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Knowledge of Leather Alternatives: An Exploratory Study: Implications for Education

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Abstract

The purpose of this study was to discover a fashion consumer's level of knowledge, use and attitudes about leather and its alternatives. The two categories of leather alternatives included Vegan Leather (mostly made with plastic coatings) and Eco-Friendly Leather alternative (materials that are "good" for the environment).

With a convenience sample (N=11) of fashion design students/consumers, data was collected via questionnaire with open and closed-ended questions, including questions about the participant's knowledge and experience with purchasing leather and leather alternative products. Their knowledge of leather processing was also questioned.

The key results were that participants had various perspectives and attitudes about using leather and leather alternatives. Most had not heard of more than one of the eco-friendly leather alternatives that was listed on the questionnaire and most did not have knowledge of the leather producing process. Those who had taken textiles courses previously stated that they covered leather and/or its alternatives either very little or not at all.

The findings have implications for various stakeholders including leather alternative manufacturers, fashion programs and instructors, textbook producers, and retail establishments. A need was discovered to define specific terms to explain the differences between leather alternatives that use plastic toxins vs. leather alternatives that were better for the environment. Leather alternative terms were used interchangeably which could confuse consumers with what they were actually purchasing.

The conclusion was that leather alternative manufacturers could use these findings to see the need to better educate their consumers. Some of the education that could be included is exposure to specifics about their products in terms of construction and components used in relationship to environmental and sustainability concerns. This specific information is not widely available to consumers and more education is necessary.

Keywords: Leather; Faux leather; Leather alternatives; Eco-friendly faux leather; Vegan leather; Education

Introduction

With today's product emphasis on terms like "green," "cruelty-free," "eco-friendly" and "sustainability", some clothing, accessories, and shoes manufacturers have chosen to create alternatives to materials that have controversial manufacturing processes. Leather is one such material. The various terms used for leather alternatives have varying meanings and implications. A "perfect" product would be made of recycled waste materials, biodegradable (break down over time), recyclable, not hurt animals, humans, or the environment and be completely non-toxic at every stage of production.

This study focuses on alternative leather products. Leather is made mostly from animals who are slaughtered for meat and toxic chemicals are used for leather processing. The movement that focuses on "cruelty-free" products wants manufacturers to stop using animals' skin for leather and other movements want sustainable practices used that also limit pollution, toxins, etc.

The purpose of this introductory study was to discover consumers' level of knowledge, use and attitudes about leather and its alternatives and how they defined certain non-leather terms. The author wondered if fashion students who are also

consumers (and for whom this knowledge could have employment implications) had been exposed to information about leather and its alternatives during their education. The findings in this study could add to the body of knowledge on this subject and encourage additional research. The findings could also expose stakeholders (including leather alternative manufacturers, fashion programs and instructors, textbook producers, and retail establishments) to information that might implicate a need for action.

What do consumers know about leather alternatives used for clothing and accessories? Several companies have created new, exciting leather alternatives that claim to be “cruelty-free” and responsible to the environment. When a handbag carries a tag that says, “Vegan Leather”, does the consumer know what that means? Is vegan leather cruelty-free and good for the environment? It is important to educate consumers and provide evidence and clarity on the labels of products made with leather alternatives. Would a person feel good about buying vegan leather if they knew that it was made of plastic, used toxic chemicals and was not biodegradable? Where is the education and information about this found? Is this information taught in schools or on the retail store level? Some consumers think when they purchase vegan leather, they are helping the environment as well as saving animals. This misunderstanding is because of a lack of education.

Review of Literature

Leather is a multi-billion-dollar industry. There is still a demand for genuine leather goods while at the same time, the leather industry is criticized because of its severe environmental impact and by those who feel that making leather from animal skin is cruel and immoral. Because of this, manufacturers have interest in developing new “leather type” materials that do not use animals and are prepared with less toxic chemicals, making it more environmentally friendly.

The two main sections covered in this review of literature are first, the killing of animals and using their skin for leather goods with the practice of using toxic leather preparation methods, and secondarily, the non-leather issue of using non-environmentally friendly chemicals in leather alternatives that are also non-biodegradable materials vs using leather alternatives that are non-toxic, eco-friendly, and biodegradable.

Most leather comes from bovine animals including cows, sheep, and goats. As leather production is currently practiced, the production is linked to serious sustainability issues, negative environmental impact, and health issues. Processing leather produces chemicals and gases, including carcinogenic chromium which is poisonous. Strict regulations governing this chemical have forced the closure of tanneries in the U.S. and Europe. In other countries, the untreated waste, potentially laced with chromium, lead, arsenic and acids, can flow directly into local waterways. Tannery leather workers risk severe health side-effects from

exposure to toxic substances which have been known to lead to kidney or liver damage and long-term cancer and reproductive problems [1].

Organizations have been created that measure and regulate the leather producing industry and some are dedicated to promoting after tanning practices in effort to cut down on exposure to the number of toxins used in leather production.

The Sustainable Apparel Coalition’s Higg Materials Sustainability Index measures impact up to the point of fabrication and gives most leathers an impact level of 159 (compared with 44 for polyester and 98 for cotton) because of its high contribution to global warming, water use and pollution [1]. Brands are attempting to address this issue by the creation of leather alternatives.

There is a need to explore the definitions of leather alternatives. In this field, many terms have been generated and the industry, as well as consumers, may get confused with the terminologies that are used. The term faux leather, pleather, leather alternatives, etc. have been used interchangeably. Are they the same? How would one describe the differences between leather alternatives when they are given interchangeable names?

Most leather is defined as a material made from the skins of animals. Leather is also defined as “... animal hide that is cleaned of hair, treated (or ‘tanned’) to preserve it and then finished with a specific color, embossing or feel” [1].

The global synthetic leather market, currently valued at \$25 billion, is projected to reach \$45 billion by the year 2025 [2]. Sewport is a business-to-business firm that provides sourcing solutions for manufacturers. They state that faux leather is also known as pleather, vegan leather, Naugahyde, synthetic leather, artificial leather, fake leather, and ersatz leather. It describes its composition as PVC or vegetable oils and is a petroleum-based alternative to genuine leather [3]. The term, leatherette, was used to describe man-made or imitation leather [4].

BLC is a commercial business-to-business organization that has over 95 years’ experience in the leather industry and provides services related to leather sustainability. They say that synthetic leather is “...also known as synthetic, faux, imitation, vegan or PU leather”. They go on to say that it is a material that looks like leather but is not made from animal skin or hide like genuine leather and that the synthetic material consists of natural and/or synthetic fibers, coated with a plastic polymer or similar. It is usually made from polyurethane (PU), polyvinylchloride (PVC) or textile-polymer composite microfibers [5].

Mahi Leather produces handmade leather goods using leather that is tanned using chromium-free vegetable dye and produced in Germany under strict European Union regulations. [8] They state that “vegan leather and faux leather are the same thing – essentially a fake ‘leather’ material that does not use animal skin” [6,7].

Eco-Friendly Faux Leather (EFFL) has been developed to minimize harmful environmental impacts and has a low carbon footprint [8].

Vegan leather is used for some of the same products that genuine leather has been used for, including jackets, shoes, hats, pants, belts, handbags, wallets, upholstery, and luggage. For many people, the question is not what chemicals are being used to make vegan leather (even if the chemicals are toxic), but whether this alternate material is a result of killing an animal. Many people do not investigate any further.

The most common way of making faux leather is with different chemicals that are bonded together to a fabric backing. These chemicals form a type of plastic. Faux leather is not friendly to the environment, depending on the types of plastic/chemicals used.

The material most used for synthetic leathers are polyvinyl chloride (PVC) and polyurethane (PU), two plastic based materials. These two synthetic materials have provoked questions about the safety and dangers of vegan leather to the environment.

PVC is carbon-intensive and does not biodegrade. It releases dioxins, which are potentially dangerous in confined spaces and especially harmful when burnt. It also uses plasticizers such as phthalates to make it flexible. Depending on the type of phthalate used, they can be toxic. According to Greenpeace, "PVC is the most environmentally damaging plastic". Its production, use, and disposal releases toxic, chlorine-based chemicals that build up in the water, air, and food chain. Its use can bring about severe health problems, including immune system damage, hormone disruption, and cancer [9].

PVC is now being used less than PU. PU, polyurethane, is used throughout the fashion industry as a leather alternative and is also referred to as vinyl. PU is a slightly more sustainable synthetic alternative to PVC but can still be toxic depending on the manufacturing process [10]. PU leather typically coats non-woven fabrics in plastic. It is mostly plastic, vs. PVC, which is generally all plastic [11].

One type of PU is a material made with a split genuine leather backing covered with a layer of polyurethane applied to the surface and then embossed. The term PU leather can have different meanings in different countries [12].

The biggest negative to vegan leather is that it is mostly made from petroleum and like all plastic products, are not good for the environment or humans due to the toxins in the plastics. The plastics often give off a recognizable chemical smell and do not biodegrade [13].

Many alternative leather manufacturers are experimenting to make vegan leather as low-impact as possible by using plants like leaves, pineapple, and flowers. Even then, most of these are not fully biodegradable yet, because each material is either made with

a mix of plants and polyurethane or is plant-based and coated with a plastic-based resin [14].

The multiplicity of terms used above can be confusing and were sometimes based on marketing. Yet, especially to the consumer, so many terms does not help the consumer know exactly what they are purchasing.

The leather alternatives discussed below are different because they were produced in response to the need for alternatives that were more sustainable and less toxic. For purposes of clarification, the author will not use the term "vegan leather" to identify leather alternatives that are eco-friendly.

Eco-friendly faux leather is defined as a biodegradable leather textile. It has minimal harmful impacts on the environment and enhanced functionality and disposability while costing less than natural leather [10]. Some alternative leather manufacturers are using materials that are made from renewable and biodegradable resources like cork, paper, mushrooms, tree bark, recycled rubber, slate stone, apples, and kombucha tea. Each of these options comes with its own pros and cons and some of them are still in experimental stage [12].

There are many new eco-friendly leather alternatives. Piñatex is made from pineapple leaf fibers and is natural and sustainable. Waxed Canvas and (Organic) Cotton has wax that is environmentally friendly. Leaf "leather" is made by applying a polymer to preserve leaves into fiber sheets without toxic treatments or dyes. Mushroom leather comes from a type of fungus and is biodegradable and eco-friendly. Coconut "leather" grown from waste products of the coconut industry and can be composted and Apple "leather" is made from the discarded skin and cores of apples [15].

Other eco-friendly materials include cork, which is renewable and recyclable, tree bark "leather" made from sustainable timber and treated only with non-toxic chemicals. Wine "leather" is made of disposed grape skins, stalks and seeds that uses a non-toxic and solvent-free process. Corn "leather" is made using cotton fabric with a corn-based coating and banana-based leather alternative is chemical free and sustainable. Additional alternatives include cactus "leather", recycled rubber, mulberry tree paper and waste from processing oranges [16].

Materials and Methods

The study design is Primary Exploratory Research whose purpose is to formulate problems, clarify concepts, and form hypotheses. Exploratory research is not conclusive but lays the groundwork for further studies. Exploration begins with a literature search then can move to a questionnaire with a small sample of participants from whom data is collected [17].

Participants & sample

Fashion consumers were the target populations in this study. By fashion, it is meant that the consumers were interested in some

aspect of wearing fashion. Students from a college fashion class who were discussing clothing purchasing fundamentals were encouraged to complete the survey in anticipation of a discussion of the subject at the next class meeting. They were used as a convenience sample for the study. Eleven students completed the survey, and all 11 questionnaires were usable.

Instrument

One sixteen-item questionnaire was developed by the author. The questionnaire which had open and closed-ended questions included questions about the participants' knowledge and experience with purchasing leather and leather alternative products. Their knowledge of leather processing was also questioned, and they were also given a list of eco-friendly leather alternatives in order to identify which ones they were familiar with. Additional questionnaire items were about demographic specifics. The questionnaire was distributed via a web link. The survey instrument is available upon request from the author.

Data analysis

Since this was an exploratory study with a small sample size, the author used descriptive statistics, being mostly interested in the frequency distribution of responses. With the qualitative data from the questionnaire, the responses were coded, and themes and frequencies were extracted and reported.

Results and Discussions

Participants were 11 female undergraduate college students attending a west coast college who were invited to complete the survey via weblink. Participants were in the age ranges between 18 and 50+ with most of the participants in the age range of 18-24 (64%). When asked their educational level, many of the participants self-reported as junior (45%), 27% as sophomores, and 9% reported as having a bachelor's degree. When asked how they described their lifestyle, 27% reported her lifestyle as plant based, 27% as "none", 18% as an omnivore, and 9% as Pescatarian [18].

When asked: How would you define the term "faux leather"? 45% said, fake, 34% used the terms artificial or synthetic and 18% said it was made from plastic and made from animals.

When asked for the definition of "leather alternative"? Answers included, synthetic or artificial leather (18%), faux (17%) optional materials (9%), looks or feels like leather (45%), and artificial (18%).

When asked: How would you define the term "pleather"? The responses were, fake (18%) plastic or plastic leather (55%), fabric made from something else (9%), and 18% other.

When asked: Have you purchased leather products in the last two years? Why or why not? Some, students (36%) said yes, they have, 64% said no. Some of the reasons included, that they did not

like it, or not their style, environmental issues, good alternatives out there, did not like the smell, and "I don't buy leather."

When asked: What is you're feeling about purchasing leather products? Why do you feel this way? Responses included that it was wrong toward the animals (36%), they did not like it, or it was not their style (18%), and other (36%).

When asked: How do you feel about the purchasing of pre-worn leather items (for example purchasing a leather coat or shoes from a thrift store)? Most (63%) said that it was good/OK and they would not be feeding a supply and demand, 27% said they would not purchase the used items, 18% gave other answers.

When asked: Do you think it is important to purchase alternate leather products? Why or why not? Thirty-six percent said yes, while 18% said no and 27% gave other answers. Twenty-seven percent said they would purchase alternate leather products to keep the animals safe.

Given a list of leather alternatives, participants were asked to choose the ones that they have heard of. Alternatives that were chosen included polyurethane (36%), mushrooms (27%), apples (9%), recycled paper leather (9%), mulberry tree leaves (9%) and coconut water (9%).

When asked: Have you ever seen in-person or in a video how animal leather is made? If so, how do you feel about this? The responses were, no (73%) and yes (18%).

When asked: Have you ever taken a textile class? If so, how much information about leather was taught? Forty-five percent stated that they had taken a textile class, but either forgot what they learned or not much about leather was covered, nine percent stated that they had taken a textile class, but nothing was taught about leather. Eighteen percent stated that they had not taken a textile class and nine percent said they had taken a class and learned a lot about leather.

To summarize the findings, most participants (64%) had not purchased a genuine leather product in the past two years for various reasons. Thirty-six said it was wrong to hurt animals by buying leather, while 18% said they did not buy it because they did not like, or it was not their style. Most respondents (65%) thought it was important to purchase alternate leather products. When asked to define a leather alternative most (55%) of the respondents called it plastic or plastic leather. The respondents mostly did not have an issue with purchasing a used leather item from a thrift store. When asked about what leather alternatives they had heard about, 36% said polyurethane and 27% said mushrooms.

Most respondents had already taken a textile class but most of them either did not remember what they learned about leather or they learned little about leather and most had never seen leather being processed.

Conclusion

The findings in this exploratory study revealed several things. It revealed that fashion students/consumers are not being educated about leather production or leather alternatives. Even those students who were passionate about not purchasing leather products lacked knowledge about the many types of leather alternatives that are not PU based. None of the students reported knowing more than one type of eco-friendly leather alternative.

Retail brands that sell products made with eco-friendly leather alternatives and alternate leather manufacturers are apparently not promoting themselves enough. If fashion students who are also consumers do not know this information, it is speculated that those consumers without a fashion background would know less. These alternative leather brands might want to start by creating educational materials that explain and differentiate the benefits of their leather alternatives. This study, even with the small sample size is clearly showing a gap in knowledge. Considering the findings in this study, it is important that consumers are educated.

In the review of literature, many definitions of vegan leather were found. There was much interchangeability in the terms, and it was difficult to find agreement in the differentiation of the terms. It would be better for consumers if clear, well agreed upon definitions of terms were established. When the term “vegan leather” is used, do consumers think that the term also means eco-friendly faux leather that is less toxic? Do customers know that all “vegan leather” is not sustainable? Finally, in the review of literature, the term “eco-friendly faux leather” describes a leather alternative that is cruelty-free and good for the environment. Even with these “safer” materials, leather alternative manufacturers have not been able to fully make products that use no questionable binders and materials. They are getting close but still have not achieved it at a 100% level.

Implications for education include the need to provide lessons, videos, textbooks, brochures, etc. from leather alternative manufacturers or brands to be included in textile textbooks, for example. Textbook companies can work with leather alternative firms to collect accurate information for textbook entries. Some fashion textile textbooks come with a swatch kit where various types of leather alternative materials and samples could be included. Faculty can start this process by insisting such material be included in the textbook and swatch kits. Leather alternative manufacturers and brands can create a group or collective to decide on clear terms/definitions for each type of alternative leather material and specify what group each type of leather alternative falls in. If this were to occur, it would be easier for consumers to know what they are buying. Extending the idea of education, retailers can provide education to the consumer in the form of hangtags, store, or online displays, etc.

Implications for consumers is that consumers can start to ask for further information on the alternative leather products

they purchase. It is ethical that they should know what “vegan leather” means, especially those shoppers who want to promote sustainability and purchase products with fewer chemicals that are biodegradable. They have a right to know what they are purchasing.

This study has several limitations that prevent generalizability of the results. There was an insufficient sample size for statistical measurement as well as the use of a convenience sample, which may not adequately represent the target population under study. This was an exploratory study to expose general understandings, beliefs and experiences with leather and its alternatives; a more in-depth study could yield more information.

Recommendations for the future include replicating the study with a larger sample size or replicating the study with another target population set that could include fashion instructors, retailers and random or focused consumers. An additional recommendation is to replicate the study (with a larger sample size) to see if and how self-reported lifestyles correspond with certain attitudes and experiences with leather and leather alternatives. Finally, one can duplicate the study with the intervention of showing participants the leather production process via video in a pre and posttest format to see how or if responses change after viewing.

Acknowledgement

None.

Conflict of Interest

Authors declare no conflict of interest.

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