Thesis Proposal

Perceptions of Sustainable Textiles: A Q Methodological Approach

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Introduction

American consumers are increasingly making choices based on socially safe consumption, (Belasco, 2014) bringing ethical concerns to the forefront of their purchasing decisions (Diallo & Checchin, 2015). The textile industry has experienced heightened consumer demand for sustainability (Dodd & Supa, 2011), a movement which has spurred a bandwagon effect (Rieple & Singh, 2010), propelling consumers to follow social norms and buy ethically

sourced products out of a fear of being left out of a trend (Bikchandani, Hirshleifer & Welsh, 1992).

As the textile industry contributes significantly to pollution and ecological hazards, retail apparel brands have come under scrutiny for both environmentally and socially harmful practices (Peterson, Hustvedt & Chen, 2012). Consumer demand for fast-fashion, punctuated by a desire for new and inexpensive clothing has driven retailer brands to accentuate speed, quantity, and size of production. These financially adept practices may come at the expense of the environment, depicted in the pollution of air or water systems, or social inequality, epitomized by sweatshop working conditions (Zavestoki, 2002).

Moosemayer and Fuljahn (2010) articulated Corporate Social Responsibility (CSR) as the embodiment of the duty of businesses to protect the interests of society at large. Management approaches invoking self-regulated standards of sustainability have emerged as an important element of corporate strategy (Moosemayer & Fuljahn, 2010). A survey conducted by the marketing firm KPMG in 2015 revealed the growing share of industry leaders who are adopting CSR strategies, finding 90% of the Global Fortune 250 Companies reported implementing corporate responsibility. Additionally, a 2012 survey of 4000 managers and executives worldwide evinced 70% of the firms placed sustainability on their management agenda (Knut et. al, 2012).

Historically, a key barrier to the verification of sustainable cotton was the absence of traceability in the supply chain. After the ginning process, the origin of the cotton quickly becomes lost in a supply chain known to be "fragmented, complex, and not very transparent" (Bhardwaj & Fairhurst, 2011, p.167). The off-shoring of manufacturing further convolutes the supply chain (Zavestoki, 2002).

In light of the increased interest pertaining to sustainable fabric, organizations have emerged acting as third-party consultants to authenticate the sustainable practices of the grower (Hustvedt, 2008). Among these organizations is the Better Cotton Initiative (BCI), founded in 2009, which has grown to be the largest certifier of sustainable cotton growing practices in the world. In 2017 the non-profit accounted for 14% of global production. The expansion of organizations such as BCI have connected many U.S. cotton growers to clothing retailers for the first time in decades (BCI, 2017). However, there is no concrete definition of what is considered to be sustainable, and corporations are left to outline their own standards independently (Page & Ritchie, 2009). The ambiguity of cotton sustainability has prompted a disconnect between perceptions of sustainability between retailers and producers (Peters, 2015).

The burgeoning prominence of sustainable cotton is happening amidst a challenging economic climate for producers. As export markets account for three-fourths of total demand for U.S. cotton (USDA, 2018), the industry notoriously experiences volatile prices shifts associated with a globalized economy (Koenning et. al, 2004). The Texas High Plains is a notable cotton growing region, producing 25-30% of the annual U.S. cotton supply, thus representing a significant market share for retailer interests (USDA, 2018). In West Texas, growers are particularly vulnerable to weather patterns (Weinheimer et. al, 2014), a fact evidenced in 2011 when drought conditions resulted in a 45% cotton crop loss in the Texas High Plains (TAWC, 2013). As retailers engage producers to adhere to their version of sustainable practices, growers may struggle to invest the capital to meet these demands amid a tumultuous economy (Peters, 2015).

The Texas Alliance for Water Conservation (TAWC) was enacted in 2005 to support West Texas growers, and although the TAWC was implemented to "monitor water use, soil

moisture, crop productivity, and economic returns of cropping systems," they also investigate

enterprise options for producers (Weinheimer et. al, 2014). Most recently, their efforts have

involved forging industry partnerships and acting as an intermediary with the BCI to introduce

clothing retailers to Texas High Plains producers. The need for a holistic understanding of textile

sustainability has been identified by TAWC leaders. In 2018 Samantha Borgstedt, TAWC

Director of Communications stated:

> The more we work with retail representatives, the more we are starting to realize
>
> what a diverse concept sustainability is and how its interpretation varies among
>
> different people. But to move beyond a one-size-fits-all approach to our
>
> communications strategy, we need to have a better idea of what our new
>
> stakeholders value in regards to sustainable practices. (Borgstedt, personal
>
> communication, September 14, 2018)

It is crucial to identify the perspectives and opinions of specific groups concerning the

food and fiber system (Kovar & Ball, 2013). Once agricultural communicators recognize these

similarities, information can be tailored to meet the needs and perspectives of different consumer

groups (Leggette & Redwine, 2016). Crafting message frames to a target audience has been

identified as a key element in communication strategies. Adapting each message to a target

audience will foster maximum communication efficiency, as personalizing the message to the

personal beliefs and opinions enhances the relevance of the subject (Hawkins & Fackrell, 2008).

The novel interaction between producers and retailers has illustrated a need to identify and

describe the perceptions regarding sustainable textiles among producers, clothing retailers, and

consumers of West Texas. This research will be implemented to aid organizations such as the

TAWC implement effective communication strategies and meet the objectives of supporting water-conscious practices.

Theoretical Framework

The study's research design is guided by Ajzen's Theory of Planned Behavior (TPB). TBP is grounded in the concept of humans acting as rational beings, using available information and assessing the implications of their actions when making decisions. Ajzen (1991) concluded behavioral intentions can be accurately forecasted through assessment of behavioral attitudes, perceived behavioral control, and subjective norms (see Figure 1). Ajzen defined intentions as a reflection of the extent of favorability felt towards a behavior, representing a notable predictor towards an individual's action. For Ajzen, (1991) behavioral attitudes encompass the subjective probability the behavior will produce a certain outcome, or what is anticipated to occur. Subjective norms comprise the social pressures of the behavior. These pressures may be indicative of what an individual believes is expected of them through peers, family, friends, and society. Ajzen (1991) described perceived behavioral control as the individual's perception of the ability to perform the behavior.
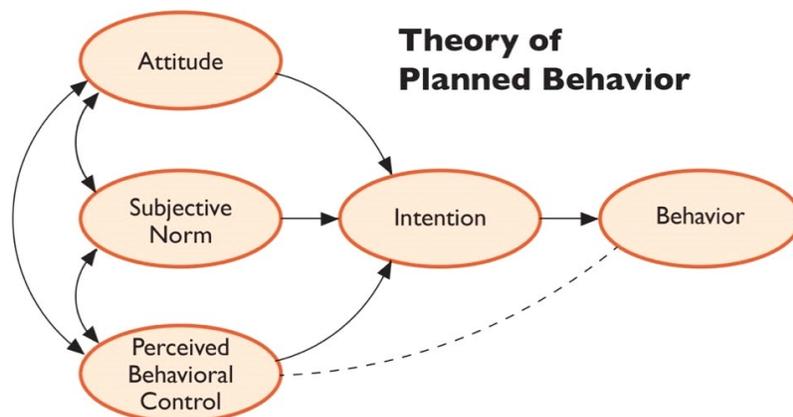
The investigation of perceptions surrounding sustainable textiles will be performed with the application of Q methodology, which studies human subjectivity through factor analysis by analyzing correlations between subjects across a sample of variances. The employment of Q methodology not only allows for the investigation of stakeholder attitudes by rating an individual's level of agreement, but also examines perceived subjective norms by exposing participants to a diversity of viewpoints. Clothing retail representatives, West Texas cotton growers, and consumers each have a unique connection to the sustainable textile industry, which allows for an exploration of a segmented audience's practices and intentions.

Previous Research

Recently, consumer perceptions of sustainability have been addressed in many fields, particularly in the context of describing the extent of consumer willingness to pay for products marketed as environmentally friendly. A considerable amount of literature has been published on consumer willingness to pay for organic cotton apparel (Ellis, 2012; Ha-Brookshire 2011; Hustvedt & Bernard, 2008). The work of these researchers revealed an escalating concern regarding the ecologically draining current level of consumption, and concluded sustainable practices are an opportunity for clothing retailers to differentiate themselves in the marketplace. These previous studies recommended expanded efforts to understand the complexity of

consumer behavioral intentions of sustainable textiles to inform and motivate retailer adoption of socially responsible practices.

Kang, Liu, and Kim (2013) studied behavioral intentions in regard to sustainable clothing and found consumer perceived knowledge, relevance, and effectiveness significantly affected environmentally friendly apparel purchasing habits of millennial consumers in the United States, South Korea, and China. Kim, Lee, and Yang (2015) evidenced the role of CSR by publishing results which suggested companies with missions promoting sustainability encouraged heuristic development among consumers. The findings indicated these mental shortcuts formed in participants' cognitive processes fostered an expectation of environmentally conscious practices of clothing retailers. The results also demonstrated consumers garnered an immediate value from these purchases, in the form of self-enhancement and altruism. Kim et. al (2015) recommended future research examining other types and measures of corporate values, beliefs, and norms within organizations and cultural contexts to develop a comprehension of targeted viewpoints regarding sustainable textiles.

Previous research is limited in exploring perceptions of sustainability using Q methodology. In 1999 Barry and Proops described consumer attitudes toward environmental issues in the United Kingdom and recommended the proliferation of Q methodological studies to foster a more refined understanding of environmental attitudes. Leggette and Redwine (2016) articulated the value of Q methodology in agricultural communications research and demonstrated the promise of using Q method in understanding "perspectives related to the truth behind feelings, behaviors, and attitudes of certain groups within society" (p. 62). The authors recommended the approach to researchers examining human subjectivity (2016). Leggette and Redwine (2016) specifically identify conservation and management practice perceptions as a

pragmatic and valid application of Q methodology, due to the ability of the data to "understand how and why each of these types of people behave and perceive water conservation and management will help the industry more effectively disseminate targeted messaging" (p. 63).

Purpose and Objectives

The purpose of this study is to examine perspectives of sustainability among key stakeholder groups in the West Texas cotton industry. The identification of perspectives will enable the TAWC to clarify factors resonating with three target audiences. To meet this purpose, two objectives will be implemented to frame the study:

- Identify level of agreement with statements related to manufacturing and agricultural production practices among West Texas cotton growers, clothing retail representatives and consumers.
- Describe personas related to the production and manufacturing of sustainable textiles of West Texas cotton growers, clothing retail representatives, and consumers.

Basic Assumptions and Delimitations

This study assumes participants understand the Q sort task and definitively rank statements according to their true perceptions. It is also assumed the concourse developed portrays an accurate representation of the conceptual space of sustainable textiles. Lastly, the study design infers participants involved in the targeted professions are knowledgeable about the subjects identified on the concourse.

A delimitation to acknowledge regards the attribute of Q methodology to fulfill the researcher's pursuit of preferences, not inferences (Brown, 2002). The methodology seeks to provide insight into perspectives and ideas rather than determine the numerosity of the perspectives among the population. Valenta and Wigger (1997) exemplified this point:

"generalizations in Q methodology research are based on the validity and theoretical implications of identified opinion types, and not on their numerical distribution among study participants" (p. 508). Generalizations cannot be drawn to quantify the personas uncovered in the study.

Furthermore, persona descriptions from this study should not be used to personify all cotton growers in the United States, as distinct growing conditions and water conservation challenges on the Texas High Plains prompt unique sustainability perceptions. The data derived from the sample population of BCI clothing retail partners cannot be generalized to all clothing retailers in the United States. Representatives from the sample population originate from companies which have made public commitments to sustainability efforts, deeming it as a priority for their organization.

Methods

The examination of sustainable textile perspectives was conducted with the application of Q methodology. Q methodology investigates the "values and preferences held by the public" (Steelman & Maguire, 1999, p. 362). Q methodology was designed to aid researchers in exploring human subjectivity to describe patterns of viewpoints held by specific audiences (Watts & Stenner, 2012). Leggette and Redwine (2016) noted these patterns are revealed by performing analyses which invert the spearman r correlations and use the individuals as tests rather than instruments. "Instead of using instruments to test the performance of an individual and make comparisons to the population, Q methodology uses each individual, complete with all the subjectivity and holistic diversity, as tests for the performance of items" (Leggette & Redwine, 2016, p. 51).

Q methodology combines qualitative aspects of research in the examination of subjective human experiences and perspectives (Brown, 1993), but also integrates the quantitative tools of

correlation and factor analysis to yield persona groupings (Simons, 2013). Q methodology is implemented through concourse development, Q sort identification, Q sort analysis, factor analysis, and factor interpretation (Simons, 2013).

Population and Sample

A panel of experts within the TAWC identified three population groups as key stakeholder entities: West Texas cotton growers, textile retailer representatives, and generation Y and Z consumers. West Texas cotton growers will be chosen based upon their production location in the Texas High Plains region. Textile professionals representing businesses who have made a public commitment to sustainability efforts comprise the second target population. The TAWC recognizes the influential nature of these brands, and the study of companies that have integrated sustainability into their marketing platform will yield insight into the patterns of priorities inherent within these corporations. The third population is of interest to the TAWC because of the growing buying power shared by these generations in the United States. The investigation of this population's perceptions will enlist the recruitment of university students.

Brown (1980) stated the purpose of Q methodology was to establish the existence of particular viewpoints, then to explicate and compare them. According to Watts and Stenner (2012), "large numbers of participants are not required to sustain a good methodological study" (p.72). Kline (1994) suggested a minimum ratio of two participants to every study variable, or twice as many Q set statements as participants. 20 participants will be recruited for each population group, resulting in a total sample size of 60 participants.

Sampling Procedure

After receiving IRB approval (Appendix A), data collection will be achieved in three stages. First, participants will be prompted to complete a pre-sort questionnaire. Watts and Stenner noted the collection of demographical data adds to the richness of a Q methodological study by "confirming and corroborating the tone of particular interpretations" (2012, p.75). Next, participants will undertake the Q sort process. Large magnetic boards will be formatted with a 13-point forced choice distribution, numbered from -6 to +6 (see Figure 2). Each Q set statement (Appendix B) will be printed on a 2" by 3" laminated card with a magnet attached to the back. An identifying number will be placed on the back of each card to distinguish each statement for data analysis. Participants will be instructed to sort each statement in accordance with their level of agreement and will be informed there is no ranking within each column. Final placings will be recorded using the statement's number on paper form, and a digital picture will be taken for an additional layer of accuracy.
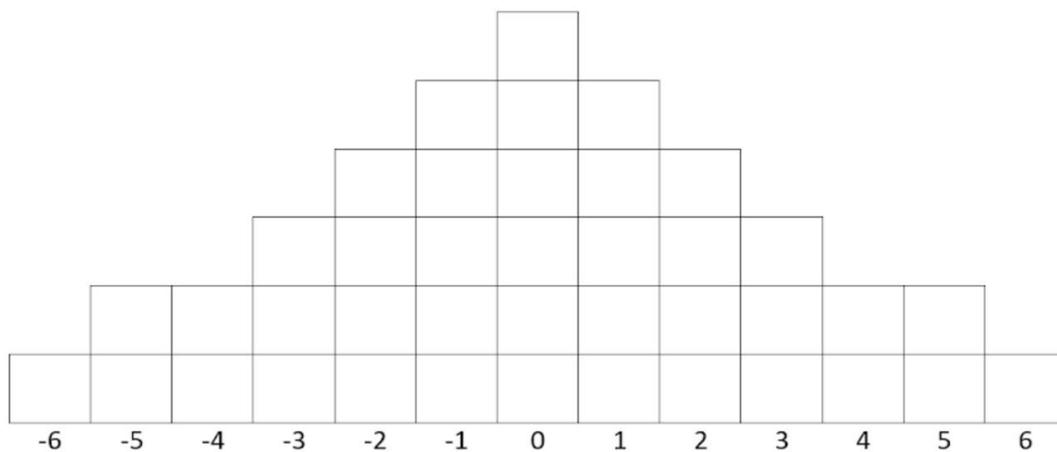
Upon completion of the Q sort, the researcher will conduct exit interviews to guide further insight into their perspectives and aid the researcher in interpreting the ranking carried out by the participant.

In anticipation of cotton planting season, data will be collected from producers in the months of March and April. The researcher will administer the Q sort process to producers at regional business locations. To garner the insights of the retail brand representative population, meetings will be scheduled in the months of April and May with textile professionals. University student recruitment will be fulfilled in April through the use of an institutional platform enabling participants to schedule 30-minute time slots with the researcher.

Instrument

The development of the Q sort instrument entailed a process by which researchers crafted a comprehensive account of constructs encompassing the perceptions, beliefs, and opinions of a topic known as the concourse. These ideas were formed into statements which compromise the Q set, physically sorted by individuals from negative to positive. Watts and Stenner (2012) recommend using a 40-80 statement Q set to enable coverage and balance into the topic. Q methodology researchers have cautioned against using too many statements, which can make the sorting process overly demanding and taxing for participants (Curt, 1994; Stanton & Rodgers, 1995). This study will use a 40 statement Q Set to avoid respondent fatigue. Per the recommendation of Watts and Stenner (2012), the study will utilize a thirteen-column distribution board, which is ideal for studies involving participants who are particularly knowledgeable about the subject matter. Implementing a platykurtic distribution of a Q sort enables participants to distinguish "fine grained discriminations at the extremes of the distribution, a strategy that allows us to maximize the advantages of our participants excellent topic knowledge" (p. 80).

The Q set should embody a diversity of perspectives and be informed by qualitative methods or relevant literature (Watts & Stenner, 2012). The concept of sustainable textiles was

first categorized into the two primary industries of textile production; agriculture and manufacturing, as determined by Rieple et al. (2010). Statements focused on the agricultural group attend to ideas related to the growth of the raw product of cotton, while statements concerning manufacturing practices encompass perspectives regarding the assembly of the textile product. Each division was further characterized by the USDA (Farm Bill, 1990) definition of sustainability, which affirms practitioners of sustainability integrate practices to promote a healthy environment, economic viability, and social equity. From this definition statements were formed inclusive of finances, environmental stewardship, and community support.

The development of agricultural statements within the concourse was additionally guided by Sydorovych and Wossink's (2008) conclusions of the components of agricultural sustainability. Statements regarding the social, economic, and ecological aspects of sustainable manufacturing were inspired by Rusinko's (2007) analysis of green manufacturing practices of textile producers. Each statement was written with the stem *sustainable textiles are,* following the suggestion of Watts and Stenner to employ a consistent prefix for clarity and understanding (2012).

Prominent scholars of Q method research have established the concepts of validity and reliability are not as relevant to Q methodology. Brown (1980) noted, "the concept of validity has very little status [relative to Q methodology] since there is no outside criterion for a person's own point of view" (1980, p.174-5). Similarly, Watts and Stenner (2012) contended:

> The R-methodological [by-variable factor analysis] take on reliability is certainly not applicable to Q methodology. Repeated administration of a Q sort to a single participant tells you more about the reliability of the person's viewpoint than it does about the reliability of the method (2012, p. 51).

With this in mind, the researchers did take steps to confirm the legitimacy of the Q set. Watts and Stenner recommended the process of piloting by subject matter experts to "clarify wording of items, reduce duplication, generate new items, and ensure that the Q set provides adequate coverage of the relevant ground (p. 61)." The Q set was reviewed by TAWC board members to verify the conceptual soundness of the concourse. Additionally, pilot testing was performed at the 2019 TAWC Water College with industry professionals to further refine the statements.

Factor Analysis

Data analysis will be conducted using PQ Method Software, a package designed specifically for Q Methodology (Schmolk, 2014). Guided by the practices of Watts and Stenner (2012), the researcher will apply a Principal Component Analysis (PCA) to generate an unrotated factor matrix. The Kaiser-Guttman Criterion will serve as a guide to determine an appropriate factor extraction. All factors with an Eigenvalue greater than 1.0 will be considered defining sorts, following Watts and Stenner's (2012) recommendations to use values in determining workable and meaningful solutions. Lastly, a varimax rotation will be applied to generate a rotated factor matrix and select defining sorts for a characterization of viewpoints.

Factor Interpretation

Q methodology has been described as an application of the abductive form of logic, a term formalized by Charles Peirce in regard to "studying the facts and devising a theory to explain them" (Pierce, 1931, p. 90). By maintaining close attention to the multitude of clues offered by factor analysis, insight is derived to shape a "unique experience into a commonplace example of some more general phenomenon" (Shank, 1998, p. 847).

The process integral to factor interpretation is grounded in the logic of abduction, as the researcher must adopt an approach exemplifying every individual item in a particular configuration has its place and ranking for a reason (Watts & Stenner, 2012). The factor interpretation for this study will be directed using Watts and Stenner's (2012) crib sheet method. The first draft of the crib sheet first outlays four categories of items. Lists for each factor are compiled to highlight the highest-ranking items, lowest-ranking items, as well as items ranked higher or lower by the factor than by any of the other study factors. By distinguishing these statements, the polarization of each factor's viewpoint is more coherently revealed. Watts and Stenner (2012) implore researchers to consider each item and its implications to the wider viewpoint, seeing exclusively from the perspective of participants, and thus generate a "sense of the overall story being told by various item rankings" (Watts & Stenner, 2012, p.156). With this contextual information regarding each factor in place, a second draft of the crib sheet is derived bearing additional items, with statements which are "highly ranked or potentially useful" (Watts and Stenner, 2012, p.157) being added to the list. The crib sheet method attends to the factor array as a whole and evinces the important items which are fundamental to persona development (Watts & Stenner, 2012).

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Appendix A

IRB #: IRB2018-973
Title: Cotton Sustainability Q-Sort
Creation Date: 10-27-2018
End Date:
Status: Approved
Principal Investigator: Courtney Meyers
Review Board: Institutional Review Board
Sponsor: Texas Water Development Board (580)

Study History

Submission Type	Initial	Review Type	Exempt	Decision	Exempt

Key Study Contacts

Member	Courtney Meyers	Role	Principal Investigator	Contact	courtney.meyers@ttu.edu
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Institution IRB Approval

Appendix B –

My views of sustainable textiles are...

AGRICULTURE	MANUFACTURING

SOCIAL

1. Sustainable textiles are safe for the consumer
2. Sustainable textiles are affordable for the consumer
3. Sustainable textiles are made from high quality fibers
4. Sustainable textiles are made with cotton grown using practices that minimize health stress to the producer
5. Sustainable textiles come from an identifiable cotton producer
6. Sustainable textiles are produced in large quantities to meet demand

SOCIAL

20. Sustainable textiles provide economic support for local communities
21. Sustainable textiles are manufactured by workers who earn a living wage
22. Sustainable textiles are fully recyclable
23. Sustainable textiles are manufactured in factories that are voluntarily disclosed to consumers
24. Sustainable textiles are functional fabrics
25. Sustainable textiles sold in the U.S. are made with cotton grown by U.S. producers

ECONOMIC

7. Sustainable textiles support the continuity of family farms
8. Sustainable textiles are profitable for the cotton producer
9. Sustainable textiles are produced by cotton growers supported with government subsidies
10. Sustainable textiles are produced from cotton grown on small scale farms

ECONOMIC

26. Sustainable textiles are produced cost-efficiently
27. Sustainable textile are profitable for the retailer
28. Sustainable textiles are produced by companies who donate to the community
29. Sustainable textiles are manufactured by workers in fair working conditions
30. Sustainable textiles are manufactured without child labor

ECOLOGICAL

11. Sustainable textiles are made with cotton grown using practices that protect soil health
12. Sustainable textiles are made with cotton grown using low emissions of greenhouse gases
13. Sustainable textiles are produced from cotton grown in ways that respect biodiversity
14. Sustainable textiles are produced with cotton grown with the responsible use of chemicals
15. Sustainable textiles are produced using cotton grown without chemicals
16. Sustainable textiles are produced with cotton grown with a focus on water conservation
17. Sustainable textiles are made with GMO cotton
18. Sustainable textiles are produced under standards to maintain air quality
19. Sustainable textiles are made with cotton grown using practices to enhance wildlife habitat

ECOLOGICAL

31. Sustainable textiles are free of synthetic dyes
32. Sustainable textiles are packaged with recyclable material
33. Sustainable textiles are manufactured using renewable energy
34. Sustainable textiles undergo minimal transportation through the process from cotton to clothes
35. Sustainable textiles should be worn multiple times before being washed
36. Sustainable textile regulation is the responsibility of the retailer
37. Sustainable textiles are produced using minimal water in the manufacturing process
38. Sustainable textile regulation is the responsibility of the government
39. Sustainable textiles generate minimal waste in the manufacturing process
40. Sustainable textiles are manufactured without polluting water systems

Q Set