and firms that do not employ women are the group of variables that has been labeled as capturing perceptions about the "qualities of women" with the highest pseudo R^2 score in Fig. 2. The variables in this group capture beliefs about the relative qualities of male and female employees. Respondents were asked whether they thought that on average men or women were more productive, had better professional skills, were more reliable, were better at multitasking, had a better work ethic, required lower wages or had lower turnover or whether they were equal. Fig. 3 highlights the extent to which firms that employ women and firms that do not employ women are different in the respective perception of qualities or attributes of men.

Respondents from firms that do not employ women consistently perceive that men are more reliable, productive, better skilled, better multitaskers and have a better work ethic compared to women. For example, 58% of respondents from firms that do not

hire women perceive that men are more productive; among firms that do employ women, only 32% perceive this to be the case. The gap in perceptions of 26 percentage points is very wide and, at least statistically speaking, the differences in perceptions appear to be a major set of factors that distinguish firms that have hired women versus firms that have not. This suggests that misperceptions may be connected to hesitance among firms to hire more women. This aligns with prior research conducted in Saudi Arabia, which shows that husband's misperceptions of social norms around women's employment discouraged them from supporting their wives' formal employment (Bursztyn et al., 2020). This study extends these insights by showing how similar mechanisms might be associated with managers' hesitance to employ women.

What is noteworthy in our findings is that the procedure did not select beliefs about turnover and wages as predictors of integration in the best model, though there are some interesting patterns in these results: firms that employ women are less likely to think that women required lower wages than men and less likely to think that they had lower turnover, though most firms in both categories thought that men and women were likely to require the same wages and have the same rates of turnover (Table 6).

These differences in impressions could be either due to selection (firms that know women will be successful in their context are more likely to hire them) or information (firms that already employ women have more accurate information about their performance relative to male employees). To distinguish between selection and information we further examine the patterns of beliefs for firms that do not employ women but report that they are actively searching for female employees. These firms are likely to have the same amount of information as non-integrated firms,

Table 5
BSS Variable List.

Rank	Group Label	BSS Variables	+/−	Sig.
1	Qualities of women	On average men are more productive	−	***
		On average men have a better work ethic	−	*
		On average men have better professional skills	−	***
		On average men are more reliable employees	−	**
		On average men are better multi-taskers	−	***
2	Task appropriateness	Making phone calls to clients/ business partners/ public agents is unsuitable for women	−	.
		Doing secretarial work is unsuitable for women	−	**
		Carrying out manual work and routine tasks is unsuitable for women	−	**
		Visiting clients/ business partners/ stakeholders outside the firm is unsuitable for women	+	.
3	Physical work space	Providing a workspace that Saudi nationals find acceptable would be/ is costly for my firm	+	**
		Providing a workspace considered acceptable to women would be/ is costly for my firm	+	.
		It is possible to provide suitable work facilities without segregating men and women.	+	***
		There is limited physical space to accommodate (more) women in your current business premises.	+	***
		Insufficient female facilities in the larger building (like restrooms, entrances) impede hiring (more) women.	+	*
4	Subjective traits	It is important for a woman to be well-educated	+	.
		It is important for a woman to have strong family values	−	**
5	Respondent demographics	Age	+	.
		Secondary school graduate	+	*
		Diploma graduate	+	***
		Respondent is owner	−	**
6	Coworking challenges	Women are treated as professionals in the workplace.	+	***
		Female staff members in your firm have no issues working alongside men	+	***
7	Firm constraints	Difficult to get required licenses/permissions from authorities	+	***
		Lack of quality infrastructure (roads, transportation, communication, electricity)	+	**
8	Organizational barriers	It is difficult to monitor women's work in a separate section.	+	**
		Workplace segregation can have a negative impact on productivity.	+	**
9	Operating costs	Wage costs are lower for a Saudi woman than for a Saudi man with the same amount of education and experience	+	*
		It is more difficult to provide on the job training for women	+	**
10	Retention	Women are/ would be more difficult to retain than men	+	.
		Women are/ would be more likely than men to be poached by other firms	+	*
11	Workplace regulations	There is no clear information on what the law/regulations requires for mixed-gender workspaces	−	*
		It is best for an employer and employee to agree on a suitable workplace without government intervention.	+	**
		It is difficult to comply with all rules governing female work spaces.	+	**
12	Compliance costs	Workplace inspectors have discretion over how they interpret the current law and regulations relating to women.	+	.
		Complying with regulations puts/ would put our firm at a competitive disadvantage.	+	*

Note: This table summarizes the best model selected by the BSS procedure in each group of responses. Independent variables equal to 1 indicate agreement with the listed statements, and the dependent variable is an indicator taking the value 1 if the firm employs women. The last two columns indicate whether the point estimate on the variable in the selected model is positive or negative and indicate statistical significance with stars indicating *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ using robust standard errors.

but are more similar to integrated firms in terms of their unobservable characteristics and attitudes. When non-integrated firms are split into those that report searching for female employees and those that do not, we find that "searching" firms tend to be more similar to "non-searching", non-integrated firms in terms of their beliefs about female employees (Fig. 4). They have lower expectations about female employees' productivity, professional skills, ability to multitask than integrated firms. Firms that employ women therefore do appear to have better information on their productivity and professional skills and abilities. Firms that do not employ women are more likely than integrated firms to believe that women will require lower wages and have lower turnover. Firms that do not employ women appear to have good information on women's work ethic relative to men. Interestingly, searching and integrated firms were more likely than non-searching firms to believe that men and women were equally reliable, while non-searching firms tended to see men as significantly more reliable. Overall, it seems that exposure to female employees is strongly associated with forming better impressions of their contributions to the firm, indicating the importance of role models in changing gender attitudes (Dasgupta & Asgari, 2004; Eger et al., 2018) and suggesting a role for information sharing across managers at different firms.

6.2. Beliefs about task appropriateness

Another key area of difference between integrated and non-integrated firms were perceptions about the range of tasks that were appropriate for female employees. Human resource man-

agers need to use their own assessment of gender norms and the needs of the firm to decide to what extent they think female workers can be put to work in socially acceptable tasks.[12] To elicit these opinions we asked a range of questions in which respondents were asked to indicate whether they perceive a category of tasks as suitable or unsuitable for women.

As Table 2 summarizes, virtually all respondents thought that it was inappropriate to expect women to visit contacts outside the firm, travel to business meetings, do physically demanding work, or lead meetings with male employees. Relatively few saw supervisory, administrative, and telework as inappropriate. Opinions were more mixed on other types of tasks, including secretarial work and manual/routine tasks, and firms with female employees were more likely to see these as acceptable for women. Column 3 of Table 2 reports the results of a within-cell regression of the indicator for considering a task category inappropriate on an indicator for whether the firm employed women. Integrated firms were significantly less likely to consider manual and routine work (by 17 percentage points), attending within-firm meetings (by 14 percentage points), doing secretarial work (by 11 percentage points), and telework (by 8 percentage points) appropriate for female employees.[13] The belief that it is considered inappropriate that women should travel for work or lead mixed meetings may even

---

[12] Eger, 2021 cautions that individuals in these positions might experience a backlash if they transgress prevalent gender norms.

[13] Integrated firms were more likely to consider it inappropriate for women to travel outside the firm for work, but nearly all firms (95% and above) found these tasks inappropriate across both groups.

	Diff
More reliable employees	-0.21***
	(0.05)
More productive	-0.26***
	(0.05)
Better work ethic	-0.10*
	(0.05)
Better professional skills	-0.25***
	(0.05)
Better multi taskers	-0.21***
	(0.05)
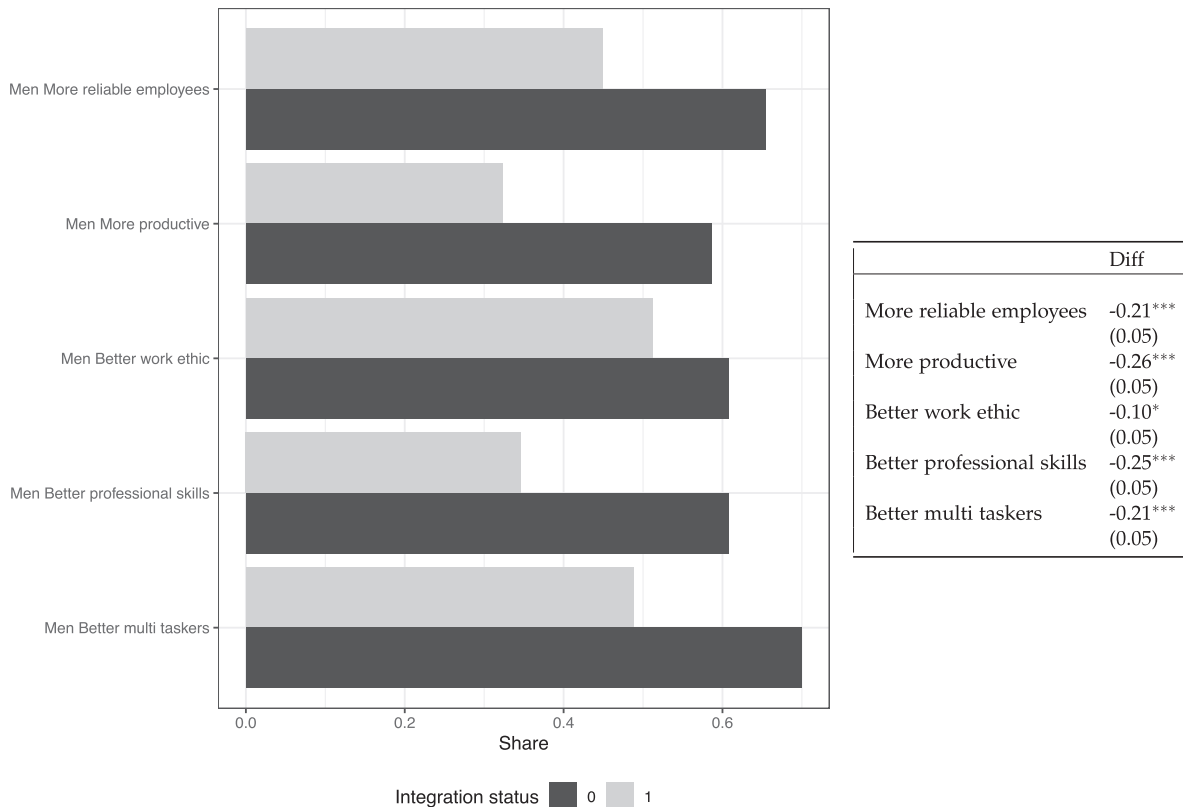
Fig. 3. Perceived qualities of women in the workplace. (*Note:* Figure presents some summary statistics of judgements of qualities of different genders relevant to economic performance. The survey allowed respondents to attribute certain qualities to either Men or Women or choose Equal. The figure presents the share of respondents indicating they believe men have a specific set of qualities (as compared to women or the perception that men and women have equal qualities). The shares are computed by whether a respondent is from a firm that has hired women (integration status equal to 1) or from one that has not (integration status equal to 0). The table shows shows the corresponding statistical tests of differences betweenintegrated and non-integrated firms.).

Table 6
Impressions of Male vs. Female Employees: Best Subset Selection.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
More productive	-1.133***	-0.921***	-0.871***	-0.734***	-0.726***	-0.724***	-0.724***
	(0.239)	(0.249)	(0.251)	(0.259)	(0.259)	(0.259)	(0.259)
Better work ethic					-0.417*	-0.418*	-0.419*
					(0.242)	(0.242)	(0.242)
Better professional skills		-0.869***	-0.751***	-0.733***	-0.815***	-0.811***	-0.808***
		(0.244)	(0.250)	(0.251)	(0.256)	(0.256)	(0.257)
More reliable employees				-0.555***	-0.556**	-0.552**	-0.547**
				(0.244)	(0.244)	(0.244)	(0.246)
Better multi taskers			-0.670***	-0.664***	-0.631***	-0.630***	-0.621**
			(0.243)	(0.244)	(0.244)	(0.244)	(0.249)
Require a lower wage							0.049
							(0.290)
Have lower turnover						0.091	0.093
						(0.277)	(0.277)
Constant	1.468*	1.637*	1.780**	1.803*	2.111**	2.083**	2.059**
	(0.874)	(0.883)	(0.900)	(0.923)	(0.953)	(0.958)	(0.968)
Best Model					X		
Pseudo R2	0.081	0.106	0.121	0.131	0.137	0.137	0.137
Observations	410	410	410	410	410	410	410
Akaike Inf. Crit.	492.640	481.720	476.140	472.986	471.998	473.892	475.864

Note: The dependent variable is an indicator taking the value 1 if firms employ women. Respondents were asked whether they thought that on average men or women were more productive, had better professional skills, were more reliable, were better at multitasking, had a better work ethic, required lower wages or had lower turnover or whether they were equal. The independent variable is equal to 1 if men were perceived as better employees and 0 otherwise. All regressions include industry and size group fixed effects and controls for firm type (family business, private firm, international firm branch) and respondent type (manager or owner). Robust standard errors are presented in parentheses with stars indicating *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

be understated, if managers are concerned that business partners may hold these beliefs. Opinions on these more controversial tasks were the ones that best predicted the integration status of the firm.

The BSS procedure selected variables capturing opinions on telework, secretarial work, manual work, and visiting outside stakeholders as yielding the best model to predict integration sta-
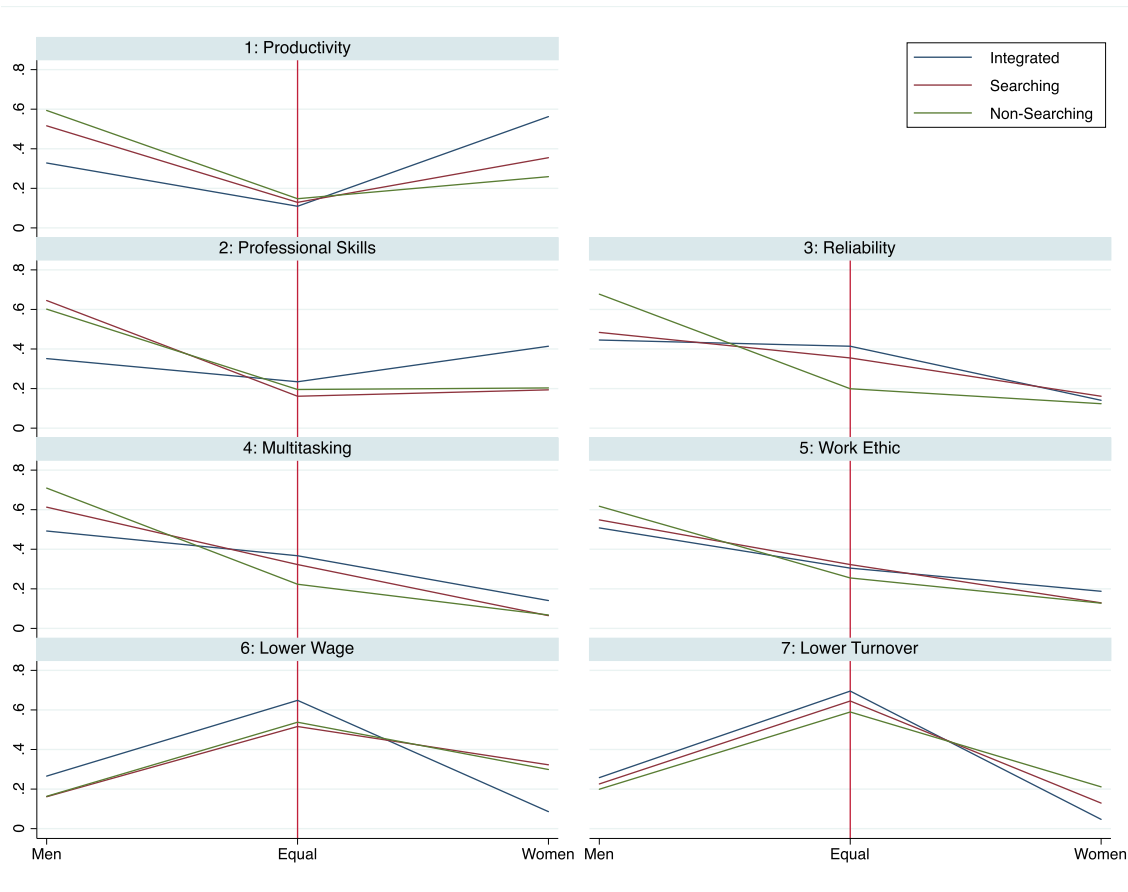
	Men	Equal	Women
1: Productivity	-0.27***	-0.04	0.30***
	(0.05)	(0.04)	(0.05)
2: Professional Skills	-0.25***	0.04	0.21***
	(0.05)	(0.04)	(0.05)
3: Reliability	-0.23***	0.21***	0.02
	(0.05)	(0.05)	(0.04)
4: Multitasking	-0.22***	0.14***	0.07**
	(0.05)	(0.05)	(0.03)
5: Work Ethic	-0.11**	0.05	0.06
	(0.05)	(0.05)	(0.04)
6: Lower Wage	0.10**	0.11**	-0.21***
	(0.04)	(0.05)	(0.04)
7: Lower Turnover	0.06	0.11**	-0.16***
	(0.04)	(0.05)	(0.04)

Fig. 4. Perceived qualities of women in the workplace: Integrated, Searching, and Non-Searching Firms. (*Note:* Figure presents some summary statistics of judgements of qualities of different genders relevant to economic performance. The survey allowed respondents to attribute certain qualities to either Men or Women or choose Equal. The figure presents the share of respondents indicating they believe men have a specific set of qualities (as compared to women or the perception that men and women have equal qualities). The shares are computed by whether a respondent is from a firm that has hired women (integrated), is from a firm that has not hired women but is actively searching for female employees (searching), or is from a firm that has not hired women and is not searching for female employees (non-searching). Table shows the corresponding statistical tests of differences between integrated and non-integrated (non-searching) firms.).

tus (Table 5).[14] Firms are therefore most likely to be integrated if managers view the types of tasks associated with many entry-level positions as appropriate for female workers. This may reflect in some cases the particular nature of these tasks across firms, though tele-work is likely to be similar across contexts. Firms do not appear to require a sense that *all* tasks are appropriate for female employees,

but rather an openness to women's participation in *enough* types of tasks to make integration worthwhile.

6.3. Physical workspace constraints

The third set of responses concerned constraints around providing an acceptable physical workspace for employees. This is immediately policy-relevant as firms may have to incur tangible costs in

---

[14] See also Appendix Table A11 for full BSS results.

order to ensure that the workplace is attractive and complies with social norms – even in the absence of legally-required physical segregation. In this survey module, respondents were asked whether they agreed or disagreed with statements about constraints related to their physical workspace, with indicators set to 1 for respondents who agreed that these aspects presented issues for their firm.

The BSS procedure identified the workspace constraints to be among the third most important set of measures that allow us to distinguish between those firms that hire women and those that do not (see Fig. 2). The best model that is selected includes all but one of the variables capturing workspace constraints (see Table 5, Appendix Table A12). In this model, a flexible approach to workplace segregation is strongly associated with employing women. Interestingly, integrated firms were more likely to have concerns about space than non-integrated firms, and limited physical space and dedicated on-site facilities for women (restrooms, private spaces) prevented firms from expanding their female workforce. Integrated firms were significantly more likely to report that providing acceptable workspaces for Saudis was costly. Importantly, while the previous set of variables mostly captures *individual perceptions* about latent norms the question around physical workspace is associated with tangible costs and highlights an area where policy interventions may make a difference.

6.4. Beliefs about women's personal characteristics and respondent demographics

Fig. 2 highlights that individual perceptions and attitudes of HR managers appear to be an important distinguishing factor between companies that have successfully integrated women and those that have not. In the next two categories, we see that the respondent's own demographic characteristics and his/her own private opinions of desirable subjective personal traits of women are also important predictors of the organization's integration status. This is perhaps not surprising: owners can set their firm's hiring agenda and influence its corporate culture, and hiring managers may be deliberately selected to achieve integration goals (see for example González, 2021).[15] The BSS procedure selects two of the responses to the questions about women's personal characteristics in determining integration status: whether the respondent thought it was important for women to be well-educated (positive point estimate, not statistically significant) and to have strong family values (negative point estimate, significant at the 10% level) (Table 5, Appendix Table A13).

The model selected among the respondent's demographic characteristics included age, education indicator variables and indicators for whether the respondent was the business owner (see Appendix Table A14). Having a diploma or secondary education (rather than a BA or above) was positively associated with integration. Age was not statistically significant. If the respondent was the business owner (as opposed to an HR manager), there was a negative association with the integration status of the company. Combined we observe that the respondent characteristics and the perceived traits of women are among the more notable set of features that can, in combination, help us distinguish between firms that employ women and those that do not. The relative absence of features that capture hard information or tangible costs from the prominent feature sets suggests that some of the core challenges to female recruitment may lie in the underlying attitudes and perceptions of managers – and not necessarily the underlying economic considerations.

6.5. Coworking challenges

Concerns about men and women working together were another key area differentiating firms that hired women from those that did not. Although most respondents at integrated and non-integrated firms thought that women could work alongside men without problems (91% and 73%) and that women were treated professionally in the workplace (98% and 88%) (Appendix Table A3), these responses were still important predictors of integration status. In terms of the combined statistical signal that lies within the measures of these expressed concerns, the BSS procedure selects as best model to be the one that includes agreement with statements "Women are treated as professionals in the workplace" and "Female staff members in your firm have no issues working alongside men" (see Appendix Table A15): agreement with both statements is strongly positively associated with firms responding that they employ women. Given that we condition for the cell fixed effects, this means we are unlikely to be confounding systematic differences in the way that work may be organized across firms working in different sectors or in different firm size classes.

6.6. BSS results for subsamples of firms

Fig. 5 explores these same results for two subsamples of firms. Panel (a) summarizes the pseudo R^2 "best models" for the randomly-selected sample of 292 firms, i.e. excluding the firms that were added via snowball sampling to make sure each industry by size cell contained both integrated and non-integrated firms. The results for this subsample are qualitatively very similar compared to the full sample. When studying, for example, the ordering of the Pseudo R2 we note that with a few minor differences, the ranking of the groups of variables is very similar throughout, suggesting that qualitatively the inclusion of the snowball observations do not make a material difference.[16]

Other interesting patterns emerge when the sample is restricted by respondent type. Out of the 410 observations in our sample, 246 of the interviews were conducted with a respondent who was an HR manager rather than the business owner. When we focus on this subsample (Fig. 5 panel (b)), physical workspace constraints emerge as the most significant factor in distinguishing between integrated and non-integrated firms, though the rankings are otherwise very similar. In general the distinguishing concerns in this sample tended to be more practical (workspace, coworking and organizational issues) rather than subjective (qualities of women as employees, subjective traits of women).[17]

7. Discussion and conclusion

Different authors have called for research that reliably assesses gender norms and attitudes related to women's employment to advance effective policy interventions (Breuer & Asiedu, 2017; Dildar, 2015; de Haan et al., 2020; Luke & Munshi, 2011; Nillesen et al., 2021). In a setting where social norms constrain between-gender workplace interactions this becomes even more relevant, as firms face a variety of barriers to integrating male and female employees into their workplaces. We examine these specific barriers in Saudi Arabia, where we use extensive fieldwork to develop a detailed survey of barriers to integration including tangible costs, organizational issues, manager perceptions, and firm (and respon-

---

[15] Different authors have explored the gatekeeping role of female business leaders and female-only networks (Dahl et al., 2018; Villesche & Josserand, 2017)

[16] Table A22 explores these same results in slightly more detail. The results are very similar, though we do lose some statistical power to detect these within-cell differences. The procedure sometimes selects slightly different models, especially in cases when the model contained variables that were not statistically significant.

[17] Table A23 lays out these results in more detail.

(a) Random Sample Firms Only   (b) Non-Owner Respondents Only
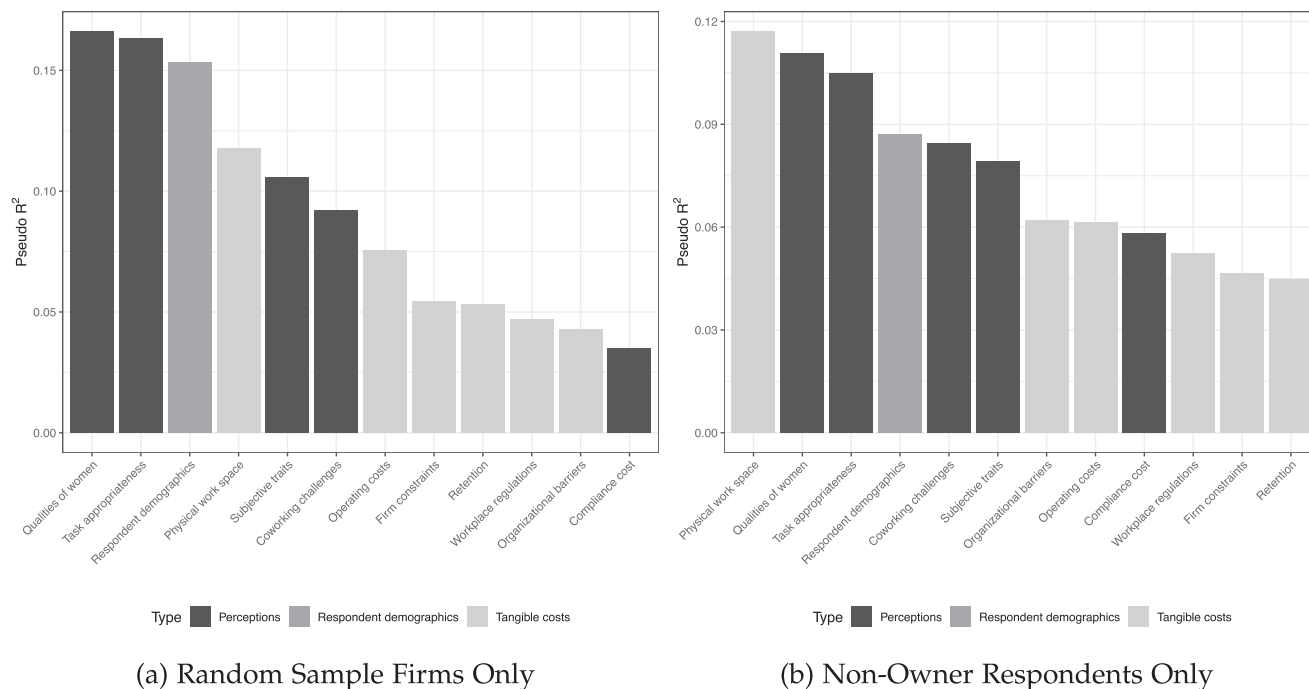
Fig. 5. Pseudo R^2 measuring the goodness of fit across various groups of features. *Note:* Figure presents the pseudo R^2 measures associated with the statistically robust "best models" that can be built by combining variables capturing different concepts or factors that may drive the decision of firms to employ women. All regressions include firm-size by sector group controls to account for the fact that sampling was stratified at that level. "Best models" have been selected among all potential models using the Akaike Information Criterion. The dependent variable is equal to 1 if a firm has hired women.

dent) characteristics. We then analyze the results of a survey of 410 Riyadh firms across a range of representative industries with and without female employees. Women's integration in the workforce emerges as a multi-layered process, in which a broad set of determinants come to bear on managerial decision making. While women's employment has been a key policy interest in Saudi Arabia, many employers continue to struggle with knowing how to integrate women effectively into the workforce. This is likely related to the dramatic increase in female labor force participation over a very short amount of time, with many firms navigating a mixed-gender workspace for the first time. The general survey results indicate that gender norms are perceived very similarly across firms, though managers differ in their ability to negotiate these norms within their firms. We find strong support for women's employment and widespread interest in employing women in a manner sensitive to prevailing norms around gender mixing. Responses also highlighted areas where there was more scope for different approaches to integration and differences in perceptions of integration barriers.

To better understand these dynamics we then look at the systematic differences in perceptions of barriers between integrated and non-integrated firms. While we can compare responses between integrated and non-integrated firms question by question, this quickly becomes unwieldy. To isolate the key differences, we use a simple machine learning method to reveal clusters of firm-specific responses that best distinguish between integrated and non-integrated firms. Results indicate ways to refine fieldwork moving forward, suggesting possible interventions and focuses for future survey work. Moreover, in line with de Haan et al. (2020), our study shows that the combination of different methods, including qualitative interviews and survey data analysis, can provide relevant insights for policy work.

Our study findings reveal that personal opinions and manager demographics are of core importance: the features that are best able to identify firms that employ women are measures of the

respondent perceptions of qualities or traits of women, the perceived cultural appropriateness of specific tasks to be performed by women, and the respondent's own demographic characteristics. While the mechanism for this impact is clear in the case of owners, it also reflects the gatekeeping and agenda-setting role of human resource managers. Gender-inclusive gatekeeping represents an interesting area for future research to evaluate the effects of the 'first-generation' of female employees entering previously male-dominated professions and firms in the Saudi labor market. Moreover, small treatment interventions and nudge experiments studying the malleability of gender attitudes may provide fruitful avenues to investigate how gender specific interventions could alter managers' perceptions and preferences to hire (more) women. Such studies may also adopt a long-term perspective to study the firm history and different integration paths to identify how these factors contribute to breaking down organizational barriers within firms.

Results also reveal possible misperceptions about female employees in firms with no women: firms that employ women are much more likely to view female employees favorably, and this seems to be the result of actual exposure to women in the workplace rather than a manager's broad attitude toward employing women. In line with prior research (Dahl et al., 2018; Dasgupta & Asgari, 2004; Eger et al., 2018), this suggests that exposure to female role models and integrated workplaces can lessen automatic gender stereotyping beliefs. This indicates that increasing the share of female employees, especially in leadership positions, can have a positive effect on women's recruitment and promotion in firms reducing prejudice through exposure. Respondents at integrated firms also took a broader view of what tasks are appropriate for women. These perceptions of female employee characteristics and tasks may be innate or malleable with more exposure and better information, suggesting a possible role for interventions that target firm decision-makers directly. Successful gender integration strategies also depend on the investment in skilled human

resource managers to help firms navigate the complex policy landscape and take affirmative action to promote women's employment.[18] This is likely to be particularly important in the rapidly changing policy and cultural environment around women's employment in Saudi Arabia.

Though we must be careful not to interpret our correlational findings as causal, our results provide some suggestive evidence of where future work might look for policy interventions to promote integration. In practice, interventions aimed at addressing the more tangible female integration costs may be less effective in promoting female employment than interventions that contribute to altering perceptions of (human resource) managers toward women employees or encourage demographic change in the management of companies. Though, it is important to keep in mind that space plays a key role in how gender becomes manifested in firms with specific physical arrangements functioning as "identity markers" (Elsbach, 2004; Wasserman & Frenkel, 2015). This becomes even more pronounced in light of recent policy updates that removed gender segregation as legally binding for firms. Physical workspace was one of the only explicit financial outlays that emerged as important. Integrated firms were more likely to be flexible about offering a segregated workspace, but felt more keenly the constraints of the workplace quality and facilities when trying to hire more women. Financial support for workplace upgrades could help increase female employment, particularly at already-integrated firms, and grants could help non-integrated firms provide acceptable workspaces for female employees. Future research could expand upon the performative role that space plays in organizational reform processes, to gain a more grounded perspective of the spatial work that managers do to integrate women in the workforce.

Overall, this work highlights the importance of gender norms, cultural preferences, and gatekeeper perceptions in determining which firms and jobs are open to women. These findings point to the need to understand entrenched social norms and values to advance women's economic empowerment supporting prior research in this field (Eger, 2021; Elamin & Omair, 2010; Seguino, 2011; Syed & Ali, 2019; Hennekam et al., 2018; Van Buren et al., 2020). The study builds on and further extends this knowledge, providing novel insights into how managers' attitudes and beliefs contribute to different labor market outcomes for women in Saudi Arabia. While this paper explores firm-level integration, the interplay between social norms, worker preferences, and employment opportunities also operates at the industry and economy-wide level, and is an important area for further study. Sectoral segregation plays an important (and potentially complex) role in integration, with industries such as construction, defense, and retail facing very different constraints in hiring women. Feminization policies, for example, have led to widespread changes in the Saudi retail sector, which might not have been considered a suitable sector for women to work in otherwise. This has increased women's economic opportunities, but Alfalih (2016, 53) cautions that "even where policies overtly suggest good intent and imply positive outcomes, the nature of intent and aspired outcomes are gendered" with feminization policies alluding to a form of job resegregation (see Skuratowicz & Hunter, 2004).

While gender norms may be particularly salient in the workplace in Saudi Arabia, there are many other countries where these types of barriers may be relevant. In the World Values Survey, for example, respondents in Saudi Arabia were on the more conservative end of the spectrum in terms of openness to women's work (Inglehart et al., 2018). 69% of respondents agreed that "When jobs are scarce, men should have more right to a job than women", plac-

ing Saudi Arabia seventh out of 38 in agreement with this statement. On this end of the spectrum agreement ranged from 51% (India) to 90% (Egypt). There were similar rates of agreement in Indonesia, Turkey, Nigeria, Pakistan, Algeria, Bangladesh, the Philippines, Iran, Iraq, Jordan, and Morocco. In a survey on global gender inequality trends, Klasen (2020) showcases how women's progress – albeit modest – in employment has led to resentment and backlash. This points to the strong persistence of gender-specific social norms related to women's economic roles. Understanding how these norms and beliefs evolve at the individual decision-maker, organizational and society-wide level is key to overcoming the demand-side barriers to gender equality in labor markets.

CRediT authorship contribution statement

Claudia Eger: Conceptualization, Methodology, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition. **Thiemo Fetzer:** Conceptualization, Software, Methodology, Formal analysis, Investigation, Writing – original draft, Funding acquisition. **Jennifer Peck:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition. **Saleh Alodayni:** Conceptualization, Methodology, Investigation, Supervision.

Declaration of Competing Interest

Acknowledgements

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.worlddev.2022. 106058.

References

Achoui, M. (2009). Human resource development in Gulf countries: An analysis of the trends and challenges facing Saudi Arabia. *Human Resource Development International, 12*, 35–46.

Alesina, A., Giuliano, P., & Nunn, N. (2013). On the origins of gender roles: Women and the plough. *Quarterly Journal of Economics, 128*(2), 469–530.

Alfalih, A. (2016). Labour flexibility: An analysis of the future trajectory of the employment of female graduates in Saudi Arabia. Doctoral Dissertation, University of Wolverhampton. (Available at http://hdl.handle.net/2436/612317).

---

[18] For a review of HRD trends and challenges in Saudi Arabia see Achoui (2009).