

Design Management Applications to Improve Work Environment for Female Academics in Saudi Arabia

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II. LITERATURE REVIEW

A. Background of University Designs

Universities in Middle-East and Asia are focusing their efforts in a pursuit of joining the ranks of some of their Western counterparts. One example of a competitive industry of education is in Saudi Arabia. The Kingdom provides the largest market for education services in the Gulf Cooperation Council (GCC) and so attracts a large student base. The universities therefore, are successful and follow the benchmarks of the industry. Marketers of the education segment are always involved in finding ways of selling their institutes [1]. On contrary to global universities in the western world, these universities in Saudi Arabia are fully funded by the government and there are no fees for students. This is being a major difference Saudi universities have different purpose built models.

[2] declares design to be the bridge between consumer demand and the company providing exactly that in a new, user-friendly way. Hence, if it is necessary for brands to cater to cultural needs and become customer oriented, the same would apply to the education industry. Universities in Saudi Arabia, operating under the framework where women need separate institutes, must realize that these institutes need then to be tailored to this segment through the management of design. Design management can provide universities a different and potentially viable perspective in the overall development [3]. [4] states that design is not only essential to contribute toward the profitability of an organization but design also helps towards elevating the social responsibilities and value addition demanded by stakeholders. This leads one to differentiate between high profile - industry sponsored corporate universities and university as a social sustainability component of higher education system sponsored by governments. The industry sponsored corporate universities have an ultimate goal of serving the needs of a parent organisation in terms of individual and organisational learning, creating knowledge repository and wisdom resource. On the other hand, the government sponsored higher education institutes are aiming the growth and development of region, country whilst imparting basic and advanced education to their citizens [5].

This study aims to focus its research on female academics work environment irrespective of who has sponsored these universities. Although Saudi Arabian education system is fast developing, the corporate university concept is not implemented. Also, the citizens in Saudi Arabia see their education system as a basic need to be funded by the cash rich

Abstract—This research study examines cases of Saudi Arabian universities and female academics for work environment issues within the context of design management applications. The study proposes use of design research, ergonomics and systems design thinking to develop the university design which facilitates removal of physical and cognitive barriers for female academics. Review of literature demonstrates that macro and micro ergonomic combined with design management and system design strategies can significantly improve the workplace design for female academics. The university design model would be prepared based on the analyses of primary data obtained from archived documents, participants' observation logs, photo audits, focus groups and semi-structured interviews of currently employed female academics in the selected case universities.

Keywords—Design management, workplace design, university design, ergonomics.

I. INTRODUCTION

UNIVERSITIES around the world compete to be of the world class level so that they can attract talented academics, students and employers. This competition between universities is in terms of ranking, employability, research focus and successful education programmes which in turn increases the demands by universities' stakeholders for the best working environments. The universities are purpose built and either funded by governments or private corporations or education trusts. For example, the universities in Saudi Arabia requires special designs such as students do not have to pay fees as education is funded by government or women only campuses based on the religious and cultural beliefs. In designing this kind of purpose built universities, female academics workplace is affected by many physical and cognitive factors, for example office design, job satisfaction, cultural issues, gender biases. Thus, the aim of this research study is to formulate a design management model to facilitate workplace improvement for female academics. In doing so, the design management and design research concepts and applications would be reviewed leading to the proposition of a new university design for female academics.

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government as most of the oil and petroleum income in Middle Eastern countries are managed and governed by Royal families and governments. The culture also plays a crucial role wherein higher education is considered as an importance of social standing. Thus, it is government and educationists imperative to build socially sustainable educational institutes, colleges and universities to maintain the integrated society [6]. The next section evaluates concept of female only universities in the GCC region.

B. Female Universities in the GCC Region

At present, the Kingdom of Saudi Arabia (KSA) is going through a transitional development phase where it is becoming a leading country for GCC and Middle Eastern regions. Higher education development is one vital element of economy and trade for Saudi Arabia. This research concerns the needs of Saudi Arabian female academics and other staff in female-only colleges and universities. In the available academic literature, these needs and different dimensions have not yet been considered extensively, especially with respect to design in their work environment. This is because the phenomenon of separate institutes for women is not worldwide and only exists in a few countries like Saudi Arabia, where tertiary education separates male and female students, academics and other staff. In addition, there is presently a huge demand from women in Saudi Arabia to obtain more education, and this cannot be met with the present infrastructure. Thus, the government is working towards the construction of new colleges and universities for women. This was reflected when earlier this year, King Abdullah of the Kingdom inaugurated the largest women's university in the world, named Princess Nora Bint Abdulrahman University (PNU). The project that cost over US\$5 billion and this university can host up to 50,000 students.

However with the majority of students in the Saudi Arabian universities comprising of women, not enough consideration has been given to customizing the design of the campuses to facilitate the female population in the universities. Women make up 58% of the total student population of 130,000 at seven universities in Saudi Arabia, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO). The Saudi government spends approximately 30% of its annual budget or US \$40 billion for education. These figures prove that resources and market segment are all in place and available; while what remains to be done is to provide optimal value to that segment by focusing the resources towards the management of design in these institutes.

C. Gender Specific Designs

Before start designing the Middle Eastern universities, one must consider factors that influence the design of women workspace and issues of space production and social space [7]. To transform or redesign the workplace and workspace, it requires detailed analyses of power structures in the community, their links to culture, religion, gender and economic developmental effects [8]. In particular, Islamic

culture and society provides higher productive/public spaces to men as compared to less reproductive/ private spaces to women considering it as a good tradition or cultural barrier [6]. This easily translated for centuries to till date in the other forms where gender based rights, roles, responsibilities and power have been granted to men. These barriers have been continued to reflect [8] in the workplace design, production of spaces for example social and physical spaces [7]. This leads to the question whether one should follow the tradition for designing the workplace for women or follow the global standards of developed countries for it [9]. The appropriate balance of giving importance of each factor such as gender, culture, religion, space and other societal standards whilst designing the workplace may improve the performance of female faculties in terms of research and teaching in the universities.

D. Improving the Workplace

The concept of workplace design has evolved many times all over the world in the last century [7] while responding to the political, technical, economical, social and environmental forces [9]. Workplaces are designed either for standardised / mass customization approach or personalized / individual usage approach. Old concept of offices were comprising fixed time – space; single purpose, individual use, private information with centralised control and variable costs whereas global standards of workplaces have shifted to flexible time – space; multi-functional use; groups work; shared knowledge and fixed costs. For example, corporate offices are designed reflecting the business plan - vision - mission of the company [9]. However, re-designing of the workplace largely depends upon the facilities demand, personnel management and business process system of the organisation. Psychological factors such as intimate distance, personal distance, social distance and public distance affect the social interaction in the workplace and its design [9]. Organisations, buildings and information technology (ORBIT) model [10] consider academic offices and research institutes in the low change and non-routine nature of work. However, continually developing technology, fast paced work days and flexible jobs have increased demands for better designs of the workplace which would increase user and customer experiences [11]. The best examples are companies selling 'ergonomic design' of products as a premium earning concept for them for example, chair, table or key pads. Thus, improving the workplace is not only about cost saving but its increasing importance is user experience [12]. Thus, the workplace design concept has shifted its focus from resource based design to users demand based design. Users demand and their experience involve satisfaction at the workplace from content and quality both. Content refers to physical factors whereas quality refers to cognitive factors [12]. This study concentrates on both types of factors influencing workplace design.

III. LITERATURE FINDINGS

This section of thesis describes the key observations made during the review of literature. The inferences are divided into two categories: (1) Meaningful inferences enabling the development of design management solution and combined application of principles of ergonomics, systems design and design management, and (2) Gaps found in the literature for workplace environment for female academics which would enable to clearly formulate the problem and research objectives for design research methodology.

A. Key Inferences from Literature

- a. Micro and macro ergonomics principles can be combined with system design thinking to improve the design of workplace environment.
- b. The systems view of ergonomics has a greater role in workplace designs according to contextual and purpose based requirements for example female academics work environment in the Middle Eastern culture where trend is to have female only universities due to religious beliefs [13].
- c. Designing a workplace includes shape, dimensions, layouts, and other elements such as user experience, utility, health and safety. The purpose of any workplace design improvement is to increase human or machine performance in terms of quality or quantity. This may need changes which can reduce constraints, strain, work load or fatigue; increase the workability by effortless operations or information exchanges; minimizing health and safety hazards [11, 575].
- d. Design management can be the bridge between demands of academics for workplace and university management same as between consumers and companies [2].
- e. Design research and design management strategies can provide a different and potentially viable solution for workplace design adding long lasting effects, social responsibility and value as demanded by female academics [3, 4, 14]
- f. University's workplace design for female academics can be facilitated by applying principles of physical, cognitive and social ergonomics combined with soft systems thinking [12, 15].
- g. Marketers of the education segment always want to find ways of improving the image and potential of their institutes for attracting talented students and academics [1].

B. Gaps Found in the Literature

These gaps form the integral part of the research problem which would be solved by research and development through design management strategy in this study.

- (1) Measures applied by university management and governments for women satisfaction about workplace design are not enough which requires ergonomics and design management to create a better design.
- (2) The literature of soft systems and design management application combined for workplace improvement is

rarely found. The literature for female only university's in the GCC region is also rarely found.

- (3) The use of ergonomics is more aligned with manufacturing and physical requirements rather than services, systems and cognitive requirements in the literature.
- (4) The design management is applied as a technical concept rather than a fundamental underpinning of theory and strategic development within academia and businesses both fields.
- (5) The models of ergonomics and design management are numerous and they usually do not collate with each other. Hence, with every problem there is a new definition for both.
- (6) Many of the models in the ergonomics and design management are simply predictions or assumptions which are not empirically tested with any type of data.
- (7) Although numerous studies have examined the workplace design, none of the studies have attempted to develop the specific solution for female only university workplace and environment.
- (8) It is still unclear after the five decades of design research, design management and ergonomics that where they merge and how their merger can be utilized.

IV. KEY RESEARCH ISSUE

The existing body of literature puts forth much evidence implying that women have different demands in the workplace from men. [16] indicates that many women have to settle for less than satisfactory conditions in their work lives.[17] analysed senior management female workforce to determine what differences they exhibit in their approaches to work and what their requirements and measurements of success might be. Women are well represented in service sector work, including libraries. [18] writes about the satisfaction of service sector employees; also [19] states about conditions of women working in the UK libraries. These research studies have indicated the need of better workplaces in terms of environment and ergonomics for working females.

Although gender segregation is not a unique feature prevalent only in the Arab world, a country like Saudi Arabia does in fact represent the far end of the spectrum in terms of gender segregation [20]. The aesthetic and physical requirements for women might be quite different from their male counterparts in the workplace environment, office and space planning [21]. [22] and [23] analysed the effects of the work environment on different groups of workers. So, under the provision that women have separate organizations, and considering that the design requirements for them are different from men, it is of utmost value that a customized approach be adopted by higher education institutes in the Kingdom to suit the female population, students and otherwise.

This research therefore firstly, aims to find out how customizing the universities using design management would improve the workplace for female academics in general and then analyse the women's universities in Saudi Arabia based on the females' preferences. This would enhance the

workplace comforts and value of the respective universities, and more importantly, if it would create greater satisfaction among the university beneficiaries. Reference [24] suggests there is a tendency to underplay or disregard the value that proper design can create for women. Secondly, to identify and address what factors are important to create a suitable design management strategy that can enhance the value in the Saudi Arabian women's universities.

V. PROPOSED METHODOLOGY

The study ultimately aims to formulate a strategy suited to women's institutes in Saudi Arabia. The course of action that leads us to determining the said framework would be divided into two principal phases: philosophy and strategy [25]. The 'philosophy' aspect of the research would rely on how the information received through the primary research conducted for this study is studied and analysed to interpret how the university design can be improved or altered to better facilitate the female population [26].

The primary research for this study includes, but is not limited to, focus groups, observations, photo audit and personal interviews with the female academics from three different universities in the KSA and UK. Design industry insights verify that when it comes to design the client knows best [27]. This study involves a sample of three universities would be from KSA and UK. This would allow a comparative perspective across the region and different levels of status. Moreover, secondary data will also be used to conduct the analysis. This would include a thorough review of archival documents. [27] points out any inconsistencies in the design of the organization would be revealed in the design audit. The proposed research design of this study is as follows [26].

1st phase: Observations of female academics in the workplace on a critical term time day

2nd phase: Focus groups of female academics to study issues of concern and to review design solutions.

3rd phase: Photo audit and archival documents and observations analyses.

4th phase: Semi-structured interviews of female academics to develop the design solution in terms of a framework for workplace improvement.

The interpretation would be conducted through qualitative analyses and would provide details of the orientation and preferences of the organizational stakeholders and present a clearer picture of the drawbacks or gaps in the design of the educational organizations for females in the region. This would include the CATWOE and rich picture formations [12, 26]. This phase would be followed by the strategy phase. [27] defines design strategy as something that establishes how the organization intends to use its design to best achieve its operational goals. This would entail into a case study research. The study will use the three different universities as case studies and would carry out the qualitative analyses. The suggested framework would be based on the multiple evidences from these case universities. The study will embed the design management tools and techniques in data collection

and analyses which would help to finalize the university design and its improved ergonomics particularly in the KSA.

VI. CONCLUSION

Marketers of the education segment always want to find ways of improving the image and potential of their institutes for attracting talented students and academics. This is where design management strategy could serve as bridging between demands of academics for workplace and university's management similar to the context of consumers and companies. Design management strategy also provides a different and potentially viable perspective for overall university development. Solutions created with help of design management strategies based on the primary data analyses obtained from real time work experiences of female academics would create long lasting and effective solutions to issues faced by female academics. These solutions on their implementation would derive the dual benefits of universities and female academics thus indirectly improving quality teaching and research quality.

REFERENCES

- [1] Rees, W. D., Porter, C., 2008, The re-branding of management development as leadership development - and its dangers. *Industrial and Commercial Training*, 40, 5, 242 – 247.
- [2] Hutton, W., 2009, Design in the knowledge economy – 2020, *The Landscape of Tough Times*, The Work Foundation.
- [3] de Mozota, B., 2003, *Design Management*, New York: Allworth Press
- [4] Cooper, R., Press, M. 1995, *The design agenda: A guide to successful design management*, New Jersey: John Wiley and Sons.
- [5] Allen, M., 2002, *The corporate university handbook*, New York: American Management Association.
- [6] Falah, G., Nagel, C., 2005, *Geographies of Muslim women: Gender, religion and space*, New York: The Guilford Press.
- [7] Lefebvre, H., 1991, *The production of space*, Oxford: Blackwell Publishing.
- [8] Steinmann, S. H., 2005, Changing identities and changing spaces in village landscapes of settled pastoralists in Eastern Morocco, Chapter 4 in Falah, G. and Nagel, C. (ed.), *geographies of Muslim women: gender, religion and space*, New York: The Guilford Press.
- [9] Worthington, J., 1998, *Reinventing the workplace*, Oxford: Architectural Press.
- [10] Davis, G., Becker, F., Duffy, F., Sims, W., 1985, *ORBIT-2 Organizations, buildings and information technology*, Harbinger, Norwalk.
- [11] Salvendy, G. (ed.), 2006, *Handbook of human factors and ergonomics*, 3/e, New Jersey: John Wiley and Sons.
- [12] Wilson, J. R., 2000, *Fundamentals of ergonomics in theory and practice*, *Applied Ergonomics*, 31, 557 – 567.
- [13] Dul, J., Bruder, R., Buckle, P., Carayon, P., Falzon, P., Marras, W. S., Wilson, J. R., der Doelen, B. V., 2012, A strategy for human factors/ergonomics: Developing the discipline and profession, *Ergonomics*, 55, 4, 377 – 395.
- [14] Laurel, B. (ed.), 2003, *Design research, methods and perspectives*, Boston: MIT Press.
- [15] Bridger, R. S., 2009, *Introduction to ergonomics*, 3/e, London: CRC Press.
- [16] Corby, S., Stanworth, C., 2009, A price worth paying?: Women and work – choice, constraint or satisficing", *Equal Opportunities International*, 28, 2, 162 – 178.
- [17] Cornelius, N., Skinner, D., 2008, The careers of senior men and women - a capabilities theory perspective. *British Journal of Management*, 19, 141 – 149.
- [18] Soltani, E., Liao, Y. Y., Singh, A., Wang, W. Y., 2010, Managing service quality: The managers' orientation and their consequences – case study evidence of current practice, *Total Quality Management and Business Excellence*, 21, 673 – 685.

- [19] Hadfield, E., Sen, B., 2009, Women's career progression in U.K. academic libraries: Organisational change and management change, IFLA publications, 1, 139, 328 – 341.
- [20] Hill, C., Loch, K., Straub, D. W., El Sheshai, K., 1998, A qualitative assessment of Arab culture and information technology transfer, Journal of Global Information Management, 6, 3, 29 – 38.
- [21] Kaplan, R., 1993, The role of nature in the context of the workplace, Landscape and Urban Planning, Special issue urban design research, 26, 1 – 4, 193 – 201.
- [22] Myerson, J., Ross, P., 2003, The 21st century office, Laurence King Publishing.
- [23] Myerson, J., Bichard, J., Erlich, A., 2010, New demographics new workspace: Office design for the changing workforce, Farnham: Gower Publishing.
- [24] Ballard, G., Koskela, L., 1998, On the agenda of design management research, Proceedings IGLC, 98, 52 – 69.
- [25] Easterby-smith, M., Thope, R., Jackson, P. R., 2008, Management research, 3/e, London: Sage Publications.
- [26] Goodwin, K., 2009, Designing for the digital age, Indiana: Wiley Publishing.
- [27] Best, K., 2006, Design management: Managing design strategy, process and implementation, New York: AVA Publishing.