

HERMENEUTIC APPROACH IN UNDERSTANDING THE ROLE OF ARTIFICIAL INTELLIGENCE: FASHION & APPAREL INDUSTRY/ LUXURY BRAND RETAILING

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ABSTRACT

This paper explores technology of Artificial Intelligence (AI) and its application with a special focus on luxury brand retailing in fashion & apparel (F&A) industry. The massive impact of AI is witnessed in changing the F&A industry in the past years. Though, the past studies in this sector are not clustered and not much of comprehensive research is done to explore the AI in the field of F&A. The researchers have adopted qualitative approach in the form of reviewing literature. The paper will try providing insight information about application of AI in F&A industry and luxury fashion product retailing. This paper will also help the marketing personnel handling retailing to understand how luxury retailing will witness new era of retailing with the help of artificial intelligence.

Keywords: Artificial Intelligence, Fashion & Apparel, Luxury Brand, Retailing, Retail Brand Marketing.

INTRODUCTION

One out of three (food, apparel and shelter) basic need of humankind is apparel; it has been required and has been part of civilized society since ages. As homosapiens grew with cognitive skills, technology and societal needs, the apparel and textile also changed from not just a need to a need of recognition and trend, thus fashion. Fashion industry is a very silent contributor to the economies of the world. With the contribution of “38% to the Asia Pacific, 26% to Europe and 22% to North America” in the economy, one of the biggest contributors is F&A Lenzing (2019). As per the article of Business of Fashion (2019), revenue of Fashion & Apparel is expected to grow its sales in the Asia Pacific by 7.5% and in Europe by 5.5% Sweeny (2015).

Artificial Intelligence has evolved as a vital edge in industrial modernization (Hager et al., 2017), it is also being used as an application of new type in the F&A industry (Wong & Liu, 2018; Amazon Fashion, 2017). As Artificial Intelligence is able to carry vital improvements in the cost, speed and flexibility in the fashion supply chain, it is need of the hour to use AI in rebuilding, merchandising, designing and marketing activities of fashion products (McKinsey & Company, 2018). AI also plays a major role in assisting designers with recommending products on the past purchase and buyer’s preferences for size, price, order history, general style, and activities on social platforms like fashion pictures uploaded on Pinterest (Cao, 2018). In continuation, fashion marketers/ retailers (such as Nike, Nordstrom Macy’s, Farfetch) are using Artificial Intelligence in, virtual assistants, chatbots and product navigators to grow and

congregate consumers' off-line and online experiences (Sennaar, 2017; McKinsey & Company, 2018). By examining and capturing insights from millions of videos and images using AI computer vision, AI has helped fashion gurus in collaborating trending key patterns, colors and styles, which may bring down the entire lead time and enlarge designers' creative discovery (Arthur, 2018).

With the perpetually shifting technology in today's world, if business houses does not consider the up-gradation, it will face the obsolescence or rough competition in the operating/ or future market. It is very important for any organization to adopt the new technology and move ahead. Artificial intelligence is the buzz of the town now a days as everyone is talking about AI and its applications to business. The ultimate objective of any profit centric organization is to increase its profit through generating revenue or through cutting down their cost. Retailing especially in the luxury segment demand for more customised products and service, AI can be instrumental in providing a more tailored made offering to the customers.

According to Solomon (2018), AI will be having its breakthrough moment as majority of retailers will adopt it to strengthen several shares of the retail and e-commerce experience. AI is not just for the flicks any longer. Clients are now demanding better, faster and tailored experiences. Retailing has requirement to meet this demand and Artificial Intelligence can help. Luxury is very personal and relative in nature as it is an established fact that, to make a product luxury it must remain exclusive, elitist, rare and distinctive. Luxury creates an aura of extra ordinary, the unachievable or dream for majority who are not included in the target market segment. It is very interesting to understand this semantic, moving and imaginary galaxy of perception of luxury brand buyers. Image and personality needs all the elements in the correct balance that comprise the communication of luxury brands.

A change in socio-economic factors have resulted in addition of consumers who selectively buys new and better fashion and apparel products as well as services and not buy the other products to pay for their premium purchases and in the process drives ideas and enlargement in old sluggish markets. New Luxury consumers seek goods which help in engaging their emotions as most successful goods and services engage emotions in more than one space. New luxury products are very unique as they bring easy to get elite experiences, which is the base of marketing the luxury brands.

In the view of Pan (2019), the luxury sector has archeologically been an H2H (Human to Human) business in the field of marketing and luxury – as a whole - is one of the sluggish sectors to adopt the technology. The only and most important technology that is by now present but momentarily misread is AI and this has undoubtedly started to give momentous recompenses to those who take the time to know its application.

The primarily reiterations of AI in luxury that were frequently used were chatbots. Chatbots are used for providing more support to luxury brands customer service strategy. With the help of Artificial Intelligence chatbots have started to manage some parts of customer service experience in a very effective and efficient way. With the onset of technology and digital platform, a transformation is taking place in the luxury retail industry particularly with Gen Z and Millennials who prefer to start with online channels for discovering brands and represent a major chunk of spending on luxury goods.

Luxury brands have realized the new requirement of their customers of getting perfect in in-store experience which can be reproduced online. This has resulted in a radical transformation of elite luxury brands to join hands with connective technology like AI.

Tommy Hilfiger in 2016 was the first brands to launch a chat-bot at The New York Fashion Week to market their products. The bot interacted with clients to benefit the buyer and recommend merchandises from its newest lines based on answers from pre-programmed inquiries, serving to produce a tailored buyer experience and attract targeted peoples to their website.

Just after, Burberry introduced their illustration of a chatbot initially offering buyers a behind the scenes picture of the brand and how clients could shop the trendiest products, but over a period of time, Burberry pulled out the chat-bot services from customer service and offered a product browsing, to store location, via online talk with a Burberry consultant.

REVIEW OF LITERATURE

As per (eatlovesavor) an international luxury lifestyle magazine, by 2025, approximately 20% of all elite brand businesses are most likely to market/ transact on e-retailing. This business will quicken in the upcoming decades, as new buyer in evolving business come online. Luxury products consumers demand a continuous and tailored buying experience. More specifically, this is majorly the case with buyers who are young and Generation-Z buyer category, which usually kick start their discovery of brands online. This is the same category of new generation, prosperous clients who are lashing 85% of the international elite sales enlargement and now characterize in spread of 30% of all elite brands purchase. To serve to purchaser's altering tastes, brands of luxury products are enhancing their visibility online and trying some or other level of Artificial Intelligence adaptation into their online retail platforms. As per Gartner, he states that more than 85% of interactions with customers will be done by AI by 2020.

Reavie (2018) in his post on forbes magazine said that *"With AI, each customer persona is a continually evolving profile, updating as interactions, context, behavior and location changes, empowering marketers to target and tailor promotions that reflect customers and their evolution."* A study done (Infosys), says *"86% of customers state personalization plays a role in their decision"*.

In a research by McKinsey, *"when brands get personalization right, marketing spend can deliver five to eight times the ROI and lift sales by 10% or more"*. Todorov (2017) in his post on forbes magazine depicted that IBM envisages that by 2020 up to 85% of all b2c communication will be done with the help of AI. For brands that are in the business of high detailed products and to surpassing buyer expectations, AI produces prodigious potential for creating a better buyer experience.

Beauloye (2019), Facebook Messenger- Louis Vuitton Digital Associate chat-bot influences AI expertise to give clients a more *"cultured, tailored, graphic and relaxed online spending experience for each consumer"* via Facebook, where LV amounts additional 23 million followers. Louis Vuitton Digital Assistant chatbot using Artificial Intelligence technology to spring clients a more *"sophisticated, personalised, visual and conversational online shopping experience for each client"*.

Daniel in his interview to Pan (2019), said *"that brands that are considerably more open today, with some players like Gucci, Dior, Chanel, and even Rolls-Royce shifting an enormous focus to digital marketing"*. Unconventional facts AI, querying and machine learning want quite an amount of skill than many in-house members possess. Some firms in the biosphere actually have good command over AI to market their products, and only some can syndicate AI with luxury approaches as Équité is doing.

OBJECTIVE OF THE STUDY

The study's objectives are separated into two sections. The first step is to conduct an in-depth examination of current AI trends in the fashion & apparel sector. The second step is to comprehend AI's role in luxury fashion retailing/ marketing.

The authors wanted to explore the AI technology and its application to luxury retailing in F&A industry, the research will attempt to answer questions like

Q1. What influence does AI have on the fashion and apparel industry?

Q2. Where is AI used in luxury fashion retailing/ marketing?

RESEARCH METHODOLOGY

This study includes a semi-systematic literature evaluation concentrating on AI and application of AI in the F&A business to address the objectives of the study; it is practically not possible to review all the related literature (Snyder, 2019). An in depth review of literature is done, literature published related to luxury brands and AI are considered for review. An unorthodox method i.e. a mix of literature has been adopted by the author; literature consists of fashion/ technology journals, magazines, blogs, fashion brand websites, published interviews of fashion gurus and industry experts. The information is collected and analyzed by authors using Semi-systematic review technique with validation from industry experts. Also, Interaction with working professionals in fashion and luxury products industry has been taken to further analyze and conclude the paper. Research Model: The model used for the conducting study is as given below Figure 1.

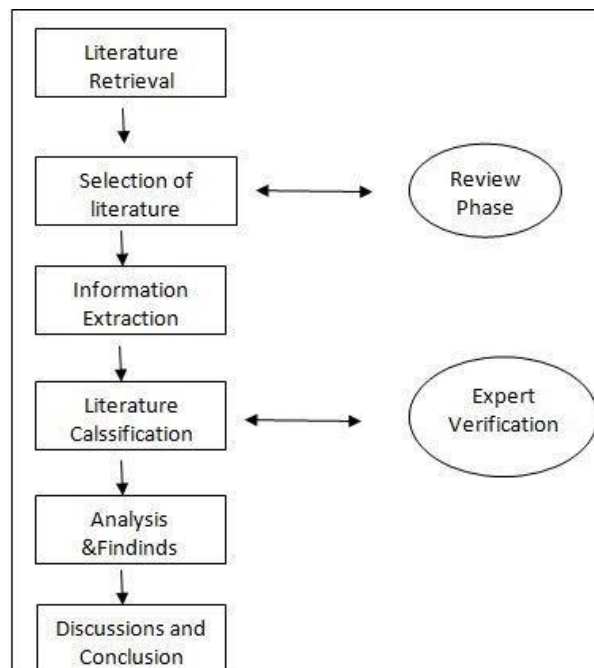


FIGURE 1
THE MODEL USED FOR THE CONDUCTING STUDY

Literature Retrieval

Here the author discusses the steps taken to retrieve the literature from various databases like Scopus, Google scholar and search engine like Google. Scopus and Google scholar are two data bases which index most of the research work and conference proceedings (AIRyalat et al., 2018) (Martín-Martín et al., 2018). In addition to this, many trade and business magazines and websites of fashion luxury brands has been referred to get to information on AI and its application in fashion industry and fashion marketing.

To find the literature, the search strings which include synonyms related to Artificial Intelligence, Fashion & Apparel and luxury retailing industry has been used. The final search strings are given in the Table 1 given below.

| Artificial intelligence | Luxury Retailing/Marketing/Fashion and Apparel |
|--------------------------------|---|
| Machine Learning | Fashion Industry |
| Experts system | Luxury Retailing/ Marketing |
| Intelligence system | Luxury Fashion |
| Data Driven | Textile Industry |
| AI | Luxury Apparel Retailing/ Marketing |
| Data mining | Apparel Industry |

Selection of Literature

Here the author screens literature and selects the relevant literature to answer the research questions, the criteria for inclusion and exclusion are given in Table 2 and Table 3 respectively.

| Criteria | Reason for selection |
|---|---|
| No time constraint | To understand the overview of AI in the Luxury retailing and F&A domain to answer Q1&2 |
| Scopus and WoS Databases which includes Journal Articles and Conference Proceedings | These databases cover the majority of scholarly journals and conference proceedings; to ensure that all articles related to our 2 Qs are received |
| All studies in the Fashion & Apparel industry that was using Artificial intelligence techniques | To identify all phases in the Fashion & Apparel luxury retailing where AI has been implemented and executed (to answer Q2) |

Exclusion Criteria

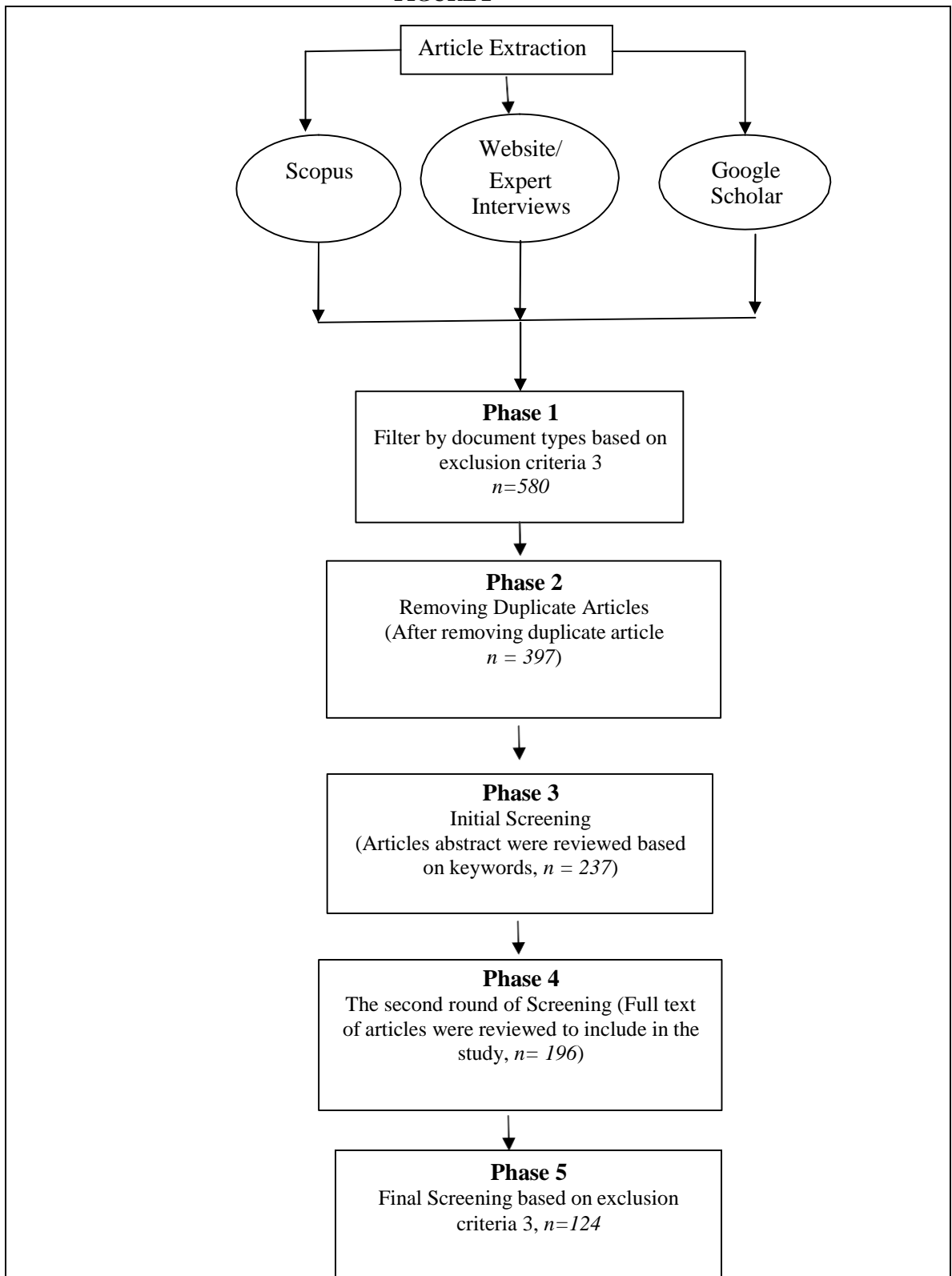
| Table 3 | |
|-----------------|---|
| Criteria | Reason for Exclusion |
| Grey literature | To maintain the scientific reliability of the literature review |
| Language | Non English literatures because of author's limitations |
| Industry | Industry that are not from F&A |

Extracted documents: Here the author extracts the articles from different sources, Table 4 given below provides the details.

| Table 4 | | | | | |
|-------------------------|---------|-------------------------|---------|----------------------------------|---------|
| Scopus | | Google Scholar | | Websites/ Expert's Interviews | |
| Document Type | Numbers | Document Type | Numbers | Document Type | Numbers |
| Journal Papers | 142 | Journal Papers | 147 | Online Magazine | 7 |
| Conference Article | 139 | Conference Article | 120 | Research firm document | 3 |
| Books and Book chapters | 6 | Books and Book chapters | 3 | Interviews | 6 |
| Review | 3 | Review | 1 | Review | 3 |
| Total | 290 | Total | 271 | Total | 19 |

Information extraction: In this section, from the extracted articles, information is extracted in 5 phases; Figure 2 explains each step in detail.

FIGURE 2



Article classification: This section attempts to explain the fashion and apparel industry with the help of verification of industry experts. On discussion with the industry experts the articles were classified into categories/ areas of AI and how they are used in F&A industry.

The AI in F&A has been classified as given in the below Figure 3.

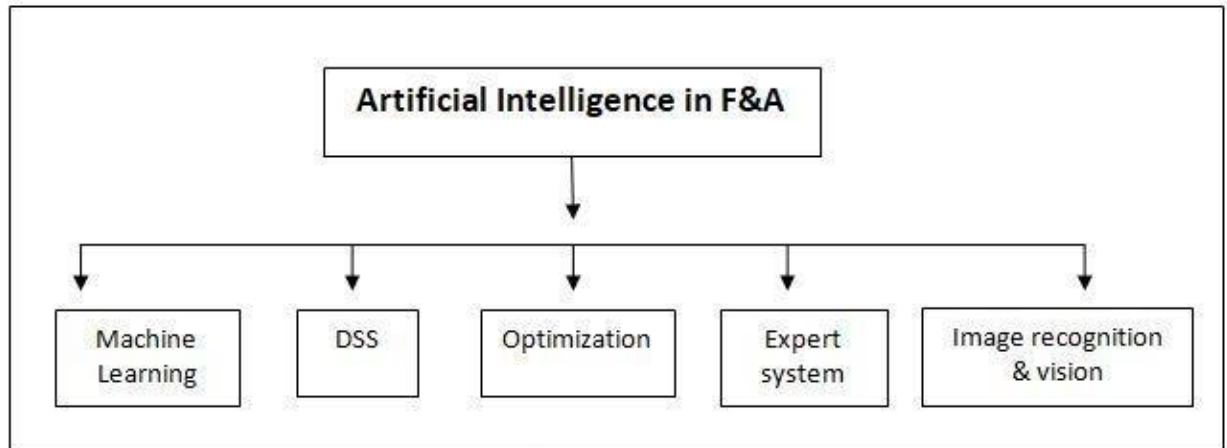


FIGURE 3

The AI use in F&A Luxury retailing has been classified as below Figure 4.

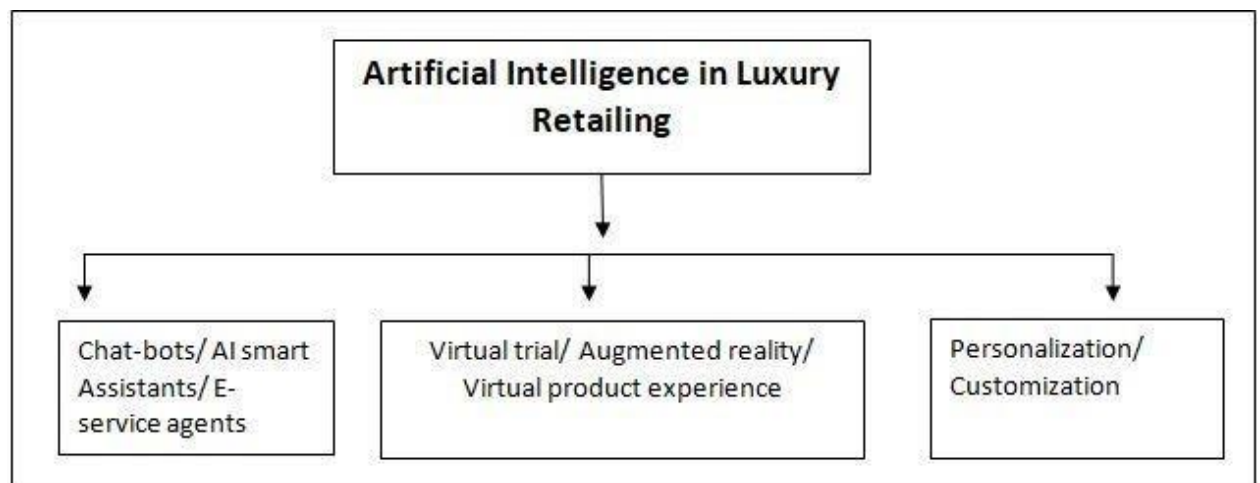


FIGURE 4

FINDINGS AND ANALYSIS

The authors chose 124 publications based on the study framework, which included journal papers, conference proceedings, expert reviews, and interviews. The ontology set in the previous section was used to classify the articles. This section presents the results of author's analysis in terms of article dispersion, which addresses the two research questions. Table 5 corresponds to Q₁ by giving the general application of AI in the Fashion & Apparel business, whereas Table 6 corresponds to Q₂ by showing the special application in the luxury retailing.

| Table 5 | | | |
|------------------------------|--|--|---|
| AI Area | Method technique used | Process in fashion industry | Author (s) |
| Machine Learning | Future decision, Supervised learning, Unsupervised learning | Cutting/ Dyeing/ Finishing/ Printing/ Finished Garments Inspection/ Retailing/ Sewing/ Spinning | Bishop(2006), Stuart & Norvig (2009), Mohri, Rostamizadeh, & Talwalkar (2012), Kumar & Poonkuzhali (2018), Hsiao, Lee, Chen, & Yen (2017), Brahmadeep & Thomassey (216), Ghosh, Guha, Bhar, & Das (2011), Pavlinić & Geršak (2004), Zhao et al (2018), Liu, Wang, Kamalha, Li, & Zeng (2017), A. Tehrani and Ahrens (2017), Li, Wang and Wang (2017), Hamad, Thomassey and Bruniaux (2017), Liu, Zeng, Bruniaux, Wang, Kamalha and Tao (2017), S. Darwish (2013), Tsai and Hsu (2013), Liang, Liang, and Wang (2013), Viktor, Pena, and Paquet (2011) |
| DSS | Intelligence decisions, Mathematical models with conventional data retrieval method, Optimised decision making in apparel supply chain | Production/ Operations/ Supply chain/ Line balancing | Keen (1980), Sprague (1980), Tu & Yeung (1997), Wong & Leung (2008), Aksoy and Öztürk (2016), Z.-Hu, Wei, and Yu (2015), Kumar and Murali Bhaskaran (2015), Lee, Choy, Law, and Ho (2014), Nakandala, Samaranayake, and Lau (2013), Rabenasolo and Zeng (2012), Aksoy, Ozturk, and Sucky (2012) |
| Expert system | Decision without human intervention, Reasoning approach "Ifthen" rule, Knowledge based decisions, Fashion retailing | Expert decision/ Environment concerns/ Production/ Retailing/ Sourcing | Jackson (1999), Leondes (2002), Stuart & Norvig (2009), Stella & Chuks (2004), Metaxiotis (2004), Wong, Zeng, & Au (2009), Istrat and Lalić (2017), Santiago, Laureano-Cruces, Antuñano-Barranco, Domínguez-Pérez, and Sarmiento-Bustos (2015), Lee, Ho, Choy, and Pang (2014), Shahrabi, Hadavandi, and Salehi Esfandarani (2013), Lee, Choy, Ho, Chin, Law, and Tse (2013), Yu, Hui, and Choi (2012) |
| Optimization | Intelligent searching, Simple exhaustive search, heuristic search approach, genetic programming in apparel production, fitting services | Production optimization/ Order processing/ Lead time management | Stuart & Norvig (2009), Luger & Stubblefield (1993), Poole, Mackworth, & Goebel (1998), Nilsson (1998), Tecuci (2012), Holland (1975), Holland et al (1992), Guruprasad & Behera (2009), Lu, Xiang, Wu, & Gu (2015), Hui, Chan, Yeung, & Ng (2007), Martino, Iannone, Fera, Miranda, and Riemma (2017), . Lee, Choy, Ho, and Lam (2016), Martino, Yuce, Iannone, and Packianather (2016), Caro and Gallien (2010), |
| Image Recognition and Vision | High level interpretation of image or videos, exploring high dimensional data, creating supervised and un supervised model, video tracking, object recognition, motion estimation, inspection and process control, content based image | Artificial shopping assistance/ Customer suggestion/ Intelligent recommendation | Ballard & Brown (1982), Sonka, Hlavac, & Boyle (2008), Jahne (2000), Forsyth & Ponce (2003), Morris (2004), Steger, Ulrich & Wiedemann (2018), Kuo, Lee, & Shih (2017), Yuan, Khan, Farbiz, Yao, Niswar (2013), Cushen & Nixon (2011), Shin, Kim, and Kim (2010), Yuen, Wong, Qian, Chan, |

| | | | |
|---|-----------|---------|---|
| retrieval system, augmented reality in the fashion and apparel industry with virtual try-on | on/ trial | Virtual | and Fung (2009), Wong, Yuen, Fan, Chan, and Fung (2009), Yuen, Wong, Qian, Fan, Chan, and Fung (2009) |
|---|-----------|---------|---|

| Table 6 | | |
|--|---|--|
| Technology | Area of use | Author |
| Chat-bots/ AI smart Assistants/ E-service agents | Shop-floor interaction, Smart retail assistance, Online customer service assistance, online chats assistance | Forbes, 2017a, 2017b, 2017c),Pan (2019),Tommy Hilfiger (2016),Beuloye (2019),Bolton et al (2013),Lee, et al (2017), Zhang et al (2017),Choi et al (2016), Woodside & Ko (2013), Mimoun et al (2017), Zhang et al. (2017), Godey et al. (2016), Crosby & Johnson (2002), Gautam &Sharma (2017), Darke et al. (2016), Zhang & Dholakia (2018), Kim & Ko (2010), Holzwarth et al. (2006), Arthur (2017) |
| Virtual trial/ Augmented reality/ Virtual product experience | Virtual dressing rooms, enlargement or magnification, 3- D rotation , mix and match, and personalized 3-D virtual mode | Wagner (2007), Kim & Forsythe's (2007), Dabholkar & Bagozzi (2002), Citrin et al. (2003), Childers et al. (2001), Menon &Kahn (2002), Heijden (2000), Schlosser (2003), Kim, J., & Forsythe, S. (2008), Merle et.al (2012), Ethan Kent (2015), Hauswiesner et.al. (2013), Rohinesh (2015), Simon (2016), Ghosh (2013), Lee, Kim, & Fiore (2010), Verhoef, Neslin,& Vrooman, (2007), Kim & Forsythe, (2008); Lee, Kim, & Fiore, (2010), Jiang &Benbasat,(2004–2005), Li et al. (2002) |
| Personalization/ Customization | Customized suggestions, suggested products on the basis of past purchase, customer body type, lifestyle, customer choice. | Brady(2018), Jain, Rakesh, Nabi, and Chaturvedi(2018), Abraham, Van, Archacki, JGonzález and Fanfarillo (2019)), Shang, Wang, Xiong, Nyberg, Yuan, Liu, Guo, and Bao (2018), Luxury Institute (2020), Delloite (2017), OGUNDIMU (2018), Shankar (2018), Berthiaume(2021), Adam (2019), ODDONE (2019), Delloite (2019) |

DISCUSSIONS AND CONCLUSION

On analyzing the reviewed literature, it is found that AI techniques and methods like ML (Future decision, Supervised learning, Un-supervised learning) is being applied in processes like Cutting, Dyeing, Finishing, Printing, Finished Garments Inspection etc. AI is not only easing the process but also helping in intelligent decision making with the help of DSS (Mathematical models with conventional data retrieval method, Optimized decision). Decision without human intervention, Reasoning approach "If then" rule, Knowledge based decisions are being done by the Expert system. One of the concern in F&A is optimization of process this is eased by AI using Intelligent searching, simple exhaustive search, heuristic search approach, genetic programming in apparel production. In corresponds to application of AI in luxury retailing, the authors witnessed that techniques like Chat-bots, AI Smart Assistants, AI based advertising to targeted customers and E-service agents are providing human less intelligent shopping assistance to buyers and ease of marketing of luxury brands to the targeted segments. Whereas Virtual trial, Augmented reality, Virtual product experience helps in giving customer a time saving, safe and contact less experience online and in the retail store. The most important concern for luxury brands is to make their services and products personalized and customized which is possible using AI with the help of customized suggestions, suggested products on the basis of past purchase, customer body type, lifestyle, customer choice etc.

The authors now are able to conclude that there exists a strong influence of AI on F&A industry in all the areas like merchandising, product planning, line balancing, decision making and stock optimization etc. Luxury retailers are the innovators/ trends setters in the area of AI application by adopting marketing tools and techniques to retail their products. The existence of AI in luxury product retailing/ marketing is majorly witnessed in U.S. and European market with a trend starting in the Middle East. Brands like Louis Vuitton, Tommy Hilfiger, Burberry, Gucci, Chanel, are already using this technology of artificial intelligence and research of Mckinsey, Euro Monitor and Forrester supports that, by 2025, 20% of the total Luxury sales across world will be online, with increase in online luxury sale, Artificial Intelligence will gel well with online sales to provide a more delighted experience to buyers. The customer finds it very interesting and “for them” i.e., customised as per their need. The objective of providing customer delight by any luxury brand can be achieved by using this technology of AI.

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