

School of Fashion and Textiles
Higher Degrees by Research Candidate Abstracts

Muhammad Asif

DR213 PhD (Fashion and Textiles)

Qualitative impact assessment of political disruptions on textile supply chain performance in Pakistan

Keywords: supply chain performance, political disruptions, transportation delays, disruptions, delivery lead time, textile industry

This study explores how political disruptions impact on the performance of supply chain by directly disrupting the supply chain networks of the textile industry in Pakistan. Qualitative methodologies were adopted to explore a deeper understanding of the relationships between political disruptions and textile supply chain performance. Semi-structured interviews were conducted at 25 different textile manufacturing firms. These interviews with senior management have generated rich data to help gaining insights and deeper understanding of the key supply chain issues. Transcript were coded and analyzed in NVivo software. The results of this study confirm the severe impact of political disruptions on supply chain performance. Political disruption however is perceived as a key factor that directly disrupts a supply chain through increased production and delivery lead time, caused transportation delays, interrupted raw material supplies to plants and distributors and constraint access to workers. The evidence presented in this study attests to the negative consequences of political disruptions on supply chain performance, which start to instigate textile firms to adopt off-shoring of textile manufacturing to politically more stable locations such as Bangladesh or India. The major limitation is that only textile industry has been used to collect data during interviews. Based on the results of this study, it is argued that supply chain performance is not entirely dependent on improving cost-efficiency and performance of supply chain but it also relies on the stability of political environment, which often cause significant supply chain disruptions. A tri-partite institutional approach between government, industry and community is therefore suggested to deploy strategy to minimize the impact of politically motivated disruptions on supply chains in Pakistan.

Armando Chant

DR213 PhD (Fashion and Textiles)

Imaginative Voyaging; Fashion Practice as transitional site for wonder and enchantment.

The research is exploring the act and feeling of wonder within a transitional and transformative context, its emotionally generative possibilities in relation to fashion, and how potentially it has the ability to inform an experimental and experiential approach to fashion practice. It considers how an experience of fashion in relation to wonder can be an immersive and ethereal experience and be created through inter-disciplinary engagement. The state of wonder will be explored within the framework of a experimental fashion practice whereby the transitional moments, sites and surfaces of creativity between mediums are seen as potential sites of encounter and enchantment.

Olga Gavrilenko

MR214 Master of Technology

3D surface print design continuity: Seamless integration of digital printing technology in computer aided design and product development.

Keywords: digital textile printing, engineered design, CAD

The seamless integration of digital textile printing technology in computer aided design and product development poses numerous challenges. This research will determine the factors that hinder the adoption of digital textile printing as a mainstream technology from a print design continuity perspective. Traditionally engineered prints require manual alterations. This research will develop a process to streamline the transfer of graphic assets from computer aided design and product development stage to manufacturing uninterruptedly.

Cecilia Heffer

DR213 PhD (Fashion and Textiles)

Re-imagining Lace: Textiles as a non-material sensory environment

Notions of lace are traditionally embedded in a set of preconceived ideas around social and cultural histories. Over the last decade interdisciplinary engagement with lace making has opened up a new emerging space for designers to extend the tools/technologies and materials with which they make textiles. Consequently the ways in which we perceive and experience textiles are also coming into question.

While we experience cloth physically, how can we engage with textiles as a non-material, sensory experience? The research breaks away from traditional lace patterning and studies the qualities of lace as a genre for expressing and exploring ideas around narrative and place making. It seeks to enquire into ephemeral qualities experienced in our unique landscape.

Research is led by an interest in the integration of the hand made and emerging technologies. New approaches to textile making investigate alternative ways in which lace can be transformed into an environment of animated pattern.

Leah Heiss

DR213 PhD (Fashion and Textiles)

Emotional Technologies: Designing wearables to re-engage the human in health and wellbeing

Keywords: Wearable technologies, advanced textiles, trans-disciplinary design, user experience, emotional intelligence.

Through the PhD I am developing a series of advanced textile wearable projects for human health and wellbeing that seek to fuse the personal and the medical. The projects are being developed through a 'residency' approach and draw together trans-disciplinary teams that traverse design, electronic engineering, advanced textiles and health sciences. The PhD examines the role of the designer at the core of successful therapeutic development projects and highlights key designerly strengths that facilitate innovative outcomes, including: resilience, empathy, emotional intelligence, reframing (of problems, technologies), and an understanding of ground moods. I examine the myriad roles played by designers in the trans-disciplinary project including as go-between, translator, instigator, and challenger. The PhD suggests that it is through the making of human-centred projects with extended material prototyping in the laboratory context that innovation can occur - in both material terms and in trans-disciplinary collaboration.

Huda Ahmed Mohammed Maghrabi

DR213 PhD (Fashion and Textiles)

A novel design of textile X-ray shielding for female user

Key words: X-ray shielding; lead apron; 3D seamless technology; radiation protection; protective textiles; fabric coated; protective garment

X-ray is a useful diagnostic tool in the radiology world. Despite its usefulness, overexposure to radiation affects the health of those who are working closely with X-ray scanner. Overexposure to high levels of radiation can cause large numbers of cells to die or lose their ability to replicate which consequently causes organs failure. Lead aprons are the only protective garment used by radiation workers to shield the radiation. However, commercial lead aprons currently available in the healthcare market have many problems such as causing user backpain due to the apron weight, easily crack due to their inflexibility thus causing radiation leakage through cracks and compromising with the necessary protection and also causes environmental problem due to the toxicity of lead. In addition, the commercial aprons only offer one design to suit both male and female, therefore does not fit nicely to female anatomical structure. This research aims at developing a durable, safer and more flexible textile with better integrity solution to the radiography field. An advance textile substrate use as a backing material for the apron will provide better X-ray radiation shielding. The prototype aprons will be lightweight, flexible and more importantly accommodate different body shapes of female user with enhancing of comfort performance.

Pictured L – R: fashion & words.

This PhD proposes to investigate how encounters with words in the discipline of fashion can contribute to fashion design processes and thinking about fashion design. As a duo, images and words give the 'reader' a storehouse of information yet, which is more important to the designer – words or images? While I see both as maintaining a role I propose it is words that hold the greater potential to provoke imagination in design as they provide the designer with a variety of ways of interpreting material gathered in response to a germinal idea. The current project draws on playwriting methods where the written word 'serves to shape the play's universe and fabricate character' (Castagno 2012, p.15).

Abu Shaid**Incorporation of Aerogel in textiles for thermal protection**

Keywords: Aerogel, fire-fighter, thermal protection, comfort

The research aims to incorporate aerogel in textile fabric for high heat insulating application and will have a particular focus to improve the Fire fighter's protective clothing in this manner. In recent years aerogel has been commercially applied in different fields such as building applications, pipelining, industrial cryogenic applications, outdoor gears etc. The use of aerogel in thermal protective gears is comparatively a new field of interest and yet to be explored with its full potential. However application of aerogel in thermal protective clothing is a challenging task as it requires to make a compromise between two crucial but conflicting factors- maximizing thermal protection and minimising heat strain. Aerogel resists heat flow. From the perspective of incoming heat fluxes from external fire source, it is a desirable property for FFPC. However, from the view of internal heat release from the body, it is an undesirable property for FFPC. Hence the benefits of extraordinary thermal insulation properties of aerogel can only be utilized, if it can be applied ensuring sufficient release of metabolic heat. The present research will focus to utilize the superior heat insulating properties of aerogel in a way where it can increase the protection without compromising comfort.

Amanpreet Singh**Port centric logistics cluster: A contemporary approach to connect and commercialize port logistics sector**

Keywords: cluster, agglomeration, collaboration, regional economies, spatial concentration

Port-centric logistics clusters are considered as an intermodal gateways and/or hubs of international trade, which connect national economies with global production networks. Despite the recognition of port-centric approach to economic development there is insufficient evidence to empirically assess the functional and spatial characteristics of port centric logistics clusters. There is also disagreement on four key questions: how port-centric logistics clusters are defined and identified, what industry types do they constitute, what methods are appropriate to delineate the boundary of port centric logistics cluster and how to measure the strength of the clusters. In this research, a spatial approach is adopted to geographically delineate the spatial congregation of port-centric logistics employment using three major container ports in Australia. The purpose of this research is to determine the methods to develop the creation of cluster and measure the strength of cluster to develop policies, more specifically in the case of Melbourne maritime industry.

Using the Census data from the Australian Bureau of Statistics (ABS 2006), analysis has been conducted on employment data containing information about where people work and what industry they work within the close vicinity of case study seaports. The results show that the spatial extent Australian port centric logistics clusters, which tend to vary both in size and shape. Overall size of employment in port-related industries in Australia has grown substantially. Road freight is dominating industry in the port-centric logistics cluster with a contribution of 23.02% and 37.54% in 2001 and 2006 respectively. The range of port-centric logistics cluster in Melbourne is towards western suburbs and in Botany Bay the port-centric logistics cluster is discerned mainly around eastern suburbs and in Brisbane the spread of port-centred logistics cluster is towards southeast inner Brisbane and Northwest Inner Brisbane suburbs

This shows the impact of land use consolidation by the State Government in their effort to boost transport and warehousing employment closer to Australian container ports. The establishment of port-centric logistics clusters, we argue, could mean the opportunities for organisations to achieve agglomeration economies, increase rivalry among organizations to promote competition, access to greater pool of customers, availability of skilled labour force, closer proximity between customers and supplier, sharing of public infrastructure and resources, increased inter-firm interactions, and knowledge spill-over.

Christopher Watson

DR213 PhD (Fashion and Textiles)

Research into Mining, Oil and Gas Ergonomic Workwear for Hot Environmental Conditions

Key words: Workwear, personal protective clothing (PPC), clothing comfort, ergonomic workwear, hot working environments.

The aim of this research is to investigate and characterize current workwear, also known as personal protective clothing (PPC), used in mining, oil and gas industries and develop improved workwear products for hot environmental conditions to provide optimized apparel with improved fit for purpose; better thermophysiological support attributes and enhanced ergonomic characteristics.

This study will use research methodology that utilizes both objective and subjective methods for evaluation of the performance of current PPC and validation of the performance of the newly designed and constructed PPC.

The outcomes of this research will provide industry with empirical evidence of improved fit for purpose workwear, as well as its attributes relevant to the thermophysiological and ergonomic functions of the wearers during their work activities. Furthermore, this research is innovative and more comprehensive as it will include worker morphology and activity profiles providing subjective evaluation.

Karen Webster

DR213 PhD (Fashion and Textiles)

STOP THE FASHION SYSTEM - I WANT TO GET OFF!

Sustainable propositions for Australian independent fashion

Key words: sustainability, slow fashion, viability, industry veracity, longevity

Fashion is a complex, vibrant, global product driven system although in its current guise not sustainable. The rise of high volume fast fashion, overt consumption and excess supply has led to significant disparities and questions of viability for independent Australian labels. In prioritising the efficiency of the system, by creating, producing and consuming excessive cheap disposable product, has fashion become a compromised and commoditised industry? What might an alternative fashion model look like? How might it operate?

This research investigates the operations and associated issues of the global fashion industry. It examines how Australian independent fashion businesses operate within this global context, and seeks to develop alternative constructs. These propositions will consider methodologies related to sustainability, production equity, slow fashion and design processes that are analytical and reflective. From this, an adaptable model will be proposed that could assist the Australian independent fashion sector to develop viable innovative practices.