

# INVESTIGATING THE ENTREPRENEURIAL INNOVATION ECO-SYSTEM IN THE TEXTILE AND APPAREL INDUSTRY

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## ABSTRACT

Recent studies show innovation is a driving force in the current U.S. textile and apparel market. In our review of current studies on Entrepreneurial Innovation, we find many weaknesses in measurements in both the types of responses and in the types of innovations. There are few entrepreneurial studies in the literature focused on the textile and apparel industries. We have used a constitutive approach to entrepreneurial innovation that postulates that the entrepreneurs and their environments are co-created. The Autio et al.[1] framework for entrepreneurial innovation and contexts is investigated by in-depth interviews of textile and apparel entrepreneurs.

**Key Words:** ENTREPRENEURIAL INNOVATION, INNOVATION ECO-SYSTEM, TEXTILE ENTREPRENEURSHIP

## 1. INTRODUCTION

Over the last decade, large corporations have had the majority of market share in many if not most industries. Entrepreneurs needed to be disruptive to enter and survive in these competitive markets. That is one of the primary reasons why many innovations are introduced by entrepreneurs. Some examples include sound motion pictures, personal computers, and search engines [1]. Therefore, new policies have been applied to inspire entrepreneurs to innovate for better economic growth [2]. According to the GEM (Global Entrepreneurship Monitor) 2018 Global Report, there are more entrepreneurs in developing countries compared to developed countries. But the true innovations still appear more often in developed countries[3].

Entrepreneurship is a major component of a dynamic modern economy. When entrepreneurs fail it is costly for societies in terms of lost resources and missed opportunities. Due to high rates of failure among entrepreneurs the research in the field is growing. But there are few entrepreneurial studies in the literature focused on the textile and apparel industries. Powell and Baker conducted 150 hours of interviews with textile entrepreneurs. They found that money generation was not the primary reason for these entrepreneurs to start their businesses but rather reasons closely tied to their sense of identity. The “founders use their firms as vehicles through which they affirm and defend their identities but also create new roles to express previously suppressed social identities” [4]. Recent studies show that the number of apparel entrepreneurs are increasing in local markets. And since these entrepreneurs are more flexible, innovation is a driving force in the current U.S. fashion market [5].

## 2. ENTREPRENEURIAL INNOVATION

In our review of current studies on Entrepreneurial Innovation, we find many weaknesses in measurements of both in types of responses and in the types of innovations. In most cases softer innovations are not included. There is also not a clear understanding of the different

contexts in which Entrepreneurial Innovation happens. Chandra and Yang developed a theoretical framework by deep study and literature survey using content analysing tools which explains disruptive innovation as a co-evolutionary entrepreneurial process at the firm, product, and customer level [6]. Another qualitative study discusses an innovation becomes disruptive when the basic opportunity has a certain demand [7]. In another study, authors define disruptive innovation in its core which is about competitive responses to innovation [8]. According to Garud et. al, in their review of the literature on entrepreneurial innovation, there are several approaches that have been taken by scholars to study the phenomena: Micro-Macro approaches, Multilevel approaches and Constitutive approaches [9].

## **2.1 Micro-Macro approaches**

The micro approach to entrepreneurial innovation is focused on how entrepreneurs and their team innovate successfully [10]. This approach emphasizes an entrepreneurial agency and entrepreneurial attitudes as the core of entrepreneurial innovation. In the micro approach, the role of contexts is not explicitly considered, but the personality and cognition of entrepreneurs and team is studied [9].

The other approach has focused on the role of contexts in entrepreneurial innovation. The macro approach investigates how a nation region or industry could cause innovations among entrepreneurs [11-13]. In this approach entrepreneurs are prescribed by institutional structures which includes nations, regions and industries.

None of the approaches mentioned above explain the complex phenomena of entrepreneurial innovation reasonably. The micro approach ignores contexts which the in which the entrepreneurial innovation happens and only considers that at the core of innovation a certain demand is needed for an opportunity to be valuable. The macro approach ignores the fact that many opportunities are generated by entrepreneurs and focuses on how contexts are creating the opportunities for entrepreneurs to discover.

## **2.2 Multilevel approaches**

In these approaches, entrepreneurs are the center actor within an established context and contexts play a major role in entrepreneurial innovation. The Multilevel approach argues that the contexts either create opportunities for entrepreneurs to “find” or dictate viability of the opportunity “made” by entrepreneurs [9].

A good example is the AMR (Academy of Management Review) decade award winner individual-opportunity nexus theory [14]. By this view entrepreneurship risk taking decision making process in uncertainty, becomes designing with constraints in interaction with the environment [14]. This study offers three basic elements of studying entrepreneurship (1) opportunities are made as well as found (2) transformations are central concept, and (3) the actions and interactions of entrepreneurs and their stakeholders are a key unit of analysis. It is discussed that some opportunities are obvious and some are hard to discover but others do not exist until a person makes it exist. Most entrepreneurial opportunities are made through actions and interactions of entrepreneurs and stakeholders using materials and concepts of the world [14].

## **2.3 Constitutive approaches**

In this view there are dynamics whereby entrepreneurial innovations emerge, there is a momentum to the field of entrepreneurship. Neither an agent-centric view that the contexts have been underemphasized, nor a context-centric view with underemphasizing agents, explain the entrepreneurial innovation well. But the constitutive approach discusses how the entrepreneurs and their environments are co-created [9]. Some scholars suggest that the outcomes of any action serve as the medium for future action [15,16] based on structuration theory [17]. In this approach opportunities are creative imaginations of entrepreneurs which is pursued as their goals based on their forward-looking prospects [18]. This perspective has so far been under-theorized. Even in one of the best influential country-level innovation studies—the National Systems of Innovation Literature[19]— we do not find the different contexts well covered. This study has focused on patentable technological innovations and not on softer innovations such as business models or creating new markets. The other weakness of this study is that entrepreneurship has been ignored in the innovation system.

## **2.4 Our framework**

It has been shown that there is a difference among individuals with different backgrounds in terms of their innovative or high growth entrepreneurial behavior. For instance, highly-trained graduate entrepreneurs want to grow faster to compensate for the cost of not having a good income by other occupations [20]. *Research Policy* published a special issue on entrepreneurial innovation in 2014. Autio et al. set a framework for entrepreneurial innovation based on different contexts: (1) industry and technological contexts; (2) organizational contexts; (3) institutional and policy contexts (further distinguishing between formal and informal institutions); and (4) social contexts, overlain by (5) temporal and (6) spatial contexts [1].

In another study, Aldas-Manzano, Küster, & Vila investigated the association between market orientation and innovation in the textile sector. In this study, innovation is measured based on a scale borrowed from other sectors [21]. Four sub-scales including innovation in products, innovation in processes, innovation in strategy and innovation as a whole were examined. These four sub-scales are taken as predictors of the success or failure of a new product. Based on in-depth interviews with general directors each innovation type scale related to products, processes and strategies were developed. Four items were used to measure performance as response variable, the ratios of profitability to investment, profit margins to sales, increase in turnover and global results [21].

## **3. METHODOLOGY**

To unfold some of the main questions of entrepreneurial innovation in the industry the Autio et al. framework of entrepreneurial innovation and context is investigated by creating four in-depth interviews of successful entrepreneurs in the textile and apparel industry. One case per innovation type was selected, based on the typology of Aldas-Manzano et al. [21]. Institutional Review Board procedures for Human Subjects research were followed throughout the investigation. All the cases are mature successful businesses in terms of money generation, creating new markets or gaining market share. Four open ended questions were asked to cover all the contexts of the framework:

- a. How and when do you feel entrepreneurial attitudes (financial gain, passion for a particular product or service offering, social contribution, job creation, or other factors) drive entrepreneurial behavior over time?
- b. What do you feel are the most important bottlenecks/barriers in the entrepreneurial process?
- c. What are the backgrounds of the founder or founders, the reasons why he/she or they started the business, the support system that helped start the business, and the business model?
- d. What is the innovation process at your company?

Many of our preliminary questions and hypotheses were based on our review of personal interviews of over 400 entrepreneurs located mostly in North Carolina conducted by our colleagues at NCSU [22]. The current research is focused in U.S. and primarily North Carolina as one of the leading states in the textile and apparel industries.

#### 4. RESULTS AND DISSCUSSION

Textile and apparel industry have a complex supply chain and needs a diverse array of partners and processes while the internet makes it possible to reach resources and customers more easily[5]. We have a constitutive approach in our study where the entrepreneurs and their environment are co-created. Our results from in-depth interviews are summarized in table 1, all cases have been founded in North Carolina. “attaching the customer to products” that means something to them is called disruptive [23], in our case of innovation as whole counts as disruptive innovation.

**Table 1.** The Autio et al. framework of entrepreneurial innovation and context results

Type of entrepreneurial innovation/ Context		Innovation in product	Innovation in processes	Innovation in Strategies	Innovation as a whole(disruptive)
Industry & technological context	Temporal dimension	Solving a problem on hand	Focuses on sustainability (trend)	Customer and sustainability focused strategy	Use of already existed technology, created a new market segment
	Spatial dimension	The local businesses in fashion are growing in the area.	Transparency strategy with high technology machinery	Start with recycled material in hand	E-commerce based with an easy interface
Organizational context	Temporal dimension	Student founders	Graduate student	Family business	Industrial background
	Spatial dimension	Studied at Nationwide top ranked school in Entrepreneurship	Social entrepreneur	Passion for design and the products	Founders background in another local business
Institutional contexts	Temporal dimension	Were a part of NCSU entrepreneurship support system	Part of a support program for entrepreneurs in poverty	Industrial background	Received grant from a not-for-profit organization entrepreneurial support system in North Carolina
	Spatial dimension	Being at top rank school in textiles with a lot of resources in hand	All made in US materials, natural colors	The business is created in founders hometown	Have access to NCSU wilson college of textiles for research
Social context	Temporal	Grow from locally to	Grow from	Aware of	Creating a community about

	dimension	nationally and internationally	and locally to nationally and internationally	customer needs constantly, more focused locally, established network	making and sharing by initiatives
	Spatial dimension	Was a winner of an angel investor national competition	Kick starter raised money and awareness	Open to all target segments	Community grow focused strategy

#### 4.1 Industry and Technology contexts

Industry and technology contexts are among the most studied contexts in the area, e.g., how a young industry could lead to more innovative entrepreneurial activity. Based on previous data from the research [22], we found many of the industry entrepreneurs to be filling the market gap and not innovate while staying small, this could be as the result of complex supply chain and large investments needed.

We find sustainability as the new trend for textile and apparel entrepreneurs. Transparency and story telling in addition to use of technology are counted as important for entrepreneurial success. In the case of process innovation, the story telling and sustainability played a major role in the business model and their market has grow from locally to internationally. In the strategy innovation case, sustainability is the nature of the company. The product is from rescued materials and the company strategy is to communicate the story behind products as clearly as possible.

#### 4.2 Organizational

Organizational context has an important influence on entrepreneurial innovation which has been explored thoroughly by scholars. It has been shown that former employments have a significant effect on the entrepreneurial entry [24]. Three different organizational contexts (previous employment in the industry- academic- being a user) have been studied to see how they impact the entrepreneurial innovation. Agarwal and Sonali Shah found that the entrepreneurial innovations differs for different organizational contexts. Product innovations mostly come from academics and users while process innovations are mostly introduced by employee founded entrepreneurs [25].

Disruptive innovation was studied by a company that used a technology already available for other industries in which the founders had a previous background. The innovative business model creates a community by offering initiatives. The company has grown from a 10 employees to more than 100 in four years.

#### 4.3 Formal and informal institutional contexts

Formal institutions mostly influence economic outcomes and opportunity costs. Informal institutions establish social norms and perceptions and social desirability for entrepreneurs called “entrepreneurial support networks” [26]. Informal institutions range from culture [27] to social norms [28] to peer influences [29].

In the case of product innovation, a market gap was filled by a user who wanted to solve a problem. The founders were students when creating their businesses with access to school entrepreneurial support system with free resources and mentors. The company later got angel investors, which helped grow their network and market. In the disruptive innovation case a private grant from a not-for-profit organization for entrepreneurial support in North Carolina was received. That grant has rescued the company at the time of economy collapsed.

#### 4.4 Social context

Social context focuses on the networks between entrepreneurs, trading partners, investors and incumbent firms, as well as how these networks influence entrepreneurship [30,31]. This context has received much attention in the literature. It has been shown that the knowledge disperses among heterogeneous agents and this flow is crucial for new knowledge production. Based on our findings having investors, support system and mentors are critical for entrepreneurial success. North Carolina had some major forward steps through creating an entrepreneurial culture with a lot of resources and support systems. The result of this study could be beneficial for policy makers and institutional components of entrepreneurial innovation eco-system as well as for individuals who have entrepreneurial intentions.

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