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CURATING DIGITIZATION SYSTEM

Digitizing Value-driven practices of Intangible Cultural Heritage Fashion for nation branding and safeguarding *

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Keywords ^{EN}

Nation Branding, Digitization, value-driven design, Intangible cultural heritage Fashion

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Nation Branding, Digitizzazione, design guidato dai valori, Moda del patrimonio culturale immateriale.

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Abstract ^{EN}

This thesis explores the concept of Nation Branding and its influence on sustainable development through the digitization of a country's Intangible cultural heritage (ICH) resources, to enhance the Saudi brand spiritual identity and Safeguard ICH fashion. focusing mainly on ICH fashion craftsmanship. Fashion is a crucial aspect of a country's visual identity, it's a source of pride for a country's people, reflecting its traditions and values, contributing to both its economy and culture. However, in the case of Saudi Arabia rebranding and digital transformation, we notice a gap as there is limited access to information regarding Saudi ICH fashion on the internet, specifically relating to its intangible values that drives its fashion design aesthetics and functionality. This creates a gap in communication and connection between the Saudi Fashion identity and its digital generations fashion identity. the researcher is proposing a digitization system to establish and sustain an accessible digital point for craftsmanship and driving values of Saudi CH fashion on the internet. To address this issue, the research methodology employed a curative-innovative digitizing system, incorporating a qualitative Hybrid design using exploratory, historical documentation, and information design methods. Information design stage was in partnership with The Royal Institute of Traditional Arts (TRITA). As it was established as part of the Saudi Vision 2030 initiative to safeguard and educate Saudi Arabia's culture for new generations as well as to promote its heritage with the world. It is important to note that the project section of the research represents the author's opinion and is not endorsed by the Royal Institute of Traditional Art. Furthermore, it should be emphasized that this is a hypothetical scenario reflecting only the researcher's perception. Moreover, the project part investigated Sustainability as driven-value to test the efficiency of the methodology, and choose Najd, the central region women's fashion as scope to investigate it, and Al-Miqtaa costume craftsmanship as digitization sampling. The research findings confirm the validity of this digitizing system and highlight the value-driven nature of Saudi CH fashion, representing rooted and active values that can be a competitive advantage for the Saudi economy and branding archetype. Additionally, as part of the sampling project, it has been validated that sustainable design-thinking is deeply embedded in the Saudi society's inheritance, resulting from the economic and environmental challenges they faced.

Abstract ^{IT}

Questa tesi esplora il concetto di Nation Branding e la sua influenza sullo sviluppo sostenibile attraverso la digitalizzazione delle risorse del patrimonio culturale immateriale (ICH) di un paese, al fine di migliorare l'identità spirituale del marchio saudita e tutelare la moda dell'ICH. concentrandosi principalmente sull'artigianato della moda dell'ICH. La moda è un aspetto cruciale dell'identità visiva di un paese, è motivo di orgoglio per il suo popolo, riflette le sue tradizioni e i suoi valori, contribuendo sia all'economia che alla cultura. Tuttavia, nel caso dell'Arabia Saudita, notiamo una lacuna nella riformulazione del marchio e nella trasformazione digitale, in quanto vi è un accesso limitato alle informazioni sulla moda dell'ICH saudita su Internet, in particolare per quanto riguarda i suoi valori immateriali che guidano l'estetica e la funzionalità del suo design di moda. Ciò crea una lacuna nella comunicazione e nel collegamento tra l'identità di moda saudita e l'identità di moda delle generazioni digitali. Il ricercatore propone un sistema di digitalizzazione per stabilire e mantenere un punto digitale accessibile per l'artigianato e i valori guida della moda CH saudita su Internet. Per affrontare questo problema, la metodologia di ricerca ha impiegato un sistema di digitalizzazione curative-innovativo, incorporando un design ibrido qualitativo utilizzando metodi esplorativi, di documentazione storica e di progettazione delle informazioni. La fase di progettazione delle informazioni è stata realizzata in collaborazione con il Royal Institute of Traditional Arts (TRITA). In quanto è stato istituito nell'ambito dell'iniziativa Saudi Vision 2030 per proteggere ed educare la cultura dell'Arabia Saudita per le nuove generazioni e per promuovere il suo patrimonio nel mondo. È importante notare che la sezione del progetto della ricerca rappresenta l'opinione dell'autore e non è approvata dal Royal Institute of Traditional Art. Inoltre, va sottolineato che si tratta di uno scenario ipotetico che riflette solo la percezione del ricercatore. Inoltre, la parte del progetto ha indagato la sostenibilità come valore trainante per testare l'efficienza della metodologia e ha scelto la moda delle donne della regione centrale del Najd come ambito di indagine, nonché il campionamento della lavorazione dei costumi di Al-Miqtaa. I risultati della ricerca confermano la validità di questo sistema di digitalizzazione e mettono in evidenza la natura guidata dai valori della moda CH saudita, che rappresenta valori radicati e attivi che possono essere un vantaggio competitivo per l'economia saudita e l'archetipo del marchio. Inoltre, nell'ambito del progetto di campionamento, è stato validato che il pensiero di design sostenibile è profondamente radicato nell'eredità della società saudita, derivante dalle sfide economiche e ambientali affrontate.

Glossary

Accessibility: The quality of being easy to understand or enjoy; The quality or characteristic of something that makes it possible to approach, enter, or use it (Cambridge dictionary, 2023).

"Al-Joud"الجود: Arabic rword refers to the concept of munificence involves being generous and open-handed, giving willingly without expecting anything in return. It's characterized by nobility, bounty, and liberality. (Almaany, n.d)

"Al-Miqtaa"المقطع: arabic word refers to a style from Najd, Saudi Arabia. An Arabic word for cutted, Referring To the method of assembling multiple pieces. A loose-fitting dress that falls to the ankles and has long sleeves. Similarly to Saudi thobes. (Albassam, 1985)

Archive: A repository stores historical records or documents (Cambridge dictionary, 2023).

Cultural heritage: Heritage of tangible, intangible and natural assets of a group or society that is inherited from past generations.

Cultural Symbols: Cultural symbols are physical manifestations that have meaning within a culture or symbolize its ideology. In order for a culture to exist, symbols are imperative because they allow a group to form its own identity. (Cultural Symbols Importance & Examples | What Are Cultural Symbols? - Video & Lesson Transcript | Study.Com, n.d.)

Cultural sustainability: In fashion: transmitting/supporting the knowledge transfer of traditional knowledge and traditional cultural expressions to future generations. Answers the questions: what cultures will exist in the future and whose cultural values will be represented? In fashion it can be approached as the opposite of cultural appropriation and exclusion (Sandhu, 2020).

Cultural Value: Cultural values are the core principles and ideals upon which an entire community is based and relies upon for existence and harmonious relationships. (Essien, 2020)

Data Visualization: Data visualization is the representation of data through common graphics. A visual display of information communicates complex data relationships and data-driven insight (What Is Data Visualization? | IBM, n.d.)

Digitization: Refers to a development process of converting analog data to digital format, which has been noted as an influential factor in the ease of finding for researchers (Luke et al., 2017).

GLAM: Short name for Galleries, Libraries, Archives, and Museums (Suls, 2017).

Heritage: The term which uses the past to represent the tangible and intangible socio-cultural expressions in the present time, developing a future vision and pausing the modernization or globalization wave against the cultural identity [Outstanding Values] of the autonomous/indigenous/local communities. (Amer, 2023)

Heritagization: The processes and dynamics of constituting something as a legacy, creating and recreating cultural and historical meanings and identities (Sjöholm, J., 2016).

Information design: The practice of presenting clear, accessible information (Pettersson & Avgerinou, 2016)

Intangible Cultural Heritage (ICH): Refers to social and cultural practices and processes rooted in traditional and local cultures, including oral traditions, customs, language, music, and craftsmanship (UNESCO, 2003).

Metadata: It is a structure that helps search engines make sense of specific data as well as discover data across the Internet (Guenther R. & Radebaugh J., 2004).

Memory institutions: Institutions such as Libraries, Archives and Museums whose collective mission is to manage the documentary and cultural heritage of their nations. (Olefhile,2018)

Nation Branding: Evolved globally and locally to enhance trust with people and augment a nation's image externally and internally (Lee, 2011).

Pattern-Making: Creating a pattern is the process of creating a blueprint for a garment. The purpose of a pattern is to cut out fabric that matches the requirements for sewing a garment. Fabric, fit, and trim are all considered. By using the pattern, the 2D fabric sits properly on the 3D body. (Apparel Pattern Making: A Guide for Fashion Designers, n.d)

Primary Sources: Linked to authorship were delivered by those directly involved in or observers of a particular historical situation (McCulloch G. et al., 2002).

Value: The concept of value as something being worthy as a perception that frames people's behavior regarding its price (Cambridge dictionary, 2017).

Web 3.0: A technological stack, responding to the issues and limitations of web2, decentralized by nature, may incorporate blockchain technologies and token-based economics. Emerging techno-philosophical concept, ad-

dressing the new vision of the internet where users are in control of their own data and identity. In fashion, it is closely linked to new digital products, NFTs, creator economy, supply chain, product authentication, and transparency. (unfolding strategy, 2023)

3D Modeling: In 3D computer graphics, 3D modeling is the process of creating an object's three-dimensional surface using specialized software and involves using different techniques (such as NURBS, solids, polygons, subdivision surfaces, etc.). The end product is called a 3D model (Vitali, 2018).

Virtual simulation of garments: Virtual simulation of garments utilizes computer graphics technology to replicate clothing behavior in a virtual environment. It has practical applications in design, production, and retail, with studies examining consumer satisfaction in online retail. (Kim & LaBat, 2013)

Introduction

Fashion industry decisions are largely driven by values, highlighting brands' value online has become essential to attract interested parties. The development of technology and digital transformation has greatly facilitated access to fashion. In fashion studies and design, digitization has become an important tool (M. Martin & Vacca, 2018). In this digital research, we explore the previous concept and consider Intangible Cultural Heritage (ICH) fashion values and what it can bring to the identity of the Saudi-fashion industry. After initiating the Saudi Vision 2030 in 2016, in line with the rebranding of the identity of the homeland, it has brought noticeable changes, as the definition of Saudi society's culture has also changed (Abu Nab, 2020). Nation Branding generates its identity based on cultural heritage resources including its CH fashion (Macrae C. et al., 1995). This type of branding is applied for Sustainable development and showcases its competitive advantage (He & Zhang, 2022). Utilizing thriving industries to promote a country's heritage products (Lee, 2011). When approaching cultural heritage from a marketing perspective, it is essential to understand its mission and content. In order to communicate about it to the public, it raises awareness and perception of it as it inspires audiences to discover, explore, experience,

and enjoy the culture (Vegheș, 2022). Fashion objects typically communicate tangible elements. However, "intangible" heritage is equally important, such as knowledge, values, and the culture behind fashion production. This has resulted in creative innovations incorporating digital media, Information and Communication Technologies (ICTs) into fashion (Permatasari & Kalbaska, 2022). The use of 3D technology has enabled the preservation of ICH in many fields. Many of these studies include craft, dancing, storytelling, game-based education, and educational and documentary applications (Skublewska-Paszkowska et al., 2022). Digital technology has the potential to engage younger audiences with Cultural heritage fashion (Yue et al., 2022). With Saudi Arabia rebranding and digital transformation movement, we notice a gap as there is limited access and awareness to information regarding Saudi ICH fashion on the internet, specifically relating to its intangible values that drives its fashion design aesthetics and functionality. This creates a gap in communication and connection between the Saudi Fashion identity and its digital generations fashion identity. This thesis explores the concept of Nation Branding and its influence on sustainable development through the digitization of a country's Intangible cultural heritage (ICH) resources, to enhance the Saudi brand spiritual identity and Safeguard ICH fashion.

The researcher is proposing a digitization system to establish and sustain an accessible digital point for practices and driving values of Saudi CH fashion on the internet. By increasing the accessibility of certain information, ultimately increases their value and relevance, as Kenney A. & Rieger O., (2000) stated, "Resources are useless unless they are accessible,". This digital research generates Saudi value-driven fashion design thinking, engage with digital communities, and create interest to safeguard intangible cultural heritage fashion practices. CLO3D is the key technology for representing and documenting the crafting process. The metadata standard VRA core is utilized to analyze and find relevant information as well as facilitate online access to data documentation. Additionally, digital storytelling based on SDG manual and virtual simulation of garments created with CLO3D are powerful presentation and communication tools. CH fashion is the product, and ICH fashion driving values is our aim to find, justify, and accelerate it accessibility with digital communities to capture, embrace, attract, and finally connect with individual's values through designing and curating a digitizing system for the case of Saudi Arabia ICH fashion driving Values and practices. This research project will begin with a comprehensive literature review that thoroughly examines the contexts of nation branding. Our focus will be on the core goals and measures of nation branding and its correlation with the cultural heritage (CH) fashion. We will pay particular attention

to the role of CH fashion in the measurement and archetype of nation branding, as well as the current governmental efforts towards reviving and renourishing the national fashion identity. We will then delve into the context of Saudi Cultural Fashion Identity, with a specific focus on the central region of Najd. Here, we will scope out the women's cultural heritage fashion that has significantly contributed to the Kingdom's identity. Moreover, we will analyze the impact of the 2030 vision on society today and examine how it has led to a shift in the fashion industry. Next, our research project will explore the digitization of cultural heritage fashion, focusing on ICH fashion, responsibilities charge for such projects, UNESCO's frameworks and policies, and the technologies behind these digitization efforts. We will discuss prevailing challenges in digitization and the potential opportunities it presents in preserving and promoting cultural heritage fashion. Once we complete the four chapters, we will present our methodology and project planning, encompassing the conceptual idea, system, and framework. This will provide a detailed roadmap for conducting our research project effectively. Finally, we will share our research findings, highlighting our key discoveries, and implications for the cultural heritage fashion industry in Saudi Arabia.

Nation Branding

Dinnie, K., (2008) described Nation branding in his book as it is a thrilling, complex, and controversial phenomenon; It is a thrilling concept as it scopes an area of little exciting theory but at the same time a considerable amount of real-world activity, complex due to encompassing different disciplines exceeding the limit of the conventional brand strategy field, and controversial in that it is a highly politicized activity that impacts viewpoints and opinions. According to (Lee, 2011) Nation branding has evolved globally and locally to enhance trust with people and augment a nation's image externally and internally.

Nation Branding for Country's Sustainability and Competitiveness

Sustainable development and competitive advantage are the goals of nation branding, aligning with the distinctive path each country takes in reflecting an ongoing process of development quality and comparative advantage. (He & Zhang, 2022) Legitimizing the role of nation branding means adopting a systematic approach while being aware of its limitations and opportunities. Technical aspects like designing, marketing, advertising, and communication in brand management have been emphasized, although, brand management must also adopt a strategic approach, including organizational and institutional contexts for a nuanced understanding of nation branding´s potential and limits (Farquhar, 2005).

Looking at the larger picture of being a «brand.» Dinnie, k, (2008) sees that such a definition tends to fall into two camps. The first definition focuses on the visual manifestation of a brand. At the same time, the second defined it as a deeper that goes under the visual aspect of a brand by capturing the essence of a brand. The American Marketing Association defines a positive brand as «a name, term, sign, symbol, or design, or a combination of them intended to identify the goods and services of one seller or group of sellers and differentiate them from those of competition.» Another definition of a brand that focuses on the consumer perspective relative to the producer, Macrae C. et al., (1995), defines a successful brand embodies a remarkable blend of characteristics and added values. A pair of functional and non-functional play a role in expressing the brand´s essence and raising its awareness. Cultural and societal trends drive and influence Nation branding and stand on a solid foundation of their national identity. It is tied to cultural resources more than any other type of branding. Cultural resources are considered a product, services, corporate, or any brandable entity.

Measuring Nation Brand Success

Among the tools used to measure nation brands since 2008 is Anhalt Ipsos Nation Brands Index. This index measures the strength and quality of a country´s brand image through a combination of six factors: exports, governance, culture and heritage, people, tourism, investment, and immigration. With a focus on cultural heritage, the index reflects global views of each nation´s heritage and appreciation for their contemporary culture, which includes film, music, art, sports, and literature. Culture should be valued and utilized as a basis for creating consumer affinity, as nation branding should go beyond simply communicating a positive image of the country (Ipsos Public Affairs Anholt Ipsos Nation Brands Index (NBI) Taking Your Reputation Places, 2021)(Vegheș, 2022). (NBI) Taking Your Reputation Places, 2021)(Vegheș, 2022).

Role of CH Fashion in Nation Branding Context

Cultural heritage fashion serve as a powerful tool for branding a nation, as it represents a country´s unique cultural identity and values through its traditional fashion elements and techniques. According to Vegheș, (2022) study, Intangible and tangible heritage provide meaningful value to a country´s development process. Taking care to preserve and restore this heritage and communicating about it to the public raise awareness and perception. Moreover, audiences are inspired to discover, explore, experience, and enjoy the culture. The research also states that understanding the cultural heritage´s mission and content is essential when approaching it from a marketing perspective. Cultural explorers should be positioned as cultural heritage consumers, passing through the interconnected stages of Thurley´s heritage cycle: understanding, valuing, caring for, and enjoying heritage. Highlighting that the stronger and more positive nation brand is supported by a richer and more valuable cultural heritage, and a stronger nation brand inspires a greater interest towards the culture. With the right marketing, a country with a diverse and outstanding cultural heritage will appeal more to the people because it is more familiar.

He and Zhang, (2022) emphasize that to make cultural heritage products brand-valued, it is necessary to identify the unique aspects of these heritages and make them brand-valued symbols with corresponding economic and brand impact. Additionally, cultural heritage branding accentuates exploring cultural connotations, creating original variations, and establishing the brand´s competitiveness before creating creativity in public demand. While Zitelli Lisa, (2018) states that the digitization of cultural heritage fashion can serve as a marketing tool for nation branding, for example: a well-structured nation database, and a platform for collecting materials for the repository.

Another study by Ko and Lee, (2011) suggests that cultural heritage fashion branding can differentiate brands and deliver brand value in-depth, authenticity, and credibility to customers (Urde et al., 2007). However, in the study, they tied Cultural heritage fashion closely to Cultural Archetypes. «Cultural archetype is a cultural product as cultural heritage that can be transformed into cultural content, including mental, physical properties, and patterns of a culture « (Lim Kyung-ho et al., 2008). The branding of cultural heritage offers a novel identity and a solid foundation. It is essential to ensure a clear visualization of the brand's competitive design element; the originality of the design can be effectively achieved by using cultural archetypes to envision the design.

According to (M. Martin & Vacca, 2018), as the number of fashion brands and consumers continue to rise, the sense of belonging becomes increasingly important through access to each fashion house's heritage -CH fashion in nation branding aspect-. Furthermore, digital platforms expose these houses to a wider audience while still maintaining an air of exclusivity. Technology allows for the blending of old and new, making fashion more accessible. The digitization of costume collections has led to more comprehensive research in fashion studies and design. The archive has become more accessible in recent years through online databases and social media.

ICH fashion Safeguarding for Sustainable economic growth

Intangible cultural heritage (ICH) is a Intangible cultural heritage (ICH) is a term used to describe the practices, representations, expressions, knowledge, and skills that are passed on from generation to generation. This heritage is continuously recreated by communities and groups, influenced by their environment, interaction with nature, and history. Intangible cultural heritage provides a sense of identity and continuity, promoting respect for cultural diversity and human creativity. The manifestation of intangible cultural heritage includes, but is not limited to, oral traditions, performing arts, social practices, knowledge, and practices concerning nature and the universe, and traditional craftsmanship. This definition is published by UNESCO in the Convention for the Safeguarding of the Intangible Cultural Heritage. In addition to being compatible with international human rights instruments, this heritage also meets the requirements of mutual respect among communities, groups, and individuals (UNESCO, 2003). Santagata, (2021) suggests that ICH's economic dimensions have social, cultural, and economic value and should be investigated. By providing education, social services, social cohesion, engagement, and increasing location attractiveness, Specific expressions

of ICH will contribute to economic features of local systems, sustaining communities, and promoting well-being.

Traditional crafts techniques, tacit knowledge, and embodied skills in creative acts face a high risk of disappearing, according to (Casciani & Vandi, 2022) research. They indicate the significance of fashion, luxury, and applied arts as Creative and Cultural Industries (CCIs) requiring protection and transmission of Intangible Cultural Heritage (ICH). Fashion craftsmanship is crucial to the sustainability of society, the economy, and the environment. Preserving ICH and promoting cultural diversity through entrepreneurship and education are vital for enhancing creativity, economy, and social wellbeing. In addition, Scholars stress the importance of ICH preservation in these domains. (Bertola et al., 2016; (European Commission, 2016)). Moreover, Safeguarding should prioritize enhancing craft aesthetics and quality, attracting younger generations of artisans to maintain cultural diversity and identity, and resisting mass production and globalization (Casciani et al. (2022; Cominelli & Greffe, 2012). This will encourage craft production, provide livelihoods, perpetuate creativity, and impact the economy and social wellbeing.

Saudi Arabia National re-branding

Concerning Saudi Arabia's national re-branding, fashion actively influences international public perceptions of the country. How Saudi Arabian motifs and values are conveyed through fashion plays a vital role in defining Saudi Arabia's image. «Points and values take on different meanings depending on the sociocultural context in which fashion is used, consumed, and interpreted» (Steele, 1998).

Saudi Arabia's Ministry of Culture reports 2020 the establishment of Eleven new cultural councils: the Heritage Commission, Film Commission, Music Commission, and Fashion Commission, to refine Western public perception and highlight the treasurable narrative embedded in Saudi heritage fashion.

In terms of Saudi branding identity, cultural heritage fashion is considered a fundamental component, the rise in event numbers associated with heritage fashion encourages Saudi brands to meet local communities' needs and to boost nationalism and local identity within their brand architype, In this period of time, it is essential to have an online platform for information concerning Saudi Arabian Cultural Heritage fashion in the current climate in order to raise awareness and facilitate access to information by specialists

in the field of fashion, as well as to elucidate the cultural values and symbols embedded in these garments. This platform also serves as a means of communication with other communities, helping to foster understanding of the external world's perception of the Saudi principle through recognition of the deeply rooted social and cultural values that comprise the identity of the Saudi individual, and act as a catalyst for the Saudi people. Moreover, this platform can also be used to promote the cultural heritage. The case is an example of the importance of tangible cultural assets, such as heritage fashion, being communicated to the public; consider the possibility of digitally sharing historical clothing components. Consequently, a new external source will be available to comprehend and renovate the cultural awareness of Saudi Arabia, generate revenue, and expand the Kingdom's outreach, as the Ministry of Culture states in its paper on Alhussein (2022). «A radical rethinking of how the cultural heritage of fashion archives will be preserved and enhanced» (Steele, 1998).

Renourishing the nation style

The primary objective of this section is to present an overview of the outcomes and revenues resulting from the government's initiatives in promoting cultural heritage fashion dialogue within the nation. This includes analyzing user participation and shared content on social media channels, in addition to gaining insight into the general sentiment among Saudi people towards this type of dialogue. The research will investigate two significant national and international events hosted in Saudi Arabia recently that highlighted the nation's branding through fashion - The Saudi Cup horserace and the founding day.

The Saudi Cup

The Saudi Cup is a social and sports burgeoning event in the Kingdom's calendar. The occasion Blends the best fashion, culture, lifestyle, and family entertainment with the exciting world of international horse racing. On 19 and 20 February 2021, in King Abdulaziz Racetrack for the Kingdom's flagship racing event, visitors from the world's horse racing society met at the Saudi Cup, which has a prize fund of more than US30$ million – the largest of any horse race in the world. Horse racing events are known for their fashion code commitment worldwide, an important occasion in the fashion calendars, encouraging attendees to showcase different looks by their fashion designers and milliners.

For the first time in Saudi Arabia, the auspices of the Fashion Commission at the Ministry of Culture teamed up with fashion heritage expert Dr. Laila Albassam and illustrator Norah Sahman to create a Dress Code for the Royal Enclosure. We will go back to this document as case study of digitization projects for raising cultural identity awareness in the following section. They invited Racegoers to dress in costumes inspired by Saudi fashion heritage. Juxtaposing with other major international horseracing festivals, the dress code interacts with the excitement of dressing up and attending the races. This makes King Abdulaziz Racecourse a unique event to embrace Arabian heritage and society narratives communicated in Saudi heritage fashion dialog, a successive identity, and a narrative that mirrors «royal enclosure.» Her Highness Princess Noura int Faisal Al Saud, Sector Development Director of the Fashion Commission at the Ministry of Culture, hopes this work will inspire current generations to look at the past by understanding its core and values to create designs that hold Saudi heritage and build narratives for its future. (Fashion at the Saudi Cup | Fashion Commission, 2021) This event comprises two exciting activities, namely horse racing and Heritage fashion racing. Many prominent people and Saudi designers from various fields participated in the «Owning Your Culture» competition, showcasing their unique expression using heritage fashion as inspiration.

Figure 2 SaudiCup, @TheSaudiCup, 2022, Announcement

Figure 3 SaudiCup, @TheSaudiCup, 2022, #TSCStyle Story Highlights, Reposting @HessaAlajaji

Figure 1 SaudiCup, @TheSaudiCup, Coming to the world_s most valuable race with a Style. (2022)

Figure 4 SaudiCup, @TheSaudiCup, 2022, #TSCStyle Story Highlights, Reposting @YaraAlnamlah

Figure 5 SaudiCup, @TheSaudiCup, 2022, #TSCStyle Story Highlights, Reposting @Hiamag

Figure 6 SaudiCup, @TheSaudiCup, collaboration post with @HarpersbazaarArabia_ Harper's Bazaar

Figure 7 Arab News. (2021, April 2). A Saudi Arabian fashion label is born_ This new brand is taking inspiration from the Bedouin [Photograph]. Arab News.

Founding Day

The royal decree issued by King Salman bin Abdulaziz Al Saud designating February 22nd as a day to commemorate the establishment of the first Saudi state, named Diriyah by Imam Mohammad Bin Saud in 1727, has emerged as an opportunity for showcasing national pride and promoting heritage appreciation between future generations of Saudis. The celebration aims to honor the bond between citizens and leadership, the achievements of the Saudi state in terms of stability, unity, and security, and the resilience of the first Saudi state in defending against enemies. Heritage fashion, symbolic of tribal and regional identity in Saudi cultures, has been employed as a marketing and educational tool to promote heritage awareness. Celebration events held around the regions of Saudi Arabia hosted by the Ministry of Entertainment, such as the Riyadh season, have provided a space for people to showcase their tribal identity through fashion. The interaction between the people and the celebration has been augmented by engaging online platforms, where many Gen Z and Millennial individuals express their Bedouin roots and tribal identity through platforms such as TikTok, with the hashtag #- gaining popularity. High-level influencers and micro-influencers have also joined the conversation on cultural garments, using their Instagram and Pinterest accounts to share their background identity through heritage fashion and expressing pride and community bonding.

Additionally, international Saudi students have demonstrated their pride in their heritage by wearing their cultural fashion in different environments and sharing their photos and videos on social media platforms. We see Saudi international students celebrated in Italy, USA, Turkey, and various other countries.

Figure 8 Sausan AlKadhi, @StylemeSausan, (2022), Instagram

Despite efforts to promote heritage fashion, The researcher points out that some misconceptions, such as confusing Saudi designs and symbols with those from other Gulf countries, such as Bahrain and the United Arab Emirates, have been observed. Additionally, some individuals have found difficulty in distinguishing heritage from other eras, as some were styles from the Saudi late 80s, missing the differentiation between vintage and heritage Saudi fashion. This case study spots the importance of national days in promoting cultural heritage, in the same time, identifying potential challenges, weakness and strengths of heritage fashion consciousness within Saudis.

Figure 10 Abeer Sindar, @Abeer.Sindaar, (2022), Instagram

Figure 9 Alaa, @Alaa, (2022), Instagram

Figure 11 Lama ALakeel, @Lama.Alakeel, (2022), Instagram

Figure 12 Norah Alshaikh, @NoraAlshaikh.official, (2022)

Figure 14 Yara Alnamlah, @Yaralnamlah, (2022)

Figure 13 Arab News. (2021, October 14). Founding Day celebrations sweep Saudi Arabia. Arab News.
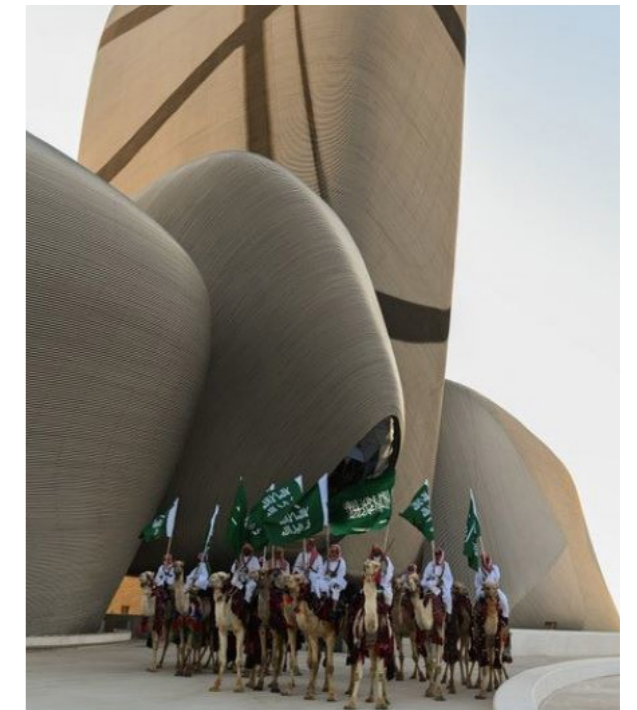
Figure 15 Arab News. (2021, October 14). Founding Day celebrations sweep Saudi Arabia. Arab News.

Figure 16 Al Arabiya. (2023, February 23). Cristiano Ronaldo dons traditional attire to honor Saudi Founding Day. Al Arabiya English.

Figure 17 Harper's Bazaar Arabia. (2021, September 25). Saudi Arabia Celebrates Its Second Founding Day. Harper's Bazaar Arabia.

Figure 18 Vogue Arabia. (2018, June 1). The History of Saudi Arabia's Bedouin Fashion. Vogue Arabia.

Figure 19 Esquire Middle East. (2019, September 23). National Day- Top 5 looks that shine in official celebrations. Esquire Middle East.

Figure 20 Esquire Middle East. (2019, September 23). National Day- Top 5 looks that shine in official celebrations. Esquire Middle East.
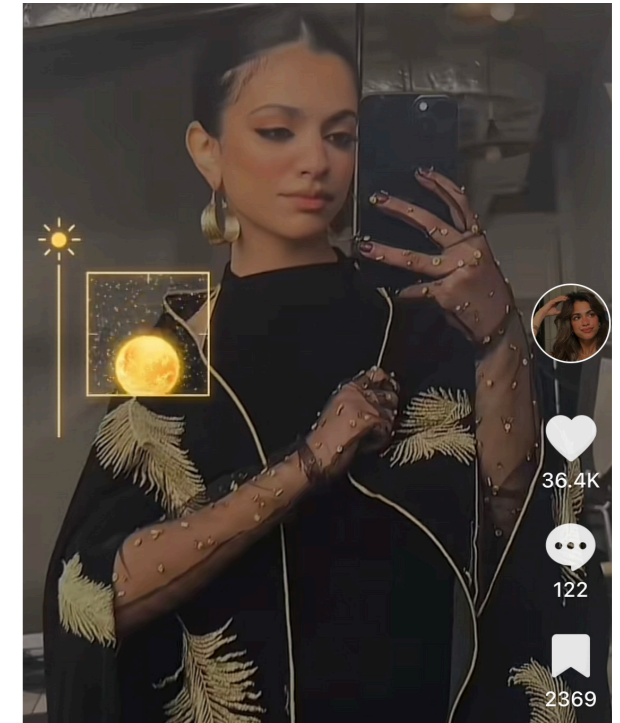
Figure 21 Daim_ ديم. [daimgaw]. (ديمقو#.(2023[Video]. TikTok.
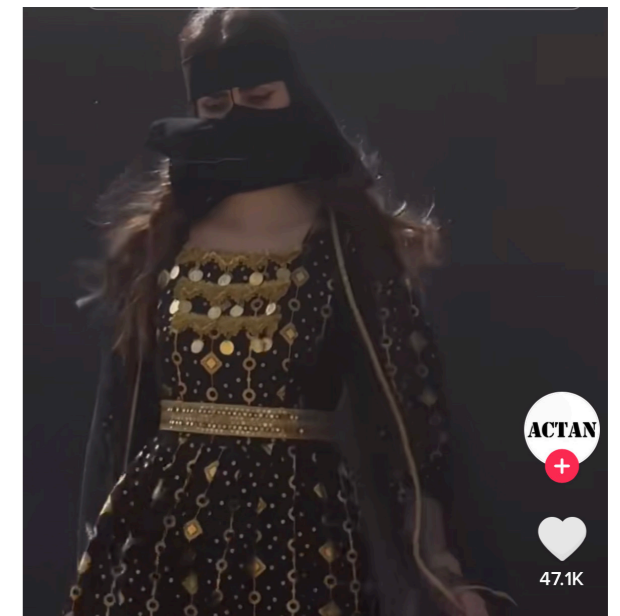
Figure 22 Actan. [actan_sa]. (يومالتأسيس#.(2023 [Video]. TikTok.

Figure 23 Turki Al jar Allah. [@10.l_]. (يومـالتأسيس #). (2023
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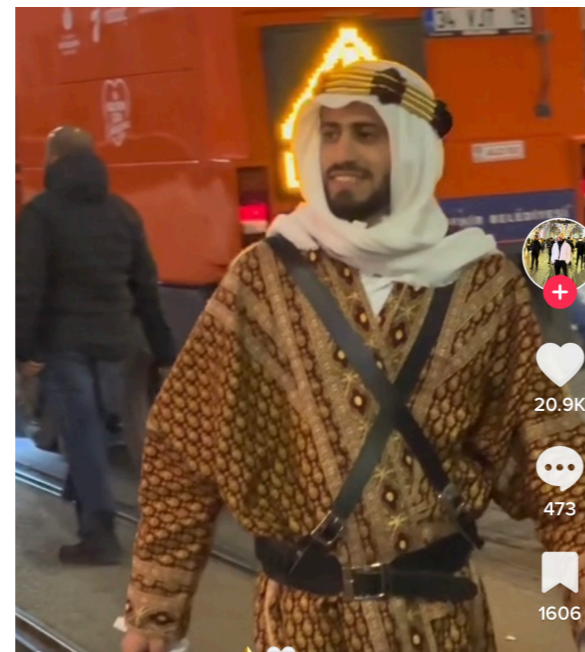
Figure 25 ato0olali. [ato0olali]. (الخبر #). (2023
يومـالتأسيس# [Video]. TikTok.
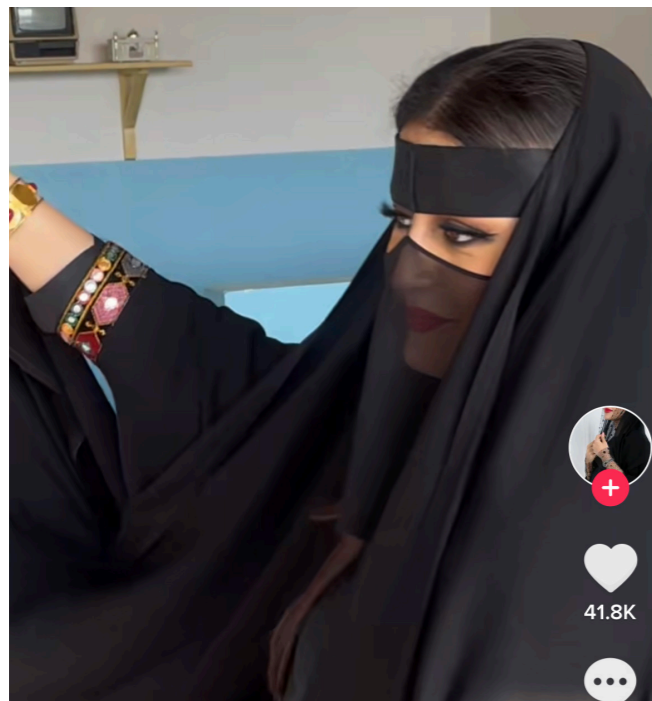
Figure 24 SURELINE شور لاين [b.j.سيسأالتـيومـ#]. (2023). [301
[Video]. TikTok.
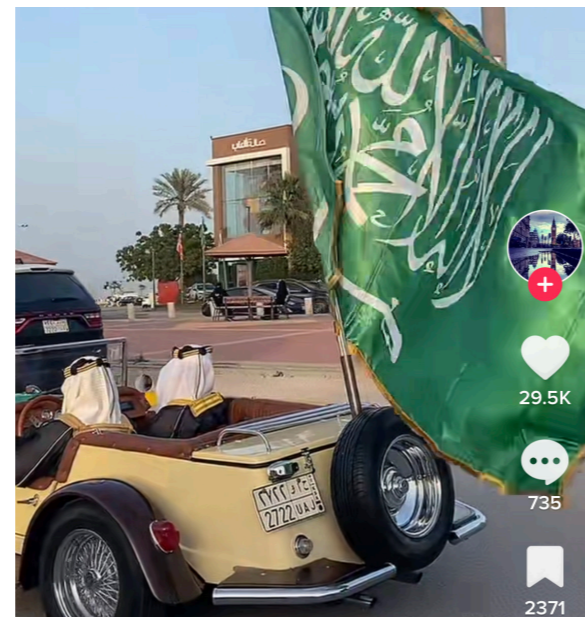
Figure 26 Ahmed Khaled. [a0khفعل ردة). (2023). [0
الناس عندما شاهدوني بالزي السعودي #يومـالتأسيس السعوديـ فيـتركيا
[Video]. TikTok.

Saudi, Culture, Identity, Vision, and Fashion

Saudi Arabia has a rich and diverse cultural heritage that reflects centuries of human civilization. Its Arab identity, heroism, history, heritage, and authenticity are evident in towering structures and civilizational monuments. The land has stimulated the development of unique artistry, mirroring centuries of cultural exchange. Natural artists who have ingeniously incorporated geometric and natural symbols into their work are a vivid example, producing visually stunning and practical items such as home decor, clothing, tools, and accouterments. These practices demonstrate the seamless fusion of culture and creativity in Saudi Arabia, offering exciting opportunities for further exploration and research for scholars (Al-Subai'i, 1999; Al-Nuwaiser, 1999, as cited in Mabrouk & Shata, 2010)

Saudi Arabia Culture and Identity

The kingdom of Saudi Arabia is one of the developing nations in the Middle East. With its blend of tribal traditions from the Bedouins shares their believes in the Islamic law (Al- Munajjed Mona, 1997). We can say that Saudi rich culture is shaped by the diversity of its people, which forms the foundation of its cultural identity. As a kingdom with over 34 million people, there are 13 distinct regions. Though all of these regions have a more comprehensive socio-cultural system, there are differences in cultural norms based on regional identity and geographic location (*People & Culture - Vision 2022 ,2030*).

Saudi Cultural Regions

In light of this, Saudi society can be divided into five central cultural regions since some regions can be culturally grouped together as a whole. It is possible to identify these regions as Najd the Middle region, Al-Hijaz the West region, Al-Ahsa'a and Ash Sharqyyah in the East region, Al-Shamal the North region, Aseer, or Al-Janoub the South region. The Arabic language and the Islamic religion are the wires that connects these regions, as each region has different dialects, cultural traditions, heritage, and culinary identity. (Montagu C., 2015).

Saudi National Celebrations

Saudi Arabia annually celebrates four official national holidays: Eid al-Fitr and Eid al-Adha the religious celebrations, and the Founding Day of the Kingdom (February 22), Saudi National Day (September 23) and a recent addition, in 2022 The Kingdom announce 11th of March detected to the flag and the values within the green rectangle.

Saudi Values

The Saudi Arabian people adopt a wide variety of social values With Islamic values that heavily influence the importance of the country. These values preserve the ancient customs and traditions of the country. These values are generosity, courage, hospitality, and maintaining solid relationships at home (People & Culture - Vision 2022 ,2030). As stated in (Abu Nab, 2020), Al-hazmi and Nyland, (2013) argue that Saudi Arabia's cultural identity is built upon three pillars: religious identity, tribal identity, and nationalism. Saudis' views of themselves and the society's values and traditions are transmitted and taught via the ideological discourse of these three systems.

Culture and oil exploration

Through a cultural exchange synchronized with the arrival of American oil exploration expeditions, the traditionally conservative nature of the society was moderated slightly after the oil exploration in 1938. Economic and political transformations also triggered exposure to Western and other Asian, Arab, and Islamic cultures. Diverse nationalities contributed to the development of the infrastructure, which has undoubtedly impacted various levels of the Kingdom's cultural identity (Abu Nab, 2020). During the 1970s and 1980s, oil revenues helped improve school systems, allowing a more coherent religious identity to develop. The religious establishment was formally responsible for some of the country's limitations. Saudis have become accustomed to the idea that the state is responsible for politics and the religious establishment is responsible for culture, society, and religion (Alhussein, 2019).

Cultural Changes and The Vision

Saudi Arabia has undergone tremendous cultural changes in recent decades, including eliminating sexism in public, prohibiting women from driving, and removing religious police authority. The government has begun a new initiative called Vision 2030, which aims to attract more tourists and local spending to gradually shift revenue reliance from oil to tourism as a source of revenue. (Madani, 2022).

The Saudi Vision 2030 has brought about noticeable changes. In line with the new strength and identity of the homeland, the definition of Saudi society's culture has also changed (Abu Nab, 2020). The Vision should be mentioned when discussing current Saudi culture, as it is refining Saudi people toward revived cultural narratives. The following section presents the vision and discuss its cultural implications.

Saudi Vision 2030

Saudi Vision 2030 is a comprehensive long-term plan for the economic and social development of the Kingdom of Saudi Arabia, launched by Crown Prince Mohammed bin Salman in 2016. The Vision aims to reduce the country's dependence on oil, create a vibrant society, and improve the quality of life for its citizens. The Vision is built around three themes: a vibrant society, a thriving economy, and an ambitious nation. (Saudi Vision ,2030 2016, p. 13)

Vibrant Society

A vibrant society is characterized by individuals who follow the principles of moderation as defined by Islam, have a strong sense of national identity and pride in their cultural heritage, live in a beautiful environment, have supportive families, and have access to empowering social and health care services. The promotion of a deep-rooted national identity is a crucial aspect of a vibrant society. Furthermore, the government aims to guide future generations and consolidate its cultural richness and diversity. Implementing their efforts to preserve and promote its cultural heritage, values, and principles will contribute to national unity and pride and ensure that its historical legacy is passed. The creation of cultural events and world-class museums will attract visitors from around the world and contribute to the well-being of society by fostering national

pride. (Saudi Arabia Vision 2016 ,2030, p. 17)

The plan aims to preserve and enhance the country's rich cultural heritage to promote national unity and pride in its cultural heritage. As part of this process, national cultural heritage sites are preserved. Cultural and entertainment options are provided for citizens and residents.

As part of the plan, efforts are being made to create a thriving fashion industry that supports local designers and businesses and illustrates the nation's creativity and style around the world (Saudi Vision 2016 ,2030, p. 34). It is not only beneficial to the preservation of cultural heritage, but it also creates economic opportunities for the local community.

Technology

Digitization is another key aspect of Saudi Vision 2030, with technology being leveraged to improve the efficiency and competitiveness of the economy, enhance the quality of life for citizens, and promote innovation and entrepreneurship (Saudi Vision 2016 ,2030, p. 36). This focus on technology helps to create new industries and job opportunities, contributing to a stronger national identity and a sense of pride in the country's future.

The relationship between the research and the vision goals are seen by its possibility of promoting a vibrant society and a strong national identity. As the plan seeks to preserve and promote cultural heritage, develop new industries, and leverage technology to drive progress, all with the aim of fostering national unity, creating economic opportunities, and promoting national pride.

Saudi Fashion Identity

Figure 27 Vogue Arabia. (2018, June 10). Rediscovering the rich history of Bedouin fashion in Saudi Arabia. Vogue Arabia.

Cultural heritage Fashion identity is an essential element of a country's cultural heritage and can provide insights into its history, social structure, and cultural practices. In the case of Saudi Arabia, traditional clothing reflects the country's Bedouin and tribal heritage, as well as its Islamic traditions.

Saudi fashion identity has gone through various influences to be in the form of today's identity. This section explores the various elements that have shaped the Saudi fashion identity, including a historical background of Saudi fashion, Historians narrating, the features of traditional Saudi clothing, tribal fashion identity, the impact of Western fashion, then we will dive briefly in regional CH fashion and scope specially Najd, the central region for Al-Miqtaa garment the project sample, and finally the famous image about Saudi fashion the white Thobe and the black Abaya.

Historians Narrating

Several historians have described Saudi fashion as a composition of allure, elegance, modesty, Mystique allure, and haute couture. Clothes that express graciousness in its simplest form. As Middle Eastern customs have been loose and flowing throughout history, and headgear has been a distinctive element. (Ross, 1981) According to Abu Nab (2020), Iskandarani (2006) described the traditional Saudi women's dress as a maxi-length garment with long sleeves decorated with various shades of colored embroidery at specific areas, such as the neckline or the cuffs. Stitchery is generally fine and sometimes quite exquisite - often as good as the finest Victorian samplers. Even though conflicted times in the history of Arabia, clothing, jewelry and other body accessorizing has steadily maintained importance, indicating appearance consciousness in Saudis identity. Layering clothes served as a unifying theme that symbolizes modesty and function to conserve body moisture during harsh weather conditions. Face veiling and headpieces protect the complexion and prevent inhalation of sand. In addition, the clothes provided an aesthetically pleasing appearance, identification, and functionality. (Ross, 1981).

Figure 28 Artist impression of northen dress featureing exquitsite embriodary. The motif include stylized trees and plants. (ross, 1981)

Tribals Fashion

Figure29 Alsharifah Dhat Alshan, daughter of Alsharif Sharaf, Alhudhayl Tribe, taif, West Region, Saudi Arabia. Mansoojat Collection book (2021)

In Saudi Arabia, the types and forms of clothing vary from one cultural region to another as well as from one tribal region to another. An important role played by fashion was that of an identification and articulation symbol (Ross, 1981) (Mohammed & Dossry, 2012). Almost all of Saudi Arabia's regions are characterized by tribal/regional fashion individuality. Traditionally, women were responsible for protecting their tribe's dress code. Dress codes are unique to each tribe/region so that ladies from different tribes can be distinguished from each other. Therefore, traditional dress is considered an integral part of tribal culture. (Abu Nab, 2020)

The tribes are divided into rural and desert areas; there are similarities in their social structure and social life, But not in their fashion identity (Mohammed & Dossry, 2012). Villagers and nomadic people wore colorful, graceful gowns in the past. It could likely be composed of flowing, voluminous, fine kinds of cotton and wools with colorful appliqués, silks, satins, chiffons, floral and plain cotton richly embroidered with bold pink, orange, and green geometric patterns.

In the same way, the elegant, flowing quality can also be found in the garments of Arabian men. Regarding construction, traditional Arabian garments for men and women are relatively similar. They both wear layers of clothing based on the body shirt. Garments have different names in different regions, but the pattern remains the same. The color was one of the

most apparent differences between clothing worn by men and women in ancient times. Color is significant to Arabian women and men. Men used to wear colorful robes, but today, they are plainer. It was once common for women to wear richly embellished cloaks; in the last period it been noticed that cloaks become plainer. The following paragraph will discuss the distinction between Bedouins' and Villagers' dressing.

Bedouin Fashion Identity

Katakura (1977), one of the scholars interested in Arab culture, pointed out that Bedouin women's traditional dress epitomizes elegance, according Abu Nab (2020). Ross (1981) speaks about the differentiation between Bedouins and villagers in her book, defining each element that indicates authority.

An impression of Bedouin appearance is created through a combination of dress, ornamentation, and tribal costume, involving the art of hairdressing and beauty culture. The structure of tribal societies fostered appearance traditions and symbols, which were particularly manifest in the embroidery and decoration of garments and trappings. Even though many tribal and sub-tribal variations have been lost forever, it is possible to identify old Arabian garments regionally. Bedouin costumes contrast the desert background, the nourishing colors

applying a beautiful impression. A wealthy Bedouin wore silk, brocade, satin, or velvet, while an impoverished Bedouin wore cotton. Even simple indigo-dyed calico garments are often ornamented with exotic embroidery and appliqué under difficult and comfortable living conditions. The Bedouin women love color and glitter and are often clad in spectacular materials when performing daily chores. She uses Metal-threaded satins and brocades, known for maintaining their shine despite heavy use. It is generally believed that the most popular colors for Bedouin aesthetics are red, cerise, rose, purple, orange, and green (Ross, 1981). In today world, the old ways are fading rapidly, and appearances are no longer revealing a person 's tribal identity.

Villagers Fashion Identity

Like their nomadic counterparts, Ross (1981) said that also village women in Arabia prefer loose-fitting, ankle-length dresses with long sleeves. Sleeves can range from straight and slightly narrowed at the wrists to wide and flared. Sleeves usually end with a deep fold, are worn wrist-length or much longer than the arm, as a rule, with the hemline often reaching the garment's hemline. When greater freedom of movement is needed, these sleeves are usually knotted together and dropped over the head.

Western Influence

Saudi women's dress underwent two

Figure 30 Dar Alhanan School in 1980 (Wikimedia Commons,N.d)

significant transformations. During the political establishment of the Kingdom of Saudi Arabia, regional dress codes were replaced with the abaya to unify identity. In Abu Nab (2020) Yamani (1997) believes this replaces local dress identities by requiring an identical dress code to define the national identity. A second dramatic change in Saudi women's fashion occurred during the 1970s when the Western style replaced traditional dress. This trend developed due to oil wealth and exposure to different fashion systems (Mohammed & Dossry, 2012) From the Islamic fundamentalist's point of view, they perceived this as a threat to the Islamic identity and saw it as Western colonialism (Abu Nab, 2020).

Based on Abu Nab (2020) research, she mentioned Yamani's (2004) research, where she indicated that between the 1950s and 1980s, which was named the period of openness, mainly in the Hijaz region, which had complex cultural, political, social, and economic changes. Beneath the abaya, western fashion had gained a great deal of influence on Saudi fashion. The influence started to sparkle from actresses in Egyptian films in its golden time. In 1970, Western fashion's popularity peaked when the wealth was caused by oil. Along with that, luxury brands begin to operate in the Saudi market. It became a status symbol in Saudi Arabia (Shechter, 2011), associated with modernity and elegance (Luqmani et al., 1987). However, its adoption led to a dilution of regional identity (Yamani, 1997).

Preview on Central region CH fashion

After understanding the principles of cultural formation in the Kingdom, we will review and explore the regional identifications based on Cultural Heritage fashion documentations. This includes understanding the various forms, characteristics, types, techniques, materials and colors of traditional attire, as well as the crafts associated with them in Najd region. These CH attires boast a rich cultural heritage, shaped by historical, geographical, social environmental diversity, economic factors, resources, and openness to other communities. Importantly, these cultural regions defined values which they embrace through their fashion.

Figure 31 Picture of various Saudi CH women fashion,Najd, Central region of Saudi Arabia, Mansoojat Collection book (2021)

Scope: Najd, The Central Region

Environment

The Najd, also known as the Central Arabian "high land", features a flat limestone plateau and Dhana Desert sand dunes. These geological features are interrupted by the Tuwayq Mountains which stretch from north to south. Due to its challenging terrain (Ross, 1981), Najd's rugged roads have made it difficult to reach, contributing to its isolation and protection against foreign influence and migration. This has helped to preserve its unique costumes and traditions (Altorki, 2021)

Apart from occasional springs and wells. Three sides of the Najd are bordered by a desert wilderness, while to the west the land is flanked by mountains. The climate of Najd is characterized as desert, where summers are hot and dry, while winters are cold and rainy. There is significant variation in temperature between day and night, as well as between the seasons. Despite excessively dry weather and low rainfall, the central town of the area is called Riyadh, meaning "the gardens." (Ross, 1981)

Economy
Trades

Saudi Arabia's location between the Arabian Gulf and the Red Sea, combined with the domestication of camels, facilitated land and sea trade routes throughout history. These routes extended from Makkah in Western Arabia to Central Asia, India, China, and beyond. The Silk Road was a significant trade route that continued to be utilized until the fifteenth century. Qaryat al-Faw, the capital of the ancient Kingdom of Kinda, (in Najd region) was an important site for trade-route commerce in the Arabian peninsula, with an established textile craft predating Islam. After the emergence of Islam, textiles and clothing products developed in new directions, with Muslim travelers conveying Arabian articles to distant lands in Asia, Africa, and beyond. This led to the evolution of classic motifs and the creation of syncretistic patterns involving Muslim themes and symbols from different cultures. Islamic societies valued textiles as an accessible art form and helped spread Arabian textile patterns and embroidery motifs worldwide(Altorki, 2021)

Resources

To uncover the economic aspect of traditional clothing in the Najd region, Saudi Arabian heritage fashion references suggest that some types of traditional clothing and fabrics are named after the source country where they were produced or exported from. Delving into the most prominent sources and economic factors in Najd, as depicted in the available Saudi Arabian heritage fashion documentation. Starting with Al-Miqtaa the essential garment, then the thobe, the head cover, Shayla.

Al-Miqtaa Types Names:

- made from the Indian Sari. (Albassam, 1985)
- ThobeQenaui Maqtaa: made from Chinese silk. The name of the garment might originate from the Arabic word Alsen, which means China, and the dialect of the Najd region pronounces the "Q" as "s". (Albassam, 1985)

Sari Miqtaa:

- Thobe Hind: Referring to the Arabic name for India, "Al-Hind"(Albassam, 1985).

Head covers:

- Shaila bor Saed: Referring to the factory's location in Port Said, Egypt (Albassam, 1985).

Abaya:

- Tabriz Abaya: Referring to sources of wool, Tabriz Iran (Albassam, 1985)
- Abaya Hasawiyah: Referring to the domestic region, Al Hasa East side of Saudi (Albassam, 1985).

Industrial Textiles

In 1930, The Najd region has industrial textiles from different countries. Natural silk was primarily imported from India, while cotton was sourced from Syria and Egypt. Other countries, such as Japan, Germany, France, Ameri(Albassam, 1985; Ross, 1981)ca, and Iran. The goods were brought into Najd through various means, such as trade caravans or by traders and Hajj pilgrims. Regarding wool, it was made locally. The local production method used sheep's wool in a manual and primitive style. Al-Ahsa region was known for their excellency in crafting wool textile for "Abaya" or "Almeshlah" men outwear. To this day, the Al-Ahsa region remains a significant producer of high-quality men's "Meshlah" made from camel hair(Albassam, 1985).

Form

Streamlined geometrical shapes. Rectangular, triangular, square, and the circular shape shown in detail like the neckline and in the embellishments.

Characteristics

The traditional clothing of the Najd region and some other Arab countries is characterized by a combination of functionality and identification aesthetics. Designed by Najd women, the clothing is known for its use of geometric patterns, awareness of fabric consumption, layering, and a variety of colors in embroidery. Albassam, (1985) and

Ross, (1981) notes that the clothing design incorporates distinctive features such as the use of narrow strips of fabric called Tikhrasah, multiple parts connected to form the garment known as configuration, a consistent use of straight lines in the design, and extensive embroidery.

Types of traditional attire
Outwear

Miqtaa, Thobe, Abaya, Sheila, Zabon, Sdiriyah, Pants

◆ Miqtaa

The essential traditional dress for Najdi women. It is a loose-fitting garment that reaches the ankles, with long sleeves, and has a similar appearance to the men's thobe that is still worn today.(Albassam, 1985)

Figure 32 Miqtaa Illustration figure (1), Albassam, L. (1985).

Figure 33 Miqtaa, Najd, Central region of Saudi Arabia, Mansoojat Collection book (2021)

◆ Thobe

Thobe is known to be the third layer (Ross, 1981), its A wide garment worn over Al-Miqtaa, is an essential traditional clothing piece for women in Najdi culture. It holds great cultural value and has been a must-have piece in their wardrobe. The garment shares similarities with Al-Miqtaa, however, it is characterized by its unique exaggerated flared shape that gives it a square or rectangular appearance (Albassam, 1985).
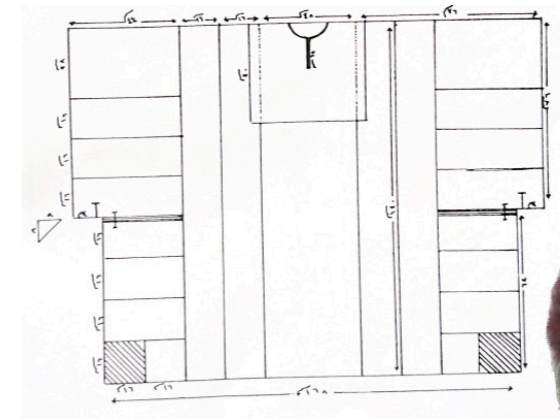
Figure 34 Mutaffat Thobe Illustration figure (5), Albassam, L. (1985).

Figure 35 Mutaffat Najd, Central region of Saudi Arabia, Mansoojat Collection book (2021)

Figure 36 Zabon (Daglah) of Men, Najd, Central region of Saudi Arabia, Mansoojat Collection book (2021)

Zabon (Daglah)

In Al-Qassim, Najd region, "Al-Zobon" is a daily garment for men, while it's called "Daglah" in other Najdi regions. It resembles a coat and is still worn to this day. However, women in the northern region, particularly in the Jabal Shamer (Ha'il) area, also wear this type of clothing. Al-Zobon is an open garment from the front, extending from the neck to the ankles, with a set of fabric and cane buttons (known as "Al-Zari") in the middle, from the top of the collar to the middle of the length. The lower part is open, with openings on both sides. The neckline, or "pocket," as referred to in the Najd region, is often round, sometimes adorned with a high collar. The sleeves are long, relatively wide, and straight, occasionally featuring a small opening at the end (Albassam, 1985).

Head Covers

Al-Shayla

Al-Shayla and Al-Ghadafa are head coverings commonly worn by women in Najd. Meant for covering and protection of sun heat (Ross, 1981). These garments are made of lightweight black cotton fabric and are rarely crafted from silk. The weaving structure of Al-Shayla is variable; for instance, intertwining weaving patterns are prevalent during winter for prayer and domestic attire, while wide weaving patterns are preferred during summer or while going outside. Sometimes, Al-Shayla meant for indoor wear is the same as ones intended for outdoor settings, with the difference being that old ones are usually used for indoor wear. It is rare for women to go without wearing Al-Shayla or leave their heads uncovered, even when alone (Albassam, 1985).

Covering Clothes

The Abaya

(Also known as Al-Bisht): is a long, loose-fitting rectangular-shaped cloak that is open from the front. It is made from a rectangular piece of cloth that is folded from the sides towards the front, leaving a space of 15-12 cm between the ends of the cloth at the center front, with both sides not touching. This space is called the "jib" and is where the abaya sits on the head (Albassam, 1985).

Figure 37 Abaya from Al-qassim, Najd, Central region of Saudi Arabia, Mansoojat Collection book (2021)

Under-garment

Sdiriyah (Blouse)

The garment is similar to the upper half of Al-Miqtaa, but with half sleeves. The side pieces are narrower, fitting closely to the body, and are known as "Al-Khistak," which extends to the waistline, requiring different techniques from those used for Al-Miqtaa. The neck opening is circular and fits snugly around the neck. It has a high collar "Ghaloqa", which is entirely open from the front. The opening has a flap that reaches the end of the shirt at the waistline. The aesthetic embellishment used for fastening is called "Azrar," also known as buttons in the Najd region. The best types of Azrar are made of gold in the form of four-pound coins connected with a gold chain. However, silver is also used depending on the economic level and the appropriateness of the outfit as a whole (Albassam, 1985).
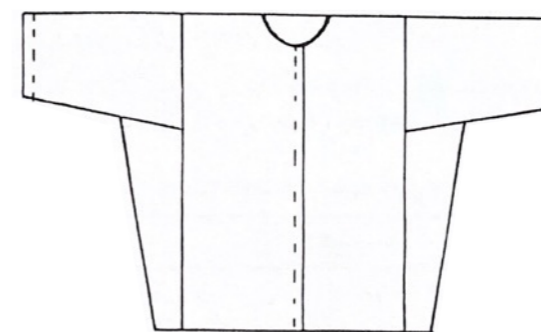
Figure38 Sdiriyah (Blouse) Illustration, Albassam, L. (1985).

Sirwaal (Pants)

The traditional Najdi women's pants, known as "Sirwaal," are characterized by their long, covering, and spacious design from the top, which gradually narrows towards the legs and finally reaches the feet in a manner that permits easy removal (Albassam, 1985).
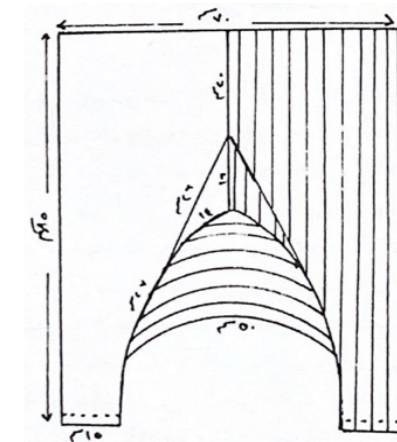
Figure39 Sirwal (Pants) Illustration, Albassam, L. (1985).

Techniques

Tekhrasah technique, Tekhrasah development(khashtag), Hethwa technique, and khabnah technique.

Tekhrasah technique

" Tekhrasah" (Gusset): It is a small square-shaped piece that is placed in the underarm area, bent on the seam line to form two triangles, one facing front and the other facing back. It is attached to the corners resulting from the intersection of the "buniqa" line with the sleeve from the front and back. The reason for using it is to protect the area

from tearing and to facilitate movement. It is also suitable for the straight detailing lines that are distinctive in traditional clothing. The size of the Tekhrasah varies in the garment according to its section, appearing larger to match the sleeve's width while maintaining the shape and flow of the garment when raising the sleeves on the head, keeping the side buniqa lines in place. In occasion clothing, the " Tekhrasah " is made of a different fabric and color to add an aesthetic value to it.(Albassam, 1985; Altorki, 2021)

Tekhrasah development(khashtag): It is a small rectangular piece that is located under the armpit. Its upper rib is linked to the sleeve while its lower rib is linked to the side panel. It narrows gradually until it reaches the side panel, and sometimes small pleats are added to the top of the side panel creating a breaking line. The side panel is still present in the modern traditional men's thobe in the Kingdom.(Albassam, 1985)

◆ **Hethwa technique:**

"Al-Hathwa" is a fabric strip that is fixed at the lower part of the garment. It is made of a different type of fabric compared to the main garment to safeguard the attire's bottom part from consistent rubbing against the ground, and it can be easily changed if worn out. Besides its practical purpose, it also serves as a decorative element showcasing the wearer's multiple layers of clothing. (Albassam, 1985).

◆ **Khabnah technique:**

Albassam, (1985) Indicates that its a functional stitch consists of an invisible inner stitch that provides the necessary width in the area above the knees, approximately in the middle of "Al-Miqtaa." It operates in the same manner at the top of the arm in line with the armpit seam so that it is not visible from the outside, thus reducing its aesthetic value. Khabnah has practical functions

- It allows the removal of damaged parts of the garment's edges, and then the stitch can be undone and re-folded, preserving the length of the garment.

- If the fabric is susceptible to shrinkage, undoing the stitch can provide the appropriate length, shortening it in case of excess length.

- For girls' clothes during their growth phase, the stitch can be undone to lengthen them in case of a growth spurt.

Colors

Bases on Albassam, (1985), Women's clothing in Najd was known for its color choices for specific occasions:

- Popular colors: included various shades of red and purple, brown, green, and both light and dark blue.

- Events and celebrations: black clothing was widely used.

- Bright colors: such as orange and yellow, were used in combination with other colors for various decorative styles.

- Avoided colors: The color white was not popular due to its association with masculinity, but it was acceptable if it had embellishments on the fabric.

- Modesty colors: Dark colors like black and green were worn to show modesty and dignity, particularly in religious rituals, grievous events, and outer robe attire. Young girls preferred plain colors, while older women preferred small patterns on the outer robe attire.

Craftsmanship related to CH fashion
Creation process of Al Miqtaa

The process of creating Al-Miqtaa garment involves cutting the fabric, configuration and assembling between recycled and new pieces, sewing, finishing, and embroidery. Traditional designs were not documented through paper patterns and were instead transferred onto the fabric using traditional hand measurements with the guidance of a seamstress's visual memory. The design process for traditional clothing was passed down through oral tradition by a master who explains the creation process, its significance, and values. Through Dr. Laila Al-Bassam's research, we can see that the garment has a deeper purpose beyond its aesthetic and defining qualities.

Al-Zari Embellishment

It's an important feature in Najdis occasional wear. Zari is the Metallic threads woven into various motifs (Altorki, 2021). The embroidery goes around the neck and sleeves is marked by its density. Najdi women used to refer to the golden threads of al-zari as 'meat' and the silver ones as 'fat.' This type of embroidery was considered a financial asset that could be invested in. People in Najd used to burn clothing pieces with al-zari embroidery to extract the gold and silver threads. Al-zari embroidery was used in ornamental clothing for special occasions and events. Most women in Najd coveted these pieces because they represent an aesthetic value that women like to show off during special occasions. In addition to its aesthetic function, Zari embroidery had other purposes such as strengthening the edges and openings of the garment, stabilizing adjacent pieces or covering existing stitches in the garment (Albassam, 1985).

Regional Embroidery

The patterns of Najdi embroidery are visually appealing and strictly adhere to designated design boundaries, despite some noticeable deviations in execution. One of the most prevalent decorative themes is the palm tree motif. Another commonly used design is the ancient Arabian lamp, which is still sold in antique shops in southern regions (Ross, 1981). Albassam, (1985) states that

there were no pre-drawn patterns for women to embroider, rather it was a primitive and spontaneous process where women used stitches and colors to create coordinated and intricate designs with geometric precision and artistic creativity. All of these patterns were inspired by the environment, such as palm fronds, tree leaves, flowers, a bird's foot, and the shurfah (a type of decorative pattern used on surfaces of houses). Other designs included the sun shape (a stitch called 'Ain Al-Shams), the full moon shape (a stitch called 'Al-Thuraya'), chains (called "Al-Marasen"), cumin seeds, and watermelon seeds. There were also geometric shapes consisting of adjacent or curved lines, circles, squares (known as 'Hanadi'), triangles, and dots.

Tuft

The Najd technique is well-known mostly in the southern part of Riyadh. It is an organized, geometrical rectangular piece made of Kinawi fabric (Chinese silk). It is usually found in light green, orange, and fuscia colors over a dark ground of garment, such as black or mauve or brown or burgundy.(Altorki, 2021)

Cultural Values

Najdi people have been known for their pious and conservative reputation which we can see in it modest designs. Next to that, Due to their simple and harsh desert lifestyle, they have also inherited strong ideals and traditions of hospitality and generosity, which have flourished over time. This friendly disposition is a product of their environment, where simplicity and hardship have led to a deep emphasis on hospitality and generosity. Furthermore, In both conversation and poetry, the people of Najd value eloquence. In poems, poetries reflected traditional society values characterized by honor, masculinity and fortitude (Ross, 1981).

Figure40 Traditional embroidery of Najd, from Al-maqtaa Om Asssa garment.

White Thobe and Black Abaya

Figure 41 Princess Alice daughter of queen Victoria of England visit Saudi Arabia (1938)

Thobe "Shirt Dress" and The Abaya "Cloak" is rooted fashion within the Arabian and Islamic identity. In most cultural regions of the Arabian Peninsula, men wear the thobe as a well-known and recognized everyday garment. The lines of the thobe represent the basic garment of the Arab dress, which is characterized by its simplicity and functional design. The thobe design lines are also presented for men and for women in Najd, the central region. The differentiations of Al-Thobe versions are by names, gender, measurements, and colors. As for the Abaya, it is one of the origins of the outer garments of the Arabs, and it has been found in dark colors in several cultural regions inside and outside Saudi Arabia, and we can find it in the dark colors in Najd the central region, where is Al Diryyah town, the birthplace of the ruling Al Saud family. Abaya is worn by women and men as outwear. Women wear it when they leave the house to hide their adornment from men who are not familiar with them. (Albassam, 1985). Adopting the thobe and abaya as Saudi formal attire intended to establish a unified national identity rather than nullify regional identity, with the aim of reducing tribal discrimination and secession attempts (Abu Nab, 2020) (Yamani, 1997, 2004). We can refer to this action as part of the nation's internal branding. This unification aimed to facilitate harmony between different tribal communities, creating a contemporary national identity based on cultural exchanges (Yamani, 2004, 1997). By implementing a national outwear uniform activism, the country intends to create the sense of unity and familiarity among the various regions through visual symbols. Meanwhile, it was permitted to wear regional clothing under the Abaya.

Digitization

Digitization and CH

The word Digitization refers to a development process of converting analog data to digital format, which has been noted as an influential factor in the ease of finding for researchers(Luke et al., 2017). Manžuch, (2017) explained what digitizing is starting with the definition of digitization provided by (UNESCO, 2020) and described it as definition that connect digitizing with the broader context of memory institutions´ decisions and activities: Digitization involves the conversion of physical, analog files into digital formats by means of scanners, cameras, or other electronic devices. This undertaking consists of several steps that are critical for success, such as selection, needs assessment, prioritization, preparation of originals for digitization, metadata collection, and creation of digitized data collections. The process also involves submission of the digital resources to delivery systems and repositories, as well as comprehensive management that covers intellectual property rights and quality control. Finally, evaluation takes place at the end to ensure everything has been completed correctly.

Conducts that preserving and digitizing cultural heritage leads to commercial and scientific growth and enriches sustainable development. The importance of Digitization is to increase access to and protect these materials (Fox, 1999). Furthermore, it leads to a positive impact on societies. It serves the nation´s cultural heritage to be visible and accessible to the citizens and a larger audience. (Bachi et al., 2014). Digitizing plays a decisive role in preserving cultural heritage, changing, and expanding with every new technology. The development of digital tools and software greatly influences commercializing uses and enhancing research efficiency and performance requirement. Digitization aligns with preserving and conserving cultural heritage and scientific resources. It increases educational and tourism opportunities and improves citizens´ access to patrimony. Having digital materials such as databases, catalogs, virtual reconstructions, web pages, e-mails, digital images, and virtual simulation of garments can be reachable for broader audiences and gather a larger community compared to physical sources (Bachi et al., 2014). It is possible to use fashion digital archives collaboratively, which improves knowledge creation. (Arvanitidou, 2022) However, the Digitization and archiving of fashion have their specific features. It differs from traditional archiving (such as manuscripts, letters, advertisements, and prints); they are two-dimensional and uncomplicated to archive. As for fashion, the issue becomes more complex as it is a three-dimensional model. Clothes and fabrics can be imitated, but their images remain two-dimensional and are not considered a realistic representation of them. This problem is compensated for by writing down the details and stories. Collecting and modifying fashion archives and enhancing them with their original stories, It can provide excellent opportunities to be discovered in a wider scale and digital layers. (Papadakis & Kapaniaris, 2022).

ICH Digital Safeguarding

However, little research has been done on the role of new technologies in the preservation and transmission of intangible heritage (Ioannides et al., 2017) . Yue et al., (2022) research indicates that digital preservation methods are becoming increasingly important for the preservation of intangible cultural heritage (ICH). There are numerous advantages to using a digital database, including high storage capacity, safety, ease of retrieval, and the ability to promote dissemination. Digital technology has the potential to engage younger audiences with Cultural heritage fashion through various means such as holographic images, cloud museums, and VR-themed games. Digital preservation is crucial for archiving, displaying, and promoting ICH resources and expanding the cultural industry. Noting that, the internet, online channels, social media platforms, and data mining can help improve public communication and stimulate creativity, leading to the development of new technologies and preserving traditional culture.

CH Fashion Digitization: Who is in Charge?

(Karol J. & Trilce, 2017) state that archival collections are associated with government information creation and delivery facilities experiencing a significant transformation operated by e-government programs. E-government approaches provide sustainable, transparent, and trustworthy access to data services from the user´s viewpoint (Yakel, 2004). The freedom of information and data protection laws are organized by legal measures to ensure translucent, original, and safe access to information (Barata, 2004). On the same side, museums and heritage institutions are seen as partners in digitizing cultural heritage (Marty & Jones K., 2007). Heritage organizations keep most cultural and scientific content, mainly libraries, archives, and museums. They are typically non-profit institutions guided by goals linked to providing access to collections to encourage creativity. Expanding access and enhancing experience to collections is an essential motive for these organizations to adopt new technologies. (Bakhshi et al., 2012). They have benefited from digitization

and technical innovation in photography and 3D visualization technology. (Karol J. & Trilce, 2017) Museums and fashion collection owners have strengthened their focus on digitization since 2020, experimenting with new tools and modern technology to transport and imitate delicate cultural 3D artifacts into the Meta world. (Arvanitidou, 2022).

Kenney A. & Rieger O., (2000) argue that creating digital surrogates of collections assists in promoting the collections and the institution, persisting in supporting the concept of value in their house materials» Resources are useless unless they are accessible.» To create an efficient source digitally, associations must blend professionally and technologically between planning, risk management, and correct infrastructure to communicate with users fully. However, neglecting the user perspective in an institution´s strategic goals often appears in disharmony with the necessary form of an ideal digital conversion project. They also have to be evaluated from the user´s point of view and consider the user as the main center while creating a Meta version of the information. To emancipate the knowledge, the digital version of the association should be activated and be reachable and an accessible source by the user´s research engine.

UNESCO: Digitization Challenges

During researching, the researcher spotted the international Digital Preservation Policy Framework by (UNESCO, 2021) The memory of the World (MoW) sub-committee. They identified four main aspects that challenge digital conservation. Intending to refine a bunch of priorities for its work against the backdrop of these issues:

1. Preservation action: Timely and quality preservation actions are of the highest importance. Effective preservation measures are necessary to preserve cultural identity and protect unsubstantial and threatened cultures. The documentary heritage must be created, specified, and preserved as urgently to stop the permanent loss of their memory.

2. Sustainability: Assuring stable resources and setting long-term sustainability

standards are vital to the long-term retention and accessibility of digital documentary heritage.

3. Technology challenges: Systematic management of technology inactivity is key to preservation activities and the accessibility of the documentary heritage. The influential heritage of the 20th century is preserved as magnetic tape, which is in immediate danger of loss. All the magnetic tape formats are now obsolete, emphasizing the problem's size and time shortage as it needs to be rescued from being vanished by digital and physical preservation.

4. Legal frameworks: The adoption of technologies is in rapid and relentless progress. At one time, governmental shifts are considered slow in the meanwhile. The need for national and international supervision to support sufficient policy development and regional authorities is urgent. To give memory institutions the essential authorization to choose and preserve the digital documentary heritage and to retain the universal right to access cultural heritage.

Across museum, library, and archive sectors, digitization of cultural and heritage content has resulted in a rich collection of historical information. Through digitization, researchers can easily copy, share, access, analyze, and process primary historical sources, and

explore different aspects, relationships, viewpoints, or details. It is important to note that digital representations are a mere translation and not a replacement of the original object. However, it is important to recognize that the digital representation might not completely capture the essence of the artifact (Terras, 2015). Fashion objects are usually communicated by highlighting tangible elements, such as textiles, materials, and patterns. However, it is also important to communicate "intangible" heritage, such as knowledge, values and the culture associated with fashion production. This has resulted in various creative innovations incorporating digital media, Information and Communication Technologies (ICTs) into fashion for the purpose of educating, preserving, and communicating fashion objects (Permatasari & Kalbaska, 2022).

Technologies such as Virtual Reality is arising, and there is a solid case to extend the scope of digital preservation to protect. However, it has been point out that virtual reality is still not "real," and guidelines for the digital preservation of cultural identities are still under threat during the digitizing process. During the process, it must take morals, ethical, legal sensitivities, and technical standards carefully (UNESCO, 2021). As a key component of the digitization process, we are going to explore and examine the technology in the next chapter.

ICH Digital Safeguarding Challenges

ICH is challenging to document and communicate due to its impermanent nature and strong connection to people. New ways of capturing and preserving its essence must be developed to share its inherent knowledge. Recent efforts have focused on the «alive» and «active» components of ICH, using experimental museology techniques like visualization, augmentation, participation, and immersive embodiment. Cultural data computation and data sculpting enable the reconstruction of ICH knowledge. Archivists must view culture as a renewable resource, not limited to static digitization. A more robust and multifaceted approach is needed in collating archival content beyond conventional forms (Hou Y,2022).

Technology in CH Digitization

Technology Investigation

Technologies are a changeable component in digitizing and keeping up with the latest technology has reformed cultural heritage fashion information storage and access to store information online. Heritage practitioners face the challenge of conveying two sides: collecting data for internal management and benefiting their users through public spaces like the internet. Technology choices must be adopted, implemented, and sorted out with a collection management mandate for sustainable growth. At the same time, practitioners should carefully select a relevant technology to fulfill their communities, not to create barriers and present authentic digital replication results (Setlhabi, 2008). A study by Mikovec Z., Slavik P., and Zara J., (2009) discussed, the possibility of administrating the fact that new information technologies have promising educational potential. This potential can be visualized in various forms to deliver historical data to the audience.

Using information technologies always raises the matter of improving the information acquisition process. The researchers have suggested increasing user involvement in the learning process as a suitable approach by exchanging information with receiving feedback to evaluate whether the delivery method has reached and satisfied the user´s curiosity. The usage of Virtual simulation of garments software, hardware and their continued improvement assist in the Accessibility and comprehensibility of memory institutions. (Comes et al., 2014)(Capacete et al., 2013) as Technology and heritage fashion have been fused to achieve sustainable conversion intents.

3D digitization Technologies

Cultural heritage is increasingly using 3D technologies. The same holds true for museums that are striving to make their exhibitions more attractive in the digital age. Providing access to museum collections through digital media has become relatively easy and has been successfully used not only by the world´s leading museums but also by smaller institutions (Żyła et al., 2020); (Thwaites et al., 2019); (Żyła et al., 2021). Intangible heritage is not as easily documented or as rapidly as tangible heritage. The authors believe that intangible heritage complements tangible heritage by providing its «soul». In other words, it is what gives a physical object its significance and function or creates what can be described as its aura (Thwaites et al., (2019); Latour & Lowe, (2010). Casciani & Vandi, (2022), highlight that the use of presentation and representation tools in digitization and digitalization projects has the potential to be effective in ensuring that ICH is safeguarded. Also, they explained the difference between these two concepts where representing is the act of encoding, documenting, analyzing, preserving, and presenting is the act of transmitting, communicating, and disseminating.

Furthermore, according to Gomes et al. (2014), the complete recording of cultural heritage, as noted by Pavlidis et al., (2007) is a multifaceted process that extends beyond the mere 3D digitization of objects and monuments. This comprehensive process encompasses various related facets such as digital content

management and representation. The creation and preservation of digital cultural heritage involves three important aspects:

1. The three-dimensional digitization.
2. Data storage.
3. Data management.

Outlining the primary grounds for preserving cultural heritage digital assets to:

(i) Assure the infinite life of artifact form and texture, preventing loss in case of impairment by accidents or environmental causes.

(ii) To authorize the publicity of the 3D models to a vast crowd.

3D technologies in CH Overview

3D technology has made it possible to preserve ICH in various fields. A great number of studies concern craft, dance, storytelling, game-based education, and various types of application for educational and documentary purposes. It is stated that sport and settlement are also widely described issues (Skublewska-Paszkowska et al., 2022) ICH is also presented in the form of the virtual. For example, Art Gallery of Shanghai Style Lacquerware, used 3D laser scanning technology, 3D CAD modeling, and 3DMAX were applied (Gomes et al., 2014). The process of three-dimensional digitizing an object is essentially a translation of its geometrical and visual aspects into a mathematical representation. This results

in the creation of a 3D model. There are several commonly utilized technologies that can be employed to gather data regarding these objects´ attributes. These include CAD modeling, Touch scanning, Laser scanning, Structured light scanning, Computerized tomography scanning, and Photogrammetry (Żyła et al., 2021).

In the CH context, the research found multiple digitization research and projects by different memory institutions, created for different approaches, and used different technologies yet, achieve similar goals in terms of preservation and promoting.

Application of 3d technologies for CH

In the following, we will explain and demonstrate technological examples in the field of cultural heritage projects separated into two categories, presentation, and representation, to assist in understanding and differentiate between technologies that are used for documentation and those for communication. To see what technologies are able to combine these two objectives. Also, we will discuss other aspects of digitizing technologies related to creating digital preservation projects, from storage management and metadata in the context of CH. Lastly, we will study today well-known CH fashion digitization projects to understand how these technological elements works together and be more aware with digitization systems in CH fashion projects.

CH presentation: 3D technologies

Engagement, Communication

Digital holography:

(Tahara et al., 2018) describes digital holography as a sophisticated imaging technique that enables multidimensional imaging without a traditional lens. It can capture simultaneous data on subjects such as 3D structure, quantitative phases, dynamics, multiple wavelengths, and light polarization. With a single exposure, digital holography can generate images of nonlinear light and incoherent 3D light. As such, its holographic recording abilities have numerous applications.

◆ Case Study: Maisie Wilen fall/winter 2022
Los Angeles-based fashion brand, Maisie Wilen, partnered with Yahoo News to present a holographic runway show using **Unreal Engine software** to transform the runway into a **3D holographic experience** and turning viewers away to a parallel universe. Using Unreal Engine software, the runway was transformed into a shimmering 3D holographic experienceIt featured five silhouettes with strong geometric shapes and vibrant colors, aiming to challenge the traditional fashion show format. The innovative digital technology aligns with the fashion brand's sustainability mission and highlights the potential of the tech in fashion (Hahn, 2022).

Virtual Reality (VR) themed games:

VR is increasingly being utilized in cultural heritage settings and is gaining popularity in museums and exhibitions (Rodrigues et al., 2023).

Figure 42 Maisie Wilen fall/winter 2022

Its potential to enhance user experiences has been recognized, resulting in significant results in game and technology utilization for cultural heritage purposes. VR games in cultural heritage offer various benefits, including improved learning, increased motivation, and dynamic engagement between visitors and content (Theodoropoulos & Antoniou, 2022). The combination of VR with storytelling maximizes its effects, allowing users to access information using various senses while experiencing the virtual world. An example is the iMareCulture project, which combined storytelling, VR games, and underwater archaeology to enable the exploration of sunken cities while playing in VR.

Augmented reality:

Augmented reality technology is an established technology that utilizes the physical world as a base and enhances it by adding computer-generated data. It has been implemented in various areas, notably in the domain of Cultural Heritage management and conservation, where its efficacy has been validated.(Boboc et al., 2022). Furht, (2006) describes AR as it's a technology combines virtual information with what the user sees in the real world, using computer-generated objects. This lets users interact with the virtual content as if it was part of the real world, using devices like smartphones or headsets that use sensors, cameras, and processors to track the user's movements. In addition to being widely used in education, health, and tourism, they are also widely used in architecture. AR was used in (Ibiş, 2023) study for the conservation of architectural and cultural heritage.

◆ Case study 1 : iMARECULTURE
iMARECULTURE uses VR and AR to make significant underwater heritage available to a wider audience. The project aims to develop a sailing game and an underwater archaeology game with the partnership of universities and SMEs. Its main goal is to improve visitor experience using VR Cave, info kiosks, tablets, and underwater housing, and foster social media for information exchange (Skarlatos et al., 2016).

Figure 43 iMARECULTURE

◆ Case study 2: the Miyake Issey Exhibition: The Work of Miyake Issey at the Tokyo National Art Center (2016), where an augmented reality application for smartphones was used so that visitors could interact with digital designs by Miyake Issey (Ioannides et al., 2017).

Storytelling

Casciani & Vandi, (2022) have suggested that the limitations of technological data collection can be overcome through the use of effective storytelling during presentation. This could lead to a more comprehensive and refined experience that goes beyond the boundaries of data collection. However, current Intangible Cultural Heritage (ICH) projects tend to take

CH representation: 3D Technologies

Figure 44 Miyake Issey Exhibition

on a limited and vertically focused viewpoint, often reproducing a single aspect in a highly interactive yet contextually disconnected manner. This is further compounded by abstracting the creative content from its context and presenting it as synesthetic outputs.

Documenting, analyzing

To truly convey the essence and significance of cultural heritage, it is essential to recognize and appreciate its symbolic shapes. In this regard, tangible cultural heritage plays a crucial role as it allows for the physical representation of cultural objects. The field of cultural heritage fashion has seen significant development in recent years, particularly with the rise of digitization and the increasing focus on preserving and promoting cultural heritage by memory institutions. Through digitization, studies show the ability to create accurate and immersive representations of cultural heritage fashion using 3d technologies, enabling online audiences to better understand and admire its beauty and significance, providing

a new strategy for promoting traditional costumes (Gomes et al., 2014) Nowadays, 3D data documentation represents an important component of collecting shapes and textures with high precision, allowing future generations to store and retrieve the data (Gomes et al., 2014) .

CAD modeling

CAD modeling involves the use of specialized software to generate digital representations of physical objects (Parra & Levi, 2019). The resulting 3D solid or surface models have been utilized for reconstructing heritage assets while aiding in documentation, analysis, conservation, and public education. According to recent research, the metaverse can utilize augmented and virtual reality technologies to extend the physical world and allow users to experience cultural heritage assets that have been digitized using CAD modeling for preservation (Dwivedi et al., 2022).

◆ **Software**: According to a study by (Żyła et al., 3 ,(2021D models can be constructed using CAD (Computer-Aided Design) tools such as CLO 3D, Gerber AccuMark 3D, Optitex, Lectra Modaris, MeshLab, Autodesk 3D, Blender 3D, and Rhinoceros 3D. These software tools are solely dedicated to crafting garments or textile designs and are not intended for broader modeling purposes beyond the field of fashion design.

◆ Case study: Virtual simulation of Yue Opera costumes and fashion design based on Yue Opera elements. This research employs virtual simulation technology to showcase traditional costumes from Yue Opera, China, creating a 3D digital presentation for modern fashion design while preserving their cultural and historical aspects. The study emphasizes the vital role of modern fashion design in preserving and promoting the Yue Opera costume culture. Using Virtual simulation Fuyi CAD software is used to draw the garment construction diagram, and the CLO virtual simulation of garments software to fine-tune the garment pattern. Resulting in a 3D digital presentation of 12 sets of traditional costumes that can serve as a reference for fashion designers. (Liu et al., 2022)
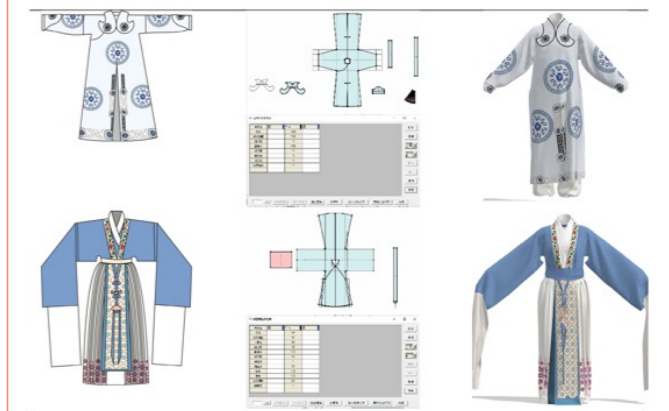
Figure 45 Virtual simulation of Yue Opera costumes

3d Scanning

3D scanning has become an increasingly important technology, even in underexplored areas such as the scanning of historical clothes (Żyła et al., 2021). Instead of traditional imaging, a 3D scanner uses mathematical calculations and algorithms to create a digital 3D model of an object's size, shape, and texture (Njoku, 2017). Although textiles are among the most perishable artifacts, their smallest fragments hold value for understanding production technology and cultural significance. However, the full potential of 3D scanners remains largely underutilized. Only a few scientific works have mentioned their use in garment image modeling, and they are mainly used to digitize single elements instead of the process as a whole (Żyła et al., 3 .(2020d scanning have various techniques applications and outcomes results. We will explore multiple e3d scanning technologies in the following:

▸▸ Laser scanning (Lidar)

Laser scanning has become part of a coherent and non-contact approach to the documentation of cultural heritage and its long-term preservation. (Factum arte, n.d.) Laser scanning, also known as LiDAR, is a method of generating 3D models by reflecting laser beams off the object's surface. It can produce accurate and detailed data useful for preservation, analysis, and presentation of cultural heritage. This data is used to create a highly detailed and accurate 3D model of

an object or environment. It is a non-invasive technique that can be used to record both surface geometry and color (Boardman & Bryan, 2018). It is a fast and accurate method of recording data, capturing details at a sub-millimeter scale and producing a dense point cloud (Dorscheid et al., 2022). Researcher noticed that this technology has been founded in fields that involves reverse engineering and disassembling artifacts.

◆ **Software**: 3DReshaper, FARO SCENE, Trimble RealWorks, and Leica Cyclone (Dorscheid et al., 2022)

◆ Structured light scanning (SLS)

Structured Light Scanning (SLS) is a highly precise method of capturing 3D data. It is crucial in digitally recording historical objects with accuracy, especially those that are from antiquity(Wessex, n.d.) Especially structured light scanners offer a number of useful features, including the ability to obtain a precise representation of a surface and reproduce its colors simultaneously. These features are confirmed by the frequent use of this type of scanner in other aspects of the 3D digitization of cultural heritage objects. (Żyła et al., 2021)

◆ Case study 1: Wessex

At Wessex Archaeology, the team relies on Artec's industrial 3D scanners and software. This technology allows them to capture intricate details of large heritage remains and smaller artifacts in high resolution and vivid

color. With SLS technology, you can achieve an accuracy of 0.05mm without damaging fragile objects or having to touch them. By scanning people in authentic costumes, the company has been able to populate their heritage interpretations with realistic characters from the past using structured light scanning (Wessex, n.d.) .

◆ Case study 2: Structuredlight 3D scanning of exhibited historical clothing—a firstever methodical trial and its results

This research examines the potential of 3D scanning technology to digitize historical costumes in order to preserve and promote cultural heritage. Unlike architectural monuments, costumes are fragile and difficult to share with the public. In the research, they propose an innovative approach to scanning historical clothes with structured-light 3D scanners (SLS). They demonstrate the methodology by scanning the Emir of Bukhara's costume. In addition, the study explores the use of 3D models and information technology to popularize cultural heritage. (Żyła et al., 2021)

Figure 46 Wessex

Figure 47 Structuredlight 3D scanning of exhibited historical clothing

Computerized tomography scanning

The research found most sources of information about this technology were highly familiar with reconstruction and conservation of cultural heritage. :

◆ Case study: The investigation of two cornetts utilized CT imaging and X-ray facilities to create 3D images of their internal structures. The 3D x-ray tomography reconstruction revealed details such as the tunneling structure of the common furniture beetle, and using FleXbox software, researchers identified features related to manufacturing and deterioration at a high resolution of 25 micrometers (Dorscheid et al., 2022).

Image-based technologies

Photography is a basic tool for documentation of cultural heritage in a certain point of time. The production and archiving of these data are crucial for the preservation and conservation of heritage (Hassani, 2015).

Photogrammetry

Photogrammetry is the science of making measurements from photographs (Factum arte, n.d.). Photogrammetry is the use of digital images to interpret, measure, and model objects (Hassani, 2015) . (Dorscheid et al., 2022) describes photogrammetry as the science of taking measurements from photographs to create accurate 3D models. This technique involves taking multiple high-resolution images from different angles.
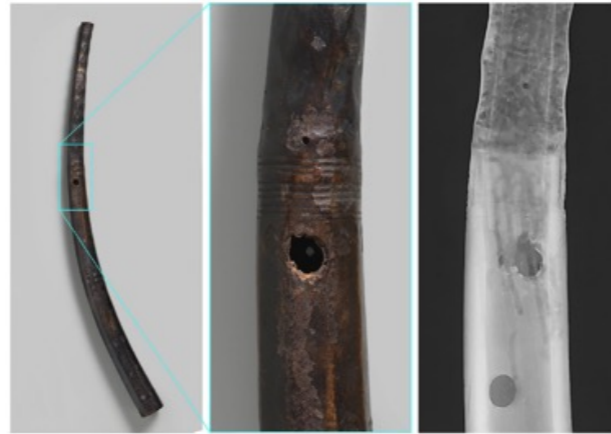
Figure 48 cornetts utilized CT imaging and X-ray facilities to create 3D images

Photogrammetry creates highly detailed 3D models and can also capture color information.

◆ **Software**: include Agisoft Metashape, Reality Capture, and Autodesk ReCap.

Panorama Photogrammetry

Panorama photography is a multi-image photogrammetric method. As an alternative to rendering based on models, this method renders based on images, which overcomes the problems of 3D modeling. Images of panoramas are useful for measuring. Moreover, if the camera calibration and adjustment are done correctly, these images can be used to analyze the dimensions (Hassani, 2015).

Close-range Photogrammetry

In the documentation process, photogrammetry plays an independent role. At least two images with overlapped data are required to guarantee the triangulation process. Using digital close range photogrammetry, data can be recorded and processed more quickly. Color and texture can be accurately documented, as well as metric data for objects of varying sizes and complexity. When direct measuring on an object would threaten it, or if access to the object is limited, this technique can be used. As well as generating 3D models of objects targeted at close range, photogrammetry has a high applicability. Models like these can be used to create a 3D archive and serve a variety of documentation needs. 3D models, orthophotos, and rectified photos can be produced by photogrammetry (Hassani, 2015).

Storage and management technologies
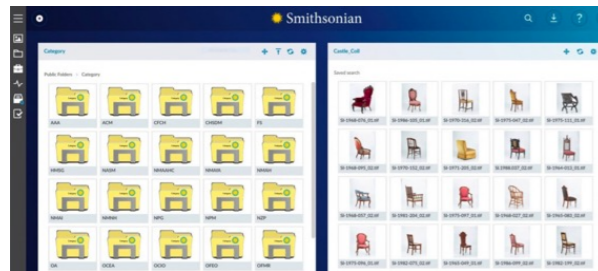
Figure 49 Smithsonian Institute
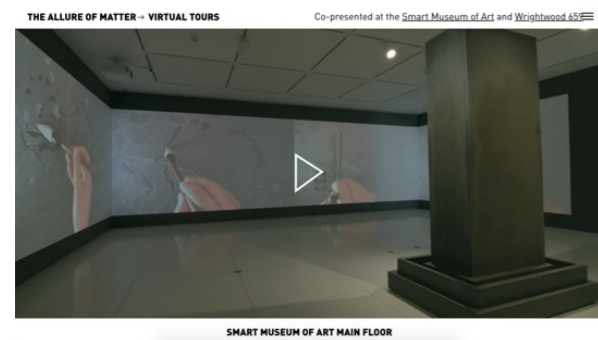
Figure 50 The Chinese Smart Museum

Cloud museums

A "cloud" is a term used to describe a centralized data center that houses servers in large buildings. These facilities are at the core of computing and storage capacity. They allow computers to connect to and store data remotely, without the need for on-site hardware. (Devine, 2021)

◆ **Case Study 1**: Smithsonian Institute
This system stores, accesses, delivers, and preserves digital media for the Smithsonian, and integrates with other systems in its digital ecosystem. Image: Smithsonian Institute (Devine, 2021).

◆ **Case Study 2**: The Chinese Smart Museum: According to (Wang et al., 2023) study which examines how technology has revolutionized museum digitization, where digitalization, networking, and intelligentization help museums improve their management, interpretation, and representation of cultural heritage. The Chinese Smart Museum Project uses advanced technologies, including cloud computing, big data, and artificial intelligence, to create a dynamic, all-inclusive museum experience. The authors propose that other museums should follow suit and adopt this approach, using intelligent digital technologies for enhanced perception, outreach, and broader applications. This would create more intelligent, sustainable, and better-informed museum experiences.

Metadata for CH

Metadata is an essential technical component for archiving and preserving digital resources. It is well-recognized critical technological feature for archiving and preserving digital resources. Regarding standards, it is important to investigate and identify the most applicable metadata standards within the data´s context (National Information Standards Organization (U.S.), 2007) (Peng et al., 2016). Metadata can be defined as data about data. (Guenther R. & Radebaugh J., 2004) It is a data structure built to inform specific data to be more feasible and also assist the research engine in discovering the data online. The system also maintains the data and its usage. (Maria De Carvalho Moura et al., 1998) It´s a clear challenge for technicians who devise new Metadata formats to acknowledge the uniqueness of fashion archives that vary in structure and classification. According to NISO (National Information Standards Organization (U.S.), 2007), they present three common types of Metadata (Guenther R. & Radebaugh J., 2004), and the standards can support one or all of them. .

1. Descriptive Metadata: Describes the data to assist the discovering and identifying it. It can contain titles, keywords, etc.

2. Structural Metadata: Describes the relationship between entities' information– for example, between different body part measurements.

3. Administrative Metadata: Helps maintain data management, such as Making processes, creation date, and other technical information.

The Metadata scheme controls vocabularies, and thesaurus familiar with communities and types of domains should be researched and analyzed to select and use the most proper keywords (National Information Standards Organization (U.S.), 2007).

As Lauterbach K., (2017) discussed in his research, the complexity of fashion Metadata starts with various designer names, construction techniques, materials, various aesthetic styles, many brands and companies' names, clothes that are addressed to men, women, unisex, and children. With different clothe usages (pants, jackets, shirts, etc.). This information requires varied search engine keywords to maintain maximum visibility and gain popularity. Memory institutions must partner with research engines like google to ensure interaction with their target. Setlhabi (2008) states that the methodologies used to record data system influences the data output, and content providers should conduct in-depth analysis from the inventor´s and the searcher´s mindset.

Metadata schemes communicate differently for each markup or programming language, instructing a different syntax—for example, XML (Extensible Markup Language) and RDF (Resource Description Framework). RDF, which uses XML for processing and exchanging Metadata, enables machine-processing of standardized Metadata and continues encoding and exchanging by setting a straightforward clarified structure (Miller, 1998).

The benefit of standardizing data is to guarantee its quality and consistency, allowing individuals not participating in the data-keeping process and machines to understand the data. This procedure is mainly consequential during data exchange between systems and applications to achieve successful user service and satisfaction (Peng et al., 2016).

Examining standards and practices in museums and archives is compulsory to identify any possible danger to the integrity of digital file information. This information can face a threat during the digitizing process evaluation based on the chosen methodology´s nature and limitations. Also, separating the data from the file in storing phase puts the link between the two features at risk (Abu Nab, 2020). Researchers have found specific generating software to revitalize unique artifacts and environments. That tends to fall within one of these three categories:

1. Digitally reconstructing objects and landscapes from the past.

2. Broadening access to cultural resources through remote distribution platforms.

3. Digitally representing and archiving cultural artifacts and media.

Researchers position digitization techniques in each of these categories to support cultural preservation. Between the mentioned technological developments, scholars often miss a critical element which is cultural practices (Rosner et al., 2014).

User Experience for CH Content

Zahidi et al., (2013) Emphasize the importance of integrating user experience (UX) in cultural heritage digitization and preservation industries. Combining UX is vital for many reasons, from assuring the digital cultural heritage documents are accurately digitized, providing user fulfillment, and authorizing easy accessibility of digital cultural heritage for future reference for end-users. The public user expects a positive experience throughout the interaction process, which should not be neglected. By continuous activation, the cultural heritage project will achieve its goals of easy-to-find information and sustainability in terms of growing and impacting future generations. UX sustains an outcome or system´s usability, pragmatics (function and features, learnability, and efficiency), and hedonic (user expectation, motivation, and feelings). Those attributes can influence a positive user experience in terms of the effectiveness of a Cultural Heritage digitization project. Furthermore, the research also mentions that one of the creative industries´ critical factors is conducting constant research on cultural heritage creative drives. Retaining project content and delivery method, and two critical aspects of UX evaluation which are user need estimation and user satisfaction studies about cultural heritage (Fuchsberger et al., 2012). Fulfilling user needs will produce a quality experience and reveals an advanced digitization project (Zahidi et al., 2013).

Digitization projects: Case Studies

This Section aims to provide a reverse engineering approach to the prominent projects in the field of digitizing heritage fashion. Case studies will focus on projects that fall into the categories of:

- E-governmental and Memory institutions (libraries, archives, museums)
- Use 3D technologies for representation CH fashion.
- The availability of information regarding the project framework will be taken into consideration when selecting associations to study.

The objective of the case studies is to identify the key market drivers, project structure and features of CH digitization projects, with a focus on the CH fashion sector. The following questions will be explored:

- What is the structure and infrastructure of CH digitization projects?
- What is the key digital representation -documentation- and presentation -communication- choices?
- What metadata standards are selected?
- What is the situation of the project sustainability? including how often it is refreshed with new content?
- What is the competitive advantage of the association?
- How is digital content managed?

Europeana

Type of Association

The goal of the Europeana project, initiated by the European Commission, is to enhance European heritage, culture, and identity by promoting memory. The project aligns with the open culture movement, which highlights culture as a shared resource for research, education, and creativity. The project has replaced the European Library Initiative (2005), which granted access to the national libraries in all European Union member nations (Melchior, 2019). Europeana has since become a flagship initiative in the European Commission's i2010 strategy. In 2015, Europeana Collections were introduced as part of their attempt to enhance their business model. The website consists of ten collections, which represent a unique, hybrid collection covering various topics such as the arts, social history, natural history, and specialized niches. Topics such as World War I, archaeology, art, manuscripts, maps and geography, migration, music, natural history, newspapers, photography, and sports are among the subjects covered by one of the topics featured in the Europeana Collections, the European Fashion Heritage Association (EHFA) (Melchior, 2019).
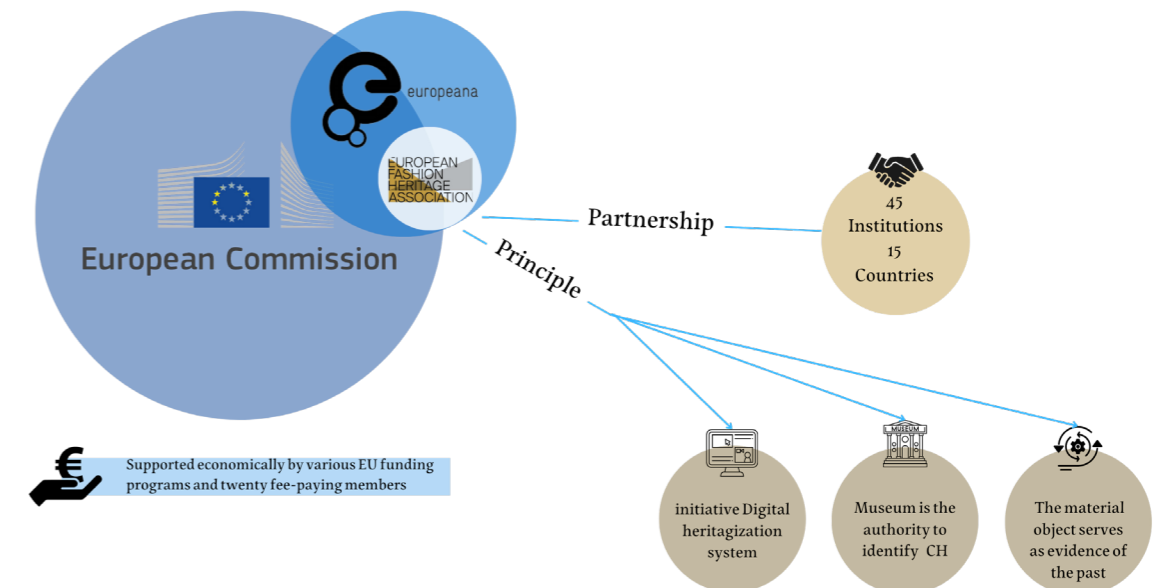
Graph Europeana and Eurpean Fashion Heritage Associations type, fundamental Structure, partnerships and principles and financial support as non-profit.

Representation -Documentation- Tools
Europeana Metadata

Europeana has developed its own metadata schema, the Europeana Data Model (EDM), which serves as a conceptual framework that enables data to be represented in various ways based on the data practices of the different domains that contribute to Europeana. The guidelines provided here focus on seven classes from the full Europeana Data Model (EDM) that are currently implemented. These classes include the three core classes representing the cultural heritage object and four contextual classes that may be associated with it. The core classes are

- edm:ProvidedCHO for the provided cultural heritage object,
- edm:WebResource for the digital representation, and
- ore:Aggregation for grouping the classes together.

The four contextual classes are

- edm:Agent for the "who,"
- edm:Place for the "where,"
- edm:TimeSpan for the "when,"
- skos:Concept for the "what."

Additionally, cc:License is included to provide information on access and usage.(Ciocoiu, 2023). (Melchior, 2019) cites Kaiser et al. (2014) who state that Europeana provides open-source and free metadata downloads, reflecting their belief that EU identity is a valuable asset in the face of economic and political globalization.

3D Technology

An EU-funded study revealed that 3D digitization of tangible cultural heritage in Europe is still in its early stages and there is a lot of potential for growth in this area. The study found that while 3D scanning technologies and software are becoming more accessible, there are still challenges around the cost of equipment and the skills required for creating high-quality 3D models. In addition, the study also highlighted examples of successful 3D digitization initiatives across Europe, such as the British Museum's 3D scanning project, and identified opportunities for collaboration and knowledge sharing within the sector. (Charles & Evans, 2023)

Presentation - Communication- Tools
Storytelling

The story concept-narratives play a core asset, helping users to identify the projects by their journey. A brief leading story is presented under their articles with an image, which creates a narrative element to the user experience (Melchior, 2019).

Vocabulary

To enhance search results, a ten-language thesaurus was developed for the fields of 'Object type', 'Materials', 'Techniques', and 'Colors' (Wildenborg, n.d.). However, Wildenborg notes that this approach is not a long-term solution as all the words used for describing a collection in any of the facets must be "tagged" with a term from the thesaurus during the upload and publication process, which is an extensive and unsustainable task.
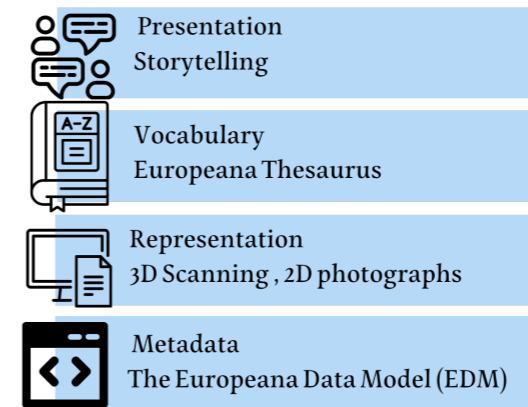
Graph Fashion Heritage Association presentation, Vocabulary, Representation, Metadata

European Heritage Fashion association
Type and Structure

This platform acts as the fashion thematic aggregator for the Europeana platform, which is dedicated to the larger context of the digital cultural heritage of Europe (Melchior, 2019). * It has become a global hub for fashion GLAM (Galleries, Libraries, Archives, and Museums), brands, researchers, and creatives to exchange experiences and best practices in digitization, open access, co-creation, reuse, and valorization of fashion heritage resources. EHFA provides support for the digital transformation of the textile and fashion industries and for preserving and promoting tangible and intangible heritage. It began with a partnership of 22 partners from 12 European countries, including the Victoria and Albert Museum (London), Les Arts Décoratifs (Paris), MoMu (Antwerp) and many others. Archive materials from brands such as Missoni and Pucci were also displayed (Suls, 2017). Now, the organization collaborates with 45 institutions in 15 countries to share their rich collections of historical fashion objects, including clothing, accessories, contemporary designs, catwalk photos, sketches, magazines, catalogs, and videos. Their goal is to unlock and provide free access to fashion's unique and vast history. By creating a vibrant and growing network of fashion heritage institutions, EHFA helps fashion repositories and brands gain more excellent value from their cultural heritage assets by connecting with new audiences. They have also created the most extensive and prosperous online digital fashion heritage repository for free. They aim to sustain a space where a thriving network of fashion heritage professionals, scholars, and enthusiasts can meet, share experiences, and learn from each other. People can access the platform to study, get inspired, or enjoy(About Us | European Fashion Heritage Association, n.d.).

Fundamental Structure

Melchior,(2019) study provides a clear explanation of the EFHA business model by stating that EHFA is supported economically by various EU funding programs and twenty fee-paying members. Europeana Fashion reflects the encyclopedic organizing principles used by most historical museums, which are based on a positivistic information system and a belief that the material object serves as evidence of the past. The museum functions as the authority that identifies what constitutes actual cultural heritage. Using their philosophy initiative in heritagization fashion, they present it as a fair phenomenon of European heritage. Tools and search algorithms are available to expose fashion heritage beyond the walls of cultural institutions. Through heritagization, privileged objects are made accessible (Melchior, 2019) .
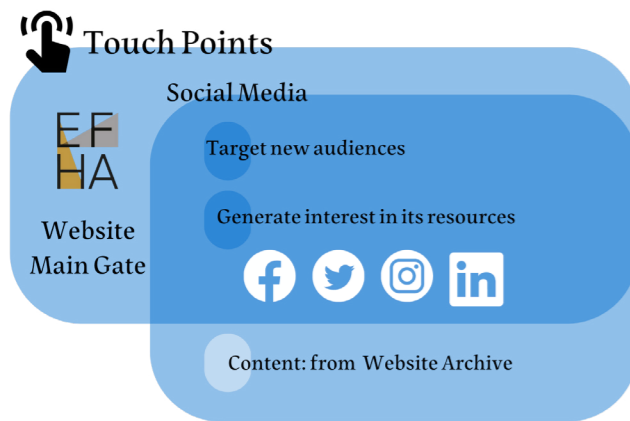
Touch Points

Global Hub for GLAM

- Unlock and accessibility to Fashion's unique and vast history
- Creating a vibrant and growing Network of fashion heritage institutions
- Gain more Value from CH fashion by connecting with new audiences.

Graph Fashion Heritage Association purpose, objectives

Content Management

 Its platform provides a wide range of services related to fashion content communication and digital heritage management. Europeana Fashion uses social media to reach new audiences and generate interest in its resources (Melchior, 2019) .
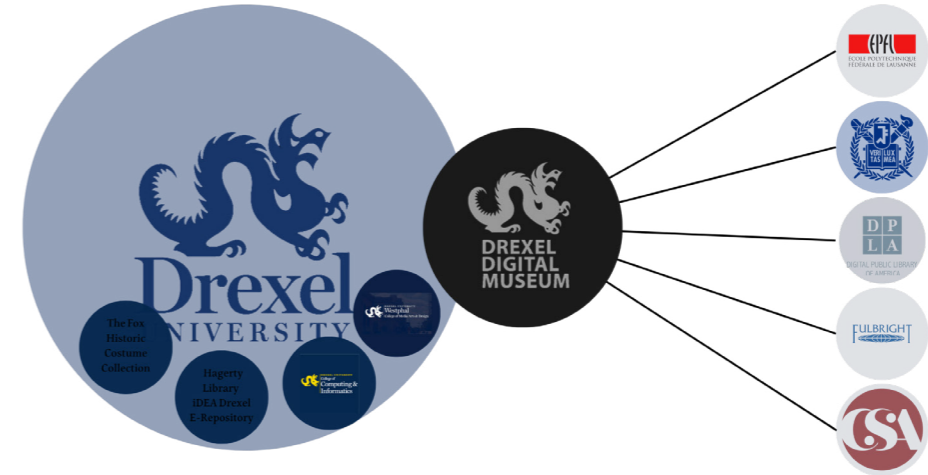
Graph The drexel Digital Museum type, fundamental Structure, partnerships.

The Drexel Digital Museum

Type of Association

Drexel University's digital museum project is held by an educational institution. Since 1999, The Drexel Digital Museum (DDM) has been focusing and experimenting with new media production for the exhibition, preservation, and publication of Cultural heritage using cutting-edge technology.

Fundamental Structure

The group consists of researchers from a variety of different units, including the Colleges of Media Arts & Design, Computing and Informatics at Drexel, the Digital Public Library of America, Hagerty Library iDEA E-Repository, the Fox Historic Costume Collection, Seoul National University, École Polytechnique Fédérale de Lausanne, Fulbright Foundation, and Costume Society of America.

Sustainable development

The DDM is committed to open access and operates a free, open-source program to regulate and digitize museum and archival collections. Further, they share full feedback, research, and their progressive history with technology in order to facilitate the reproduction of their project. The data packs contain all the files related to the design process and workflow.

Content Management

iDEA provides management of and access to digital resources produced and collected by the Drexel community. (iDea drexel)
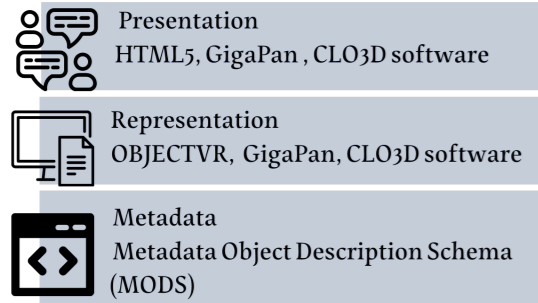
Graph The Drexel digital mueseum Presentation, Representation, Metadata.

Representation -Documentation- Tools
Metadata

Metadata was provided in the form of a short story concerning the garment and a description of the object details using Metadata Object Description Schema (MODS). MODS is a bibliographic metadata standard based on XML. Instead of numeric tags, it uses language-based tags to implement MARC (Machine Readable Cataloging) elements. As well as serving as a simplified version of MARC 21, it can also be used to syndicate and harvest metadata more easily than Dublin Core.(*MODS (Metadata Object Description Schema) – Metadata Standards Catalog*, n.d.)

3D Technologies

Using different techniques and experimenting with integration between technologies, we are able to observe and find through DDM published research and website the use of OBJECTVR to Form prototypes as 3D interactive media, allowing the viewer to actively take part in the historical fashion exhibition. Images can

be repurposed as HTML5 to display on the web at up to 3 times life size. Historic spaces have been viewed using GigaPan technology. Their website mentions merging ObjectVR files into panoramas for a virtual exhibition. The third technology, CLO3D software, is used for another project to create 3D models to be used in Metaverse. The project is titled "Customizing the Metaverse". These media's rich Metadata descriptions, mapped to current archiving standards, assure continued discovery, access, and conservation (K. Martin et al., 2019).

Graph The Drexel Digital mueseum purpose, Objectives

Santa Cruz virtual museum (MAH)
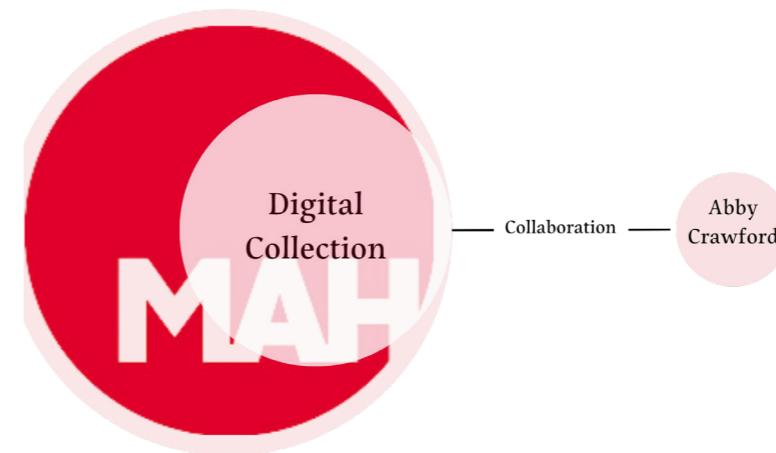
Graph MAH type, fundamental Structure, Collabroration with Digital Curator.

Graph MAH purpose, Objectives

Type of Association

Located in Santa Cruz, California, the Santa Cruz Museum of Art and History is a nonprofit educational institution and museum founded in 1996.

Fundamental Structure

The MAH curator proposes to Abby Crawford, owner of Archaeological Graphics. to digitize a selection of garments from the museum's collection for online display. The collection contains 23 pieces. The garments varied from the late 1700s to the 1970s; most pieces were women's clothing and a couple of menswear. MAH kept the garment in the museum storage due to the museum's small space and inability to be presented to the public due to the fragility of historical clothes. (*Santa Cruz Museum of Art and History (@santacruzmah) - Sketchfab*, 2015).

Representation -Documentation- Tools:
Metadata

The research suggested that Abby used no actual Metadata scheme other than telling available data from the museum catalog. The information contained colors, shapes, dates, and geographical indications.

3D technology

By using 3D scanning technology, Abby was able to relive the garment in a digital environment.
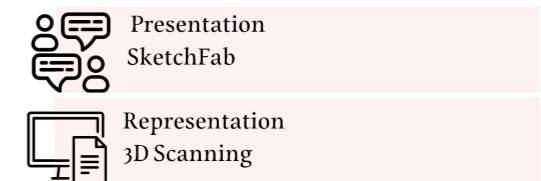
Graph MAH Presentation, Representation.

Presentation - Communication- Tools
Sketchfab Platform

Sketchfab is a community of 3D modeling interests and practices that is open source and free to use (Sketchfab Team, 2015).

The Virtual Fashion Archive
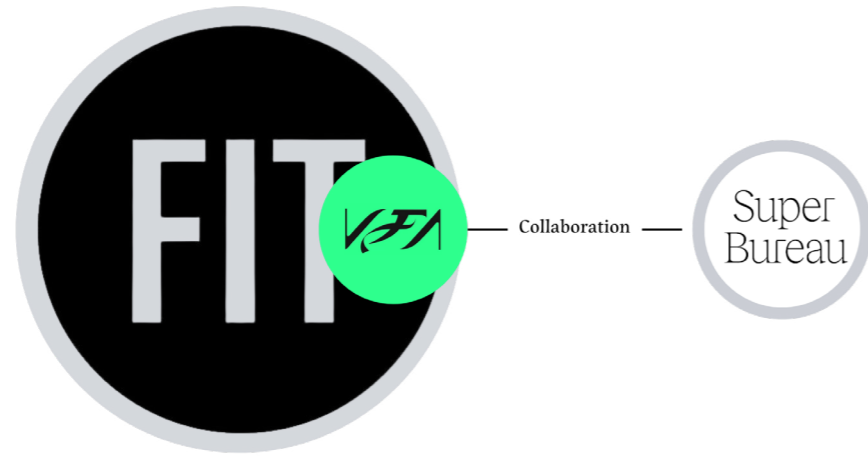
Graph FIT type, fundamental Structure, Collabroration with Art and Design Studio.

Type of Association

The Virtual Fashion Archive, is a project partnership between The Museum at FIT and Superficial (2019). Superficial is an art and design studio expanding fashion and culture into new digital dimensions. SuperBureau and Superficial studio.

Fundamental Structure

Bureau Super, (2019) notes that VFA is made as an online space for culturally significant fashion conveyed from its physical form to three-dimensional motion, interaction, and participation. The collaboration presents four garments from pioneering designers, including Issey Miyake, Thierry Mugler, and Claire McCardell. The garments have been selected for their range of innovative construction techniques and various materials that provide a challenging case study for virtualization (Bureau Super, 2019).

Graph FIT Virtual Fashion Archive purpose, Objectives

Representation -Documentation- Tools
Metadata

The information that has been seen next to the garment in a brief that includes a story about the designer and the shape of the design and dedicates season, maker, year, country, medium, and courtesy information but no reference about the type of meta scheme

have been found online. (*The Virtual Fashion Archive — A Collection of Garments Brought to Life in New Digital Dimensions*., n.d.)

3D Technology

The development process of 3d simulation has been made using CLO software, including documenting, reconstructing the garments digitally, and simulating the fabric dynamics. On the main website of super bureau, they mentioned that the virtualization process comprises three key elements:

1. Mirror construction: The studio's main challenge was not witnessing the original pattern. Many studies and data collection have been conducted to gather the most data possible. The garment is also analyzed physically, measured, and reverse engineering patterns.

2. Capturing materiality: it is essential for fabric and material re-creation to capture the materiality in high fidelity. Materials have been photographed under multiple lighting circumstances. Using high-resolution texture maps, it can accurately depict the color, roughness, transparency, and surface details, and finally, understand how the fabric responds to various lighting and environments. The photography has been used as a reference and for textures for the final virtual garment.

3. Simulating dynamics: One of the significant benefits of software CLO over other techniques, such as photogrammetry and 3D scanning, is the result of clean 3D meshes

that allows for understanding the underlying construction, which helps to stimulate the garment's physical dynamics and moves—for example, having the Claire McCardell dress twirl and spin to make the full-circle skirt come to life.

Graph FIT Virtual Fashion Archive Presentation, Representation.

Presentation - Communication- Tools
Website: "Enriched Experience"

As an interactive site, the visual language of the platform is the foundation that Allows users to surf in a combination of immersive media. Blending a minimal UI style with a logo mark brings an element of motion and dimension that is a signature of these unique spaces (Superficial, 2020). It starts by exploring the prospect of allowing the garments to be seen in motion, zoomed in and from all angles, and in the real world using the augmented reality feature. Most people are familiar with quick downloads and expect things to load immediately. For that order, file sizes have been downsized by simplifying the geometry of meshes and capsulizing surfaces. However, this has some side effects on the quality and details (Bureau Super, 2019).

Conclusion

To conclude, these case studies illustrate the importance of partnerships and collaborations for a successful digitization of cultural heritage. Partnerships can bring together memory institutions with technology and communication expertise, resulting in a more efficient and sustainable project. Moreover, legal considerations such as copyrights can also be addressed, ensuring the eligibility of digitized information. Aside from that, creating a data system that aligns with museums data management can benefit both users and curators, facilitating easier access to digital assets. In terms of technology, 3D scanning has been used to document the appearance of garments, while CAD software used to reconstruct and document tailoring techniques. Also, sharing the development process of the digitization project and its searches can serve to increase production of digitized assets. In the end, Digitization of cultural heritage requires a collaborative approach that incorporates a range of expertise and strives for long-term sustainability.

Methodology

The Missed information

Aims and Objectives

Research Design

Research problem

With the effort made for Saudi Arabia re-branding and digital transformation, we notice a gap as there is limited access to information regarding Saudi ICH fashion on the internet, specifically relating to its intangible values that drives its fashion design aesthetics and functionality. This creates a gap in communication and connection between the Saudi Fashion identity and its digital generations fashion identity.

This digital research aims to enhance the Saudi brand Identity and safeguard the Intangible cultural heritage fashion of Saudi Arabia. By establishing an accessible digital point for practices and driving values of Saudi CH fashion on the internet with digital generation

The reason of the research design is to curate Value-driven digitization project to generate an online content and data archive, for this, the research structured the transmitted information

around a qualitative Hybrid design, a combination of Exploratory research, Historical documentation approach and Information design to investigate and provide fuller and multi-faced understanding and integration outcomes. Incorporating Authentic qualitative research equals the transforming of data shape to generate Heritagization of information online. By merge them, we can map link and activate the communication of complex information, an explanation about each is in the following:

Exploratory Research

According to (Hammou et al., 2020), exploratory research is a type of study that aims to develop an initial understanding of a research problem. Its primary purpose is to clarify concepts, formulate problems and hypotheses, and gain an initial perception of the subject matter. This is typically carried out in the early stages of a research project (El-man et al., 2020). Exploratory research seeks to identify general principles to explain data and observations and is also known as the inductive method. It is commonly conducted when there is limited information available on a subject, or the subject itself does not allow for a manipulated variable (Singh, 2021; Swaraj, 2019).It tends to look for knowledgeable individuals about a topic or process for sampling instead of random sampling (Singh, 2021). Data collected through exploratory studies tends to be qualitative, such as unstructured interviews, surveys, focus groups, and observation (Churchill & Iacobucci, 2005; Aakeret. Al. 2007; Swaraj, 2019). This results in large volumes of data that must be analyzed from multiple perspectives in search of possible relationships between variables (Dudovskiy, 2022). Finally, the findings from exploratory research are tentative conclusions rather than final and conclusive answers to research questions (Hammou et al., 2020).

Graph Research design

Historical documentation

Tight M., (2019) clarified the research design approach and explained Historical research as a type of documentary research. "Documents are texts that can be published or unpublished, written, oral and virtual, and may reside in public, private or virtual domains." (Fitzgerald, 2007) In juxtaposed with, (McCulloch Gary & Richardson William, 2002) define it as a more straightforward but comprehensive definition, describing documents as "records of something" without Limiting or specifying the document's character. Tight M., (2019) also indicated a growing interest in the fashion field in research methodology formed around visual and aural documentation as it is more suitable to present the historical object of the field, remarking that historical research significance comes from the origin of its sources.

Information design

Thomas D., (2003) states that designing information can be challenging, and it is often referred to by other names. Using Pettersson, (2006) definition: "In order to satisfy the information needs of the intended receivers, information design comprises analysis, planning, presentation and understanding of a message – its content, language and form. Regardless of the selected medium, a well-designed information material will satisfy aesthetic, economic, ergonomic, as well as subject matter requirements." An important aspect of information design is making sure the messages are understood by the intended audience.

Readers should be able to distinguish between figures and backgrounds without any difficulty.

In Pontis S., (2012), she explains Information design as a user-centered discipline that involves making conceptual and design decisions based on user needs. The user is viewed as someone who uses information objects, services, or systems within the context of an activity to complete a task. Design solutions specifications are defined based on user needs and requirements, and tests and evaluations of solutions include the user's perspective. Design probes are a methodology from this field that allows researchers to explore users' needs, gather information, and test design solutions in naturalistic situations.

Information design largely consists of applied research. New theories often begin with critically selected data from other research areas. Information design and the display of verbo-visual messages is a multi-disciplinary, multi-dimensional, and worldwide phenomenon. In this context, information literacy, visual language, visual literacy, perception, and learning are important concepts to understand. Information design research uses a variety of research methods. The roots of information design can be found in graphic design, in education and teaching, or instruction, and in architecture and engineering. A need for clear verbo-visual presentation and interpretation have been recognized in these areas. (Thomas D., 2003)

Carrying out this research design assists in constructing a well-formed base of knowledge and signifies the originality of a heritage fashion to pursue an authentic digitization project based on design practices, reasons, and values.

Research Type

Inductive analysis is frequently used when analyzing qualitative data. this approach exploratory in nature. extensive, varied textual data is condensed into a brief, summary form. Research objectives and summary findings are clearly linked, and a model or theory is developed based on the underlying structure of experiences or processes evident in the pure data. It is often applied to identify patterns to develop a model with three to eight main categories. Qualitative data can be analyzed in this way for many purposes, making it convenient and efficient. It may result in outcomes that are similar to those derived from grounded theory. Compared to some traditional qualitative data analysis approaches, the general inductive approach is more straightforward for many researchers. Consequently, the general inductive approach is a useful tool for qualitative data analysts and interpreters. Thomas D., (2003)

Research strategy

The research approach adopted an exploratory search to investigate sustainable practices in CH fashion. Value Driven Design (VDD) guided the design path to optimize early-stage design using value models and gather data from primary sources (Monceaux et al., 2014). Moreover, the strategy considered the Challenges encountered by digitization projects concerning intellectual property rights, which are crucial aspects for the online dissemination of digital information. Finally, it was founded upon policies and objectives of the Royal Institute of Tradition-al Arts (TRITA), a Governmental Institution Established to promote and heritagize Saudi culture. TRITA is considered as a partner in achieving research results.

Time horizon

The research spanned from September 2022 to June 2023, encompassing a ten-month duration. The research commenced with extensive literature review on Digitization, Cultural Heritage, Technology, and Fashion, followed by comprehensive case studies from each discipline. A well-defined methodology was then developed while formulating the project, and the subsequent findings were uncovered. The project was executed in collaboration with the Royal Institute of Traditional Art in Riyadh, Saudi Arabia. The researcher gathered data pertaining to CH fashion in Saudi Arabia to compile a comprehensive database and develop information design stage components. The researcher devoted a full-time effort to the project for a month and two weeks (05/03/2023-17/04/2023) in hybrid mode, starting with online mode for the first two weeks and transitioning to a presence mode during the remainder of the duration as the visiting researcher. The researcher was responsible for submitting a database of information presenting the most efficient and reliable data on Saudi cultural Heritage fashion.

Research questions

The research question articulates the central inquiry which the study revolves. This section outlines the specific direction of the study, and lays the groundwork for the data collection, analysis, and methods that will be used

Main question: What is the suitable system design for digitizing Value-driven practices of ICH Saudi fashion for nation branding and safeguarding?

From this main question, the following Three questions branch out:

1. What are Value-driven practices in women's CH fashion?

2. What is the most effective system for digitizing Driving Values in the practices of CH Saudi fashion?

3. How we Market this information?

Sampling strategy

Based on the sources in Saudi Arabia archival, which evolves books and academic research of social, cultural and fashion studies, the attention was focused on Curating and selecting primary sources during inventory and information collection.

Al-Miqtaa costume was chosen as a sample for the following eligibility criteria:

- The availability of courses and trainings about Al-Miqtaa at the institute.

- Al-Miqtaa is a symbol fashion item of the central region of Najd, where the study was conducted.

- Accessibility to primary sources for Al-Miqtaa.

- Availability of sources related to the environment and Society in the middle region Najd.

Information Design: Information Journey
Methodology stages Breakdown
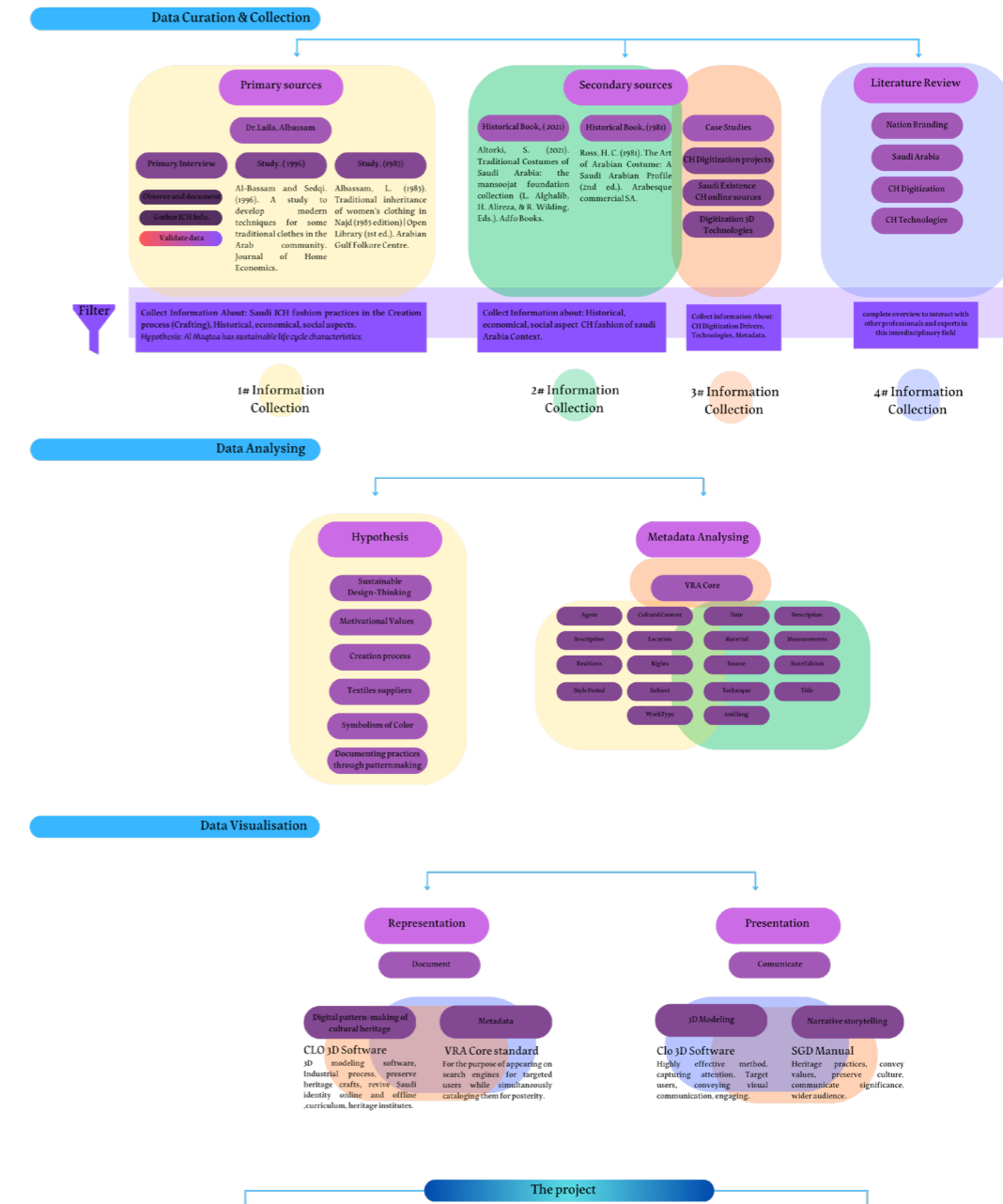
Graph Information Design journey, stages.

Information design Stages

Data Curating and collection

Curating

Sources have been divided into two categories Primary, and Secondary. McCulloch Gary et al., 2002) classify sources in historical research. First, primary sources linked to authorship were delivered by those directly involved in or observers of a particular historical situation, while secondary sources were documented after the event, usually by those who did not participate in it.

The research involves primary and secondary sources, as in academic research about Saudi Arabia's traditional costumes and governmental documents released by the fashion commission and Darah organization.

Primary Sources

The researcher noticed that most secondary references and other primary sources like Traditional costumes during the era of the first Kingdom of Saudi Arabia released by the Darah organization, they base their information on traditional costumes in the central region on Dr. Laila Saleh Al-Bassam's master's research Traditional inheritance of women's clothing in Najd, published in 1985, which she conducted as a field study. Which is a primary and second most useful source the researcher has reached to grasp detailed information related to the sampling. Furthermore, During Primary interview stage which we will discuss in the following, we reached a Research document from 1996 by Al-Bassam and Sedqi, titled "A study to devel-

op modern techniques for some traditional clothes in the Arab community," which explains how traditional costume patterns are made and what concerns need to be considered during the process. This document is not readily available in libraries or on the internet. The researcher considers the acquisition of this document to be the highlight of the data collection stage, as it provided insight into the intangible practices of Saudi Arabian heritage fashion. Finally, effective, and useful primary sources for achieving research objectives are:

- Albassam, (1985). Traditional inheritance of women's clothing in Najd (1985 edition) | Open Library (1st ed.). Arabian Gulf Folklore Centre.

The reference can be found in the hands of the institute's partners: King Abdulaziz Library, King Abdulaziz Foundation "Darah".

- Al-Bassam and Sedqi. (1996). A study to develop modern techniques for some traditional clothes in the Arab community. Journal of Home Economics.

Primary Interview

Next to interviews with crafters and historians that are specialists in the field heritage fashion of Saudi Arabia in the middle region, and object analysis and photography, which consider primary data for this research.

The researcher employed multiple data col-

lection methods to gather information about Saudi Arabian heritage fashion. Interviews with experts in the field were conducted, among them a very insightful open question interview with Dr. Laila Albassam. During the interview, the researcher had the opportunity to observe and document various Authentic heritage costumes from the middle region owned by Dr. Laila, which she collected during her years of field research Furthermore, this interview also validates the result of the analyzed data that indicate sustainability practices were surrounding the cultural Saudi heritage making stages.

Secondary Sources

Moreover, secondary data found in two books about traditional Saudi costumes in the English language: The Art of Arabian Costume: A Saudi Arabian Profile (English and Arabic Edition) by Heather Colyer Ross, and Traditional Costumes of Saudi Arabia: The Mansoojat Foundation Collection. The researcher noticed that most secondary references and other primary sources like Traditional costumes during the era of the first Kingdom of Saudi Arabia released by the Darah organization, they base their information on traditional costumes in the central region on Dr. Laila Saleh Al-Bassam's master's research Traditional inheritance of women's clothing in Najd, published in 1985, which she conducted as a field study.

Case studies

Case studies applied to follow latest update on

Saudi heritage fashion situation in term of Saudi rebranding strategy, Digitization projects Drivers and components, and 3D technologies for presentation and representation of CH fashion.

In conclusion, the researcher's use of multiple data collection methods allowed for a comprehensive understanding of Saudi Arabia branding and CH fashion Identity and strong characteristic and informed the development of a digital platforms regrading CH to succeed curative outcomes.

Data Analysis

The data analysis was structured using two information identifications Filters: Metadata VRA core standard elements and the hypothesis: "Al Maqtaa has sustainable life cycle characteristics" to navigate sustainable practices within heritage fashion of Saudi documentations. The analysis aimed to look for intangible practices and reasons linked to social values that are embodied through heritage fashion design lines. as will be explained in the following. we will take a close look at Metadata and its elements and why it's an essential component for the analyzing stage.

Metadata

In the beginning, a better way to describe metadata is as a data structure created to improve the utility of specific data. The data main role in this project is to Assist search engines discover and surface it. Data can also be saved and activated using the data system. Archiving and preserving digital resources requires metadata. The criteria vary according to the type of object to be digitized, so it is important to investigate and determine what metadata standards are most appropriate.

To adjust and manage information about three-dimensional images and their information, the researcher studied whether metadata is considered an important component in digitizing cultural heritage fashion as it is a critical standard that affects the authority of certain digital documents. It's also a tool to link the keywords of both formal association and informal language from people of the culture, and communities.

Creating an integrated system to understand the Metadata standard's distinctive attributes is vital to improving Metadata interoperability that covers the whole resource lifecycle. To appropriately select more than one Metadata standard and combine them to cover a complete cycle of resources, and generate a unique Metadata system , we need to direct our viewpoint towards a task-centric point of view, by providing Metadata details per stage and allowing for mapping between Metadata standards (Baek, 2014) (M. Martin & Vacca, 2018).

VRA Core Standard

The choice fell on VRA core as the standard function to describe the creation of visual culture and illustrations (Lubas Rebbeca et al., 2013).The core is divided into 18 element sets, each with sub elements and attributes. It is possible to describe the same resources while providing a structure to divide Metadata depicting the web resource itself (image, video, Et cetera). (*Dublin Core to VRA Core Mapping*, 2021) Finally, it is established by the Network Development and MARC Standards Office of the Library of Congress (LC) in partnership with the Visual Resources Association. (*VRA CORE - a Data Standard for the Description of Works of Visual Culture: Official Web Site (Library of Congress)*, n.d.). The VRA core Standards elements and attributes are listed below:

Agent -attribution -culture -dates (type) -earliestDate (circa) latestDate (cir- -name (type) -role •culturalContext •date(type) –earliestDate (circa) –latestDate (circa) •description •inscription –author –position –text (type) •location(type) –name (type) –refid (type) •material(type) ca) measurements(type, unit) •relation(type, relids) •rights(type) –rightsHolder –text •source –name (type) –refid (type) •stateEdition(count, num, type) –description –name •stylePeriod •subject –term(-type) •technique •textref –name (type) –refid(-type) •title(type) •worktype

Hypothesis

After Curating and collecting information, evidence, and signs Sustainable design-thinking born in challenging environmentally and economic conditions that concentrate on the longevity of CH garment life cycle and Identification aesthetic. The hypothesis led the search to navigate unique techniques that hold Motivational Values in the creation process of Al-Miqtaa. Furthermore, It also led to identify documentation of CH practices through patternmaking blocks, and details regarding the region Symbolism of colors and Textiles supplying. Finally, evidence has been confirmed by Interviewing historians and expertise in the CH fashion field of Saudi Arabia.

Data Visualization

For data visualization, the researcher chose a Digital storytelling method to fashion design related information, to merge to a higher context environment with a broader audience interested in heritage, cultures, and craftsmanship through the channel of the internet. as a way of achieving high quality of visual communication and preserving the craft for the longest time possible.

Digital Storytelling

Cultural heritage interpretation requires mediation processes connecting tangibility with intangible meanings. As a performing narrative, storytelling is an effective communication strategy in cultural and heritage tourism

(Roque, 2022). In particular, Digital Storytelling is being used to preserve and promote cultural heritage, and it is supported by a variety of technologies, which can be guided by an appropriate method. It allows users to segment information and adapt it to the different audience profiles in an interactive and immersive way. As it also impacts on cultural community engagement (Roque, 2022).

Using digital storytelling to deliver content has become more relevant in today's digital age. Digital stories combine visual communication with text for additional details. Digital stories are often considered the best method for engaging users on multiple devices (Touch points). It can be used in a variety of ways and in a variety of situations, including immersive storytelling and augmented reality (Paolini & Di Blas, 2014). Finally, the case studies indicate how digital storytelling was used in the biggest cultural heritage digization projects like Europeana and Google Culture, indicating its effectiveness in communicating and engaging with people.

Representation Technologies

In the form of manuscripts, photographs, and drawings of detailed techniques, the analyzed data about Saudi heritage fashion and its patternmaking have reached this stage. To justifying and deliver the final shape the analyzed data took as its digital documented in two forms:

1. The CH fashion is Documented and visualized using virtual simulation of garments to simplify the understanding of specialized information in the practicing part, to empower the viewer to become the investigator of garment where he/she is able to explore the garment from every angle as an advancement of virtual simulation of garments technology.

   - CLO3D Software: CLO is a 3D fashion design software program creating virtual, true-to-life garment visualization with cutting-edge simulation technologies for the fashion and apparel industries. (CLO | 3D Fashion Design Software, n.d.) 3D Fashion is developing a 3D prototype out of a 2D digital pattern. Moreover, it holds many details and enables the viewer to see the garment from all angles in the most realistic mode. It is not only beneficial in terms of documentation but also emerges with the entity branding image and its capabilities and engagement with latest technology.

2. After discussing Metadata schema in the data Analysis phase, it becomes clear, that the elements of the standards are suitable information to start building an understanding of specified information in the fashion and heritage of Saudi by the general audience, while linking the public audience to deeper sources of information through references.

   - VRA core Standard provides historical and practical information that can interact with search engine keywords. Most importantly, it can be easily prepared and done by non-professionals. As digitization projects relies heavily on integration and interaction, it will also facilitate communication between different fields and especially "non-techy" people using basic skills in XML (Extensible Markup Language). XML utilize processing and exchanging Metadata, enables machine-processing of standardized Metadata and continues encoding and exchanging by setting a straightforward clarified structure (Miller, 1998).

Presentation Format

This part will explain why choice has landed onvirtual simulation of garments and Narrating story components to agilities the presence of information regarding ICH of cultural heritage fashion of Saudi.

Virtual Simulation of garments

Virtual simulation of garments refers to the application of computer graphics technology to replicate the behavior of clothing in a virtual setting. This technology enables the assessment of garment fit, fabric drape, appearance, and other relevant factors. It has been an area of scholarly investigation for more than twenty years and has found practical applications in the design and manufacturing of diverse types of clothing. Moreover, it has been utilized to develop virtual try-on systems in the retail sector, minimizing the necessity for physical fittings. Numerous research studies have explored consumer perception and contentment with 3D virtual simulation technology in the context of online retail. (Kim & LaBat, 2013)

This presentation feature enables the creation of 3D wearable assist in virtual reality scenes to symbolize Saudi presence and TRITA's Identity in the future and head of the game. This component can be used in a variety of communication technologies that encompass both real and virtual worlds. It serves as a TRITA Digital asset. The tool can also be used in a variety of other ways in addition to explaining ICH.

- Serves as a lens effect to enhance different social media platforms' Engagement.
- 3D models can be utilized to create Interactive media with TRITA partnerships

Narrating Storytelling

Narrating textual Storytelling using high context vocabulary to ease academic and specialized language to a wider range, while assuring the presence of people of culture narrating style and vocabularies. In the context of digitizing projects, writing storytelling can be a valuable tool for engaging users and creating a sense of a bond between the past and present, to be a means of bringing cultural artifacts and practices to life. Stories have the ability to ignite our imagination, help us connect with others. By providing meaningful narratives around heritage objects and practices, we assist users to connect and appreciate the sig-

nificance of these cultural artifacts, and shift Audience perception of Cultural heritage fashion from objects to shared values and ways of expression. In response, it creates a sense of community and rethinks heritage symbols through using today's generation's choice of language (Ifla, n.d.).

Through Using the Libraries and the Sustainable Development Goals (SDGs) – a storytelling manual with resources for librarians and library advocates. Library Map of the World (LMW) has collected some tips and information to assist in writing stories about library activities, projects, and programs. The manual outlines the Sdg prescription to tell a story and its elements of compelling evidence-based storytelling. To provide a better understanding, steps have been taken to build a story alongside the virtual simulation of garments (Ifla, n.d.). Furthermore, a scenario for the story was developed based on facts and primary information analyzed, followed by the words and writing styles of people of the culture. As the researcher is authentically from the sampling area, Riyadh, Najd, the Middle Region, she is aware that the Arabic language and Saudi dialog use a variety of metaphorical expressions and their choice of words reflects their cultural and social context. For that reason, the metaphors and the vocabularies of the middle region have been considered. Having written the story in Arabic, she translates it into English to make it sound like the culture it represents.

Controlled Vocabularies

For vocabulary, the research took in account the choice of controlled vocabulary for both Metadata and stories. Using a controlled vocabulary can help prevent mistakes by organizing synonyms and variant terms for concepts in a logical order and relating them in a logical manner or sorting them into different categories (Wildenborg, n.d.; Harpring, 2010, 12). Using this method, a search engine can be able to locate records based on the search terms entered by the user. (Wildenborg, n.d.) Moreover, the researcher noted the existence of different types of controlled vocabulary in the English language, such as The Europeana Fashion Thesaurus and The Getty Museum Controlled Vocabulary which both are specialize in art, architecture, and material culture: the Art & Architecture Thesaurus (AAT) (Steen, 2012). However, the researcher did not reach the same conclusion in the Arabic context. As a result, the researcher utilized both general people wording insights through Google trends insights as well as heritage fashion wording that has been documented for the Arabic language narrating and cataloging.

Value-Driven Practices of ICH Fashion Saudi Arabia Digitization System

Declaration

This research was in partnership with The governmental entity, The Royal Institute of Traditional Arts (TRITA) in Riyadh, Saudi Arabia. To obtain substantial support in comprehending the current status and direction of Saudi Cultural heritage, and to facilitate the researcher's access to heritage-related information and interviews with experts from TRITA departments during the information design phase regarding Saudi Cultural Heritage fashion in order and to expand TRITA database. In here, We are proposing a Value-driven practices of ICH fashion Saudi arabia digitization system designed and curated for The Royal Institute of Traditional Arts.

Manifesto

In In the world of education and culture, digital communication and technology are now integral to any organization's identity. The Royal Institute of Traditional Arts (TRITA) was established as part of the Saudi Vision 2030 initiative. Its mission is to safeguard and educate Saudi Arabia's culture for new generations as well as to promote its heritage with the world. Saudi 2030 vision is a plan to revitalize and shift the focus of the Saudi Arabian economy towards different industries, including the country's fashion industry. Fashion is an essential component of any Nation branding visual identity, playing a role in both its economy and culture. Cultural heritage fashion reflects the values and traditions of a culture, it's a source of pride for its people.

We believe that by reaffirming Saudi fashion identity and unifying its different aspects, both internal and external communities can engage, positively impact economic and societal growth.

In today's global fashion industry, sustainability is a core value moves and shapes its business model and product development. For that, we use it as the first value to test our curative digitization system that idenitifies value-driven practices in Saudi Intangable cultural heritage (ICH) fashion craftmenship, digitally visualise its outcomes and accelerate access to these information. This system built to enhance Saudi branding identity and safeguard its enduring existence and engagment with digital communities.

Here, we present evidence that prove sustainable design-thinking is embedded in the cultural heritage (CH) fashion of Saudi society. Its as a core value in the craftsmanship of Saudi Arabia CH fashion, inhert from the adaptability to different economic, social, and environmental situations. its an excellent feature to defines Saudi cultural heritage fashion identity.

In the end, by digitizing the Saudi Arabia ICH fashion will not only highlight the country's unique fingerprint, but also enhance its cultural-based brands, revitalize the use of traditional practices, maintain positive connections with other industries, nations, societies, and individuals in the fashion context, and eventually, contribute to economic benefits for the country.

Concept: " Heritagization"

The dominant idea of the project stems from the term "Heritagization" in the form of a scenario.

Heritagization refers to "processes and dynamics of creating cultural and historical identities and meanings and re-creating them".

Vision

 With government efforts currently being made to raise awareness and revitalize the presence of the Saudi CH fashion in a global conversation and to shift the respective image from religious identity to culture. The urge to communicate and accelerate the availability of information sources about CHF values and practices on the Internet is crucial to drive-force the Saudi Cultural identity again into the Saudi fashion system and the global fashion system. As well as to complete the circle of heritagization in the Saudi digital transformation in the Cultural Heritage sector.

Mission

Our responsibility entails exploring CH fashion and collecting, analyzing, and visualizing data to safeguard and promote sustainable design-thinking practices in CH fashion in Saudi Arabia. By ensuring that the information is easily accessible and comprehensible, we can make an impact on the fashion industry by expanding our audience of those who are interested in learning about CH fashion craftsmanship and ultimately promote TRITA training courses.

Generosity

Hospitality

Courage

Belonging
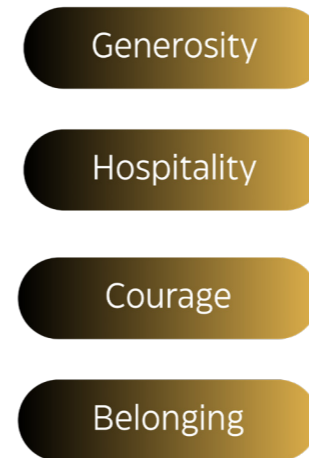
Graph Core Values

Core Values

The project firmly established values are the roots of the identity of the people of the Arabian Peninsula

▶▶ **Generosity**: Providing additional scientific and historical information.

▶▶ **Courage**: Being the first digital destination for information on sustainable practices in cultural heritage fashion online, utilizing high-quality imaging technology.

▶▶ **Hospitality**: Facilitating non-profit and easy access to information to learn traditional crafts.

▶▶ **Belonging**: safeguarding the heritage of our ancestors and re-think learning of traditional crafts.

Attributes

▶▶ **Quality**: Adding quality to the Saudi culture of fashion content online by providing a more in-depth information.

▶▶ **Mutual Vocabulary**: Using vocabulary that is both usable by the public and academic domain.

▶▶ **Bilingual**: The project speaks both Arabic and English language to Communicate with the Saudi nation people and the international world.

▶▶ **Attract**: Highlighting and promoting the concept of The Royal Institute: A destination for learning traditional crafts."

▶▶ **Ready to Travel**: The project digital Assets is ready to travel into the world of Metaverse.

Motivations

The project Captures and embrace proudly the sustainable practices and the motivational values behind the creation process of AL-Miqtaa garment.

Actions Component
(Capture) Documentation

(i) Digital patternmaking of cultural heritage: Translate CH practices to 2d digital pattern blocks.

(ii) Metadata: using CH standards metadata its simultaneously cataloging them for posterity.

(Embrace) Communication

(i) Virtual simulation of garments: Transfer 2d digital pattern to virtual simulation of garments to ease communication about the information.

(ii) Metadata: The data assist in appearing on search engines for targeted users.

(iii) Narrating Storytelling: To convey values, communicate it significance.

Graph Attributes
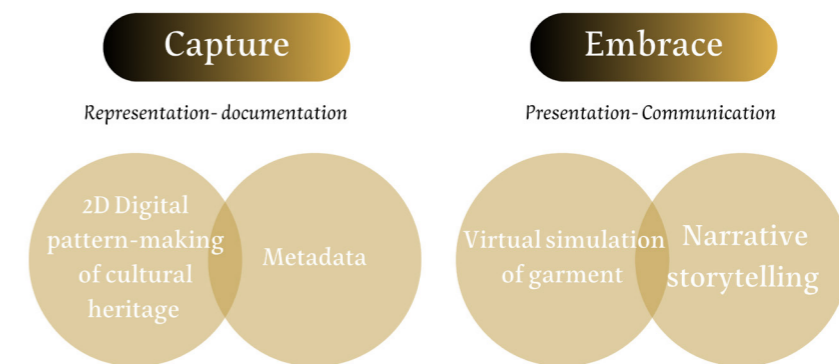
Graph Project Motivations

Scenario

The storytelling scenario adopts a 3D visualization approach, complemented by a narrating style influenced by the dialogues of the Najd region. The Najd people's conversational style incorporates culturally based expressions and metaphors, which facilitate a deeper understanding of the information being conveyed. virtual simulation of garments is employed to augment the presentation with a futuristic and engaging feel, ultimately encouraging new perspectives on development, design, and innovation.

"Munificence in Om Assa"

Narrating style influenced by the dialogues of the Najd   region

Virtual simulation of garment

Project main characters

The Curator
- Name: Rynad
- Identification: Digital Fashion researcher/ Digitization System Curator and Expert in ICH Saudi fashion practices education. .
- Role: Contextualizing, collecting, analyzing, data visualizing and activating the value of ICH data.

The Narrator
- Name: TRITA
- Identification: Storytelling Narrating Style of the royal institute
- Role: Creating meaningful narratives around heritage fashion and practices, shifting audience's perception of cultural heritage fashion from objects to shared values and ways of expression.

The Evidence
- Name: AL-Miqtaa
- Identification: Cultural Heritage garment
- Role: Saudi values reflection

The discovery
- Name: Sustainable Heritage fashion practices
- Identification: Intangible cultural Heritage
- Role:Core value in CH Saudi fashion in commen with today fashion industry driven-values.

The director
- Name: 3D Imaging angle
- Identification: Simplify understanding of information
- Role: Capture and zoom to the appropriate angle

Messenger
- Name: Web Crawlers
- Identification: Catch Search Engines optimization (SEO) keywords
- Role: Identify project relevance with digital intresters Search Keyword
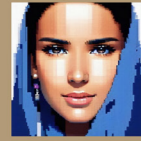
The Curator

Name: Rynad Alsager

Identification: Fashion System Designer and Expert ICH fashion practices of KSA

Role: Contextualising, collecting, analysing, data visualising and activating the value of ICH data

The Evidence

Name: Al-Miqtaa

Identification: Cultural Heritage garment

Role: Saudi values reflection

The narrator

Name: TRITA

Identification: Storytelling Narrating Style of The royal institute

Role: Creating meaningful narratives around heritage fashion and practices, shifting audience's perception of cultural heritage fashion from objects to shared values and ways of expression.

The Director

Name: 3D Imaging angle

Identification: Simplify understanding of information

Role: Capture and zoom to the appropriate angle

The Discovery

Name: Sustainable Heritage fashion practices

Identification: Intangible cultural Heritage

Role: a Value that heritage saudi shares with today fashion industry driven-values

Messenger

Name: Web crawlers

Identification: Catch SEO keywords

Role: Identify project relevance with digital intresters Search Keywords

Graph Project Main Charcters

Framework

In this section, we will explore the various components that form the framework for our project. We will delve into the policies, standards, and rights that the curator has considered in their work. Additionally, we will discuss the tools utilized, the data-driven marketing strategy employed, competitor analysis, as well as digital marketing, Omni-channel experience and project encounters. By examining these aspects, we will establish the foundation for a successful project implementation.

Framework

Policies, Standards, Rights

To develop a specialized and impactful project that promotes cultural heritage costumes on a global scale, several adaptation strategies have been implemented. The following principles have been considered when building the project:

▸▸ **The complete recording of cultural heritage**: Gomes et al., (2014) states that, the complete recording of cultural heritage, as noted by Pavlidis et al., (2007) is a multi-faceted process that extends beyond the mere 3D digitization of objects and monuments. This comprehensive process encompasses various related facets such as digital content management and representation.

▸▸ **The creation and preservation of digital cultural heritage vital aspects**:
1. The three-dimensional digitization.
2. Data storage.
3. Data management.

▸▸ **The primary grounds for preserving cultural heritage digital assets to**:
1. Assure the infinite life of artifact form and texture, preventing loss in case of impairment by accidents or environmental causes.
2. To authorize the publicity of the Virtual simulation of garments to a vast crowd.

▸▸ **The importance of Digitization**: Is to increase access to and protect these materials (Fox, 1999). Furthermore, it leads to a positive impact on societies. It serves the nation's cultural heritage to be visible and accessible to the citizens and a larger audience(Bachi et al., 2014).

▸▸ **To create an efficient source digitally**: Kenney A. & Rieger O., (2000) argue that creating digital surrogates of collections assists in promoting the collections and the institution, persisting in supporting the concept of value in their house materials" Resources are useless unless they are accessible." To create an efficient source digitally, associations must blend professionally and technologically between planning, risk management, and correct infrastructure to communicate with users fully. However, neglecting the user perspective in an institution's strategic goals often appears in disharmony with the necessary form of an ideal digital conversion project. They also have to be evaluated from the user's point of view and consider the user as the main center while creating a Meta version of the information. To emancipate the knowledge, the digital version of the association should be activated and be reachable and an accessible source by the user's research engine.

▸▸ **Digitization process**: Manžuch, (2017) explained what digitizing is starting with the definition of digitization provided by (UNESCO, 2020) and described it as definition that connect digitizing with the broader context of memory institutions' decisions and activities: Digitization involves the conversion of physical, analog files into digital formats by means of scanners, cameras, or other electronic devices. This undertaking consists of several steps that are critical for success, such as selection, needs assessment, prioritization, preparation of originals for digitization, metadata collection, and creation of digitized data collections. The process also involves submission of the digital resources to delivery systems and repositories, as well as comprehensive management that covers intellectual property rights and quality control. Finally, evaluation takes place at the end to ensure everything has been completed correctly.

▸▸ **International Digital Preservation Policy Framework by UNESCO:** During researching, the researcher spotted the international Digital Preservation Policy Framework by (UNESCO, 2021), The memory of the World (MoW) sub-committee. They identified four main aspects that challenge digital conservation. Intending to refine a bunch of priorities for its work against the backdrop of these issues:

1. Preservation action: Timely and quality preservation actions are of the highest importance. Effective preservation measures are necessary to preserve cultural identity and protect unsubstantial and threatened cultures. The documentary heritage must be created, specified, and preserved as urgently as to stop the permanent loss of their memory.

2. Sustainability: Assuring stable resources and setting long-term sustainability standards are vital to the long-term retention and accessibility of digital documentary heritage.

3. Technology challenges: Systematic management of technology inactivity is key to preservation activities and the accessibility of the documentary heritage. The influential heritage of the 20th century is preserved as magnetic tape, which is in immediate danger of loss. All the magnetic tape formats are now obsolete, emphasizing the problem's size and time shortage as it needs to be rescued from being vanished by digital and physical preservation.

4. Legal frameworks: The adoption of technologies is in rapid and relentless progress. At one time, governmental shifts are considered slow in the meanwhile. The need for national and international supervision to support sufficient policy development and regional authorities is urgent. To give memory institutions the essential authorization to choose and preserve the digital documentary heritage and to retain the universal right to access cultural heritage.

Tools

3D technology

Essential component of today CH digitization. Great tool to present and Engage in phigital atmosphere. consideres a Digital Asset.

CLO3D software

Industrial fashion production softeware, Holds a great details and Accuracy ac CAD softeware. Creates 2d digital patterns, Costumes, Avatar, Virtual simulation of garments , Texture simulation, rendering, suitable for ease the complexity of informations and document a process of creation. It's important to have publishing license to publish work ceated in CLO3D.

Metadata Schema

Data structure created to improve the utility of specific data. The data helps search engines discover and surface it. Data can also be saved and activated using the data system. Archiving and preserving digital resources requires metadata.

VRA core standard

Suitable for " Non techy people". The suitability of its elements to describe the tangible heritage element. XML is used for data processing, transmission, and automated data processing.

Elements: Agent -attribution -culture -dates (type) -earliestDate (circa) latestDate (cir- -name (type) -role •culturalContext •date(type) –earliestDate (circa) –latestDate (circa) •description •inscription –author –position –text (type) •location(type) –name (type) –refid (type) •material(type) ca) measurements(type, unit) •relation(-type, relids) •rights(type) –rightsHolder –text •source –name (type) –refid (type) •stateEdition(count, num, type) –description –name •stylePeriod •subject –term(type) •technique •textref –name (type) –refid(type) •title(type) •worktype

Digital Storytelling

Digital stories combine visual communication with text for additional details.

Digital stories are considered the best method for engaging users on multiple devices (Touch points). Used in a variety of ways and in a variety of situations, including immersive storytelling and augmented reality

Library Map of the World (LMW): The Libraries and the Sustainable Development Goals (SDGs) Manual

- Elements of compelling evidence-based storytelling: A catchy title, A strong opening, Great illustrations, Effective scene-setting, A clear narrative, A meaningful ending.

 Story must provide answers to the following questions: Why? Who did what, how and when? So what?

Virtual simulation of garments using CAD Softewares   projects

Figure 51 Exploding Fashion: From 2D to 3D to 3D Animation: MoMu and Central Saint Martins Exibihition
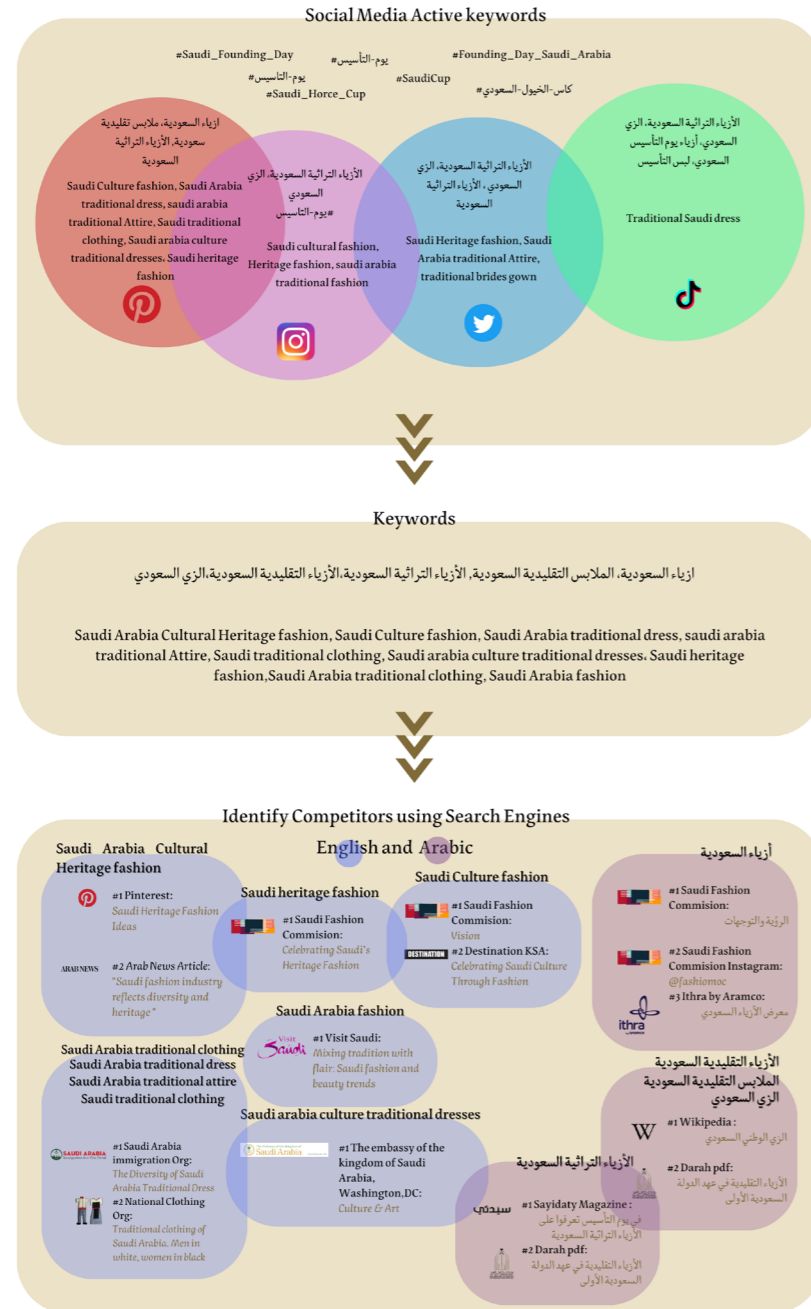
Figure 52 Hanifa Brand digital fashion show

Figure 53 The Virtual Fashion Archive FIT and Superficial

Marketing Strategy

Identifying Competitors based on people Keywords

Social Media Active keywords

#Saudi_Founding_Day يوم-التأسيس# #Founding_Day_Saudi_Arabia
#Saudi_Horce_Cup #SaudiCup كأس-الخيول-السعودي#

ازياء السعودية، ملابس تقليدية سعودية، الأزياء التراثية السعودية

Saudi Culture fashion, Saudi Arabia traditional dress, saudi arabia traditional Attire, Saudi traditional clothing, Saudi arabia culture traditional dresses, Saudi heritage fashion

الأزياء التراثية السعودية، الزي السعودي، الأزياء التراثية السعودية
#يوم-التأسيس

Saudi cultural fashion, Heritage fashion, saudi arabia traditional fashion

الأزياء التراثية السعودية، الزي السعودي، الأزياء التراثية السعودية

Saudi Heritage fashion, Saudi Arabia traditional Attire, traditional brides gown

الأزياء التراثية السعودية، الزي السعودي، يوم التأسيس السعودي، ليس التأسيس

Traditional Saudi dress

Keywords

ازياء السعودية، الملابس التقليدية السعودية، الأزياء التراثية السعودية،الأزياء التقليدية السعودية،الزي السعودي

Saudi Arabia Cultural Heritage fashion, Saudi Culture fashion, Saudi Arabia traditional dress, saudi arabia traditional Attire, Saudi traditional clothing, Saudi arabia culture traditional dresses, Saudi heritage fashion,Saudi Arabia traditional clothing, Saudi Arabia fashion

Identify Competitors using Search Engines

English and Arabic

Saudi Arabia Cultural Heritage fashion

Saudi heritage fashion **Saudi Culture fashion** أزياء السعودية

#1 Pinterest: *Saudi Heritage Fashion Ideas*

#2 Arab News Article: "Saudi fashion industry reflects diversity and heritage"

#1 Saudi Fashion Commision: *Vision*

#1 Saudi Fashion Commision: *Celebrating Saudi's Heritage Fashion*

#1 Saudi Fashion Commision: *Celebrating Saudi Culture Through Fashion*

#2 Destination KSA:

#1 Saudi Fashion Commission: الرؤية والتوجهات

#2 Saudi Fashion Commision Instagram: @fashioncoc
#3 Ithra by Aramco: معرض الأزياء السعودي

Saudi Arabia fashion

Saudi Arabia traditional clothing
Saudi Arabia traditional dress
Saudi Arabia traditional attire
Saudi traditional clothing

#1 Visit Saudi: *Mixing tradition with flair: Saudi fashion and beauty trends*

Saudi arabia culture traditional dresses

#1 Saudi Arabia immigration Org: *The Diversity of Saudi Arabia Traditional Dress*

#2 National Clothing Org: *Traditional clothing of Saudi Arabia, Men in white, women in black*

#1 The embassy of the kingdom of Saudi Arabia, Washington,DC: *Culture & Art*

الأزياء التقليدية السعودية
الملابس التقليدية السعودية
الزي السعودي

#1 Wikipedia: الزي الوطني السعودي

#2 Darah pdf: الأزياء التقليدية في عهد الدولة السعودية الأولى

الأزياء التراثية السعودية

#1 Sayidaty Magazine: سيدتي في يوم التأسيس تعرفوا على الأزياء التراثية السعودية

#2 Darah pdf: الأزياء التقليدية في عهد الدولة السعودية الأولى

Graph Identifying people Keywords and competitors

In the case of fashion in the Kingdom of Saudi Arabia, we find that there is a lack of reliable sources available online. And if they exist, they have not taken into consideration the use of data-driven strategy as a means of reaching audience. This makes this digital market a blue ocean where we can control the project's value-driven direction. And use its potential to create a data-driven strategy to deliver these values to audiences who contribute to the fashion system.

Data-Driven Strategy

Data-driven strategy refers to an approach where decision-making and planning are based on the analysis of data and information. It involves utilizing large volumes of data, often collected through various sources and data analysis techniques, to gain insights and make informed business decisions. This approach helps organizations make data-backed decisions and derive strategic insights for improving processes, targeting specific markets, optimizing resources, and achieving business goals. increase impact for non profit organization. Data-driven approaches show great potential in the identification of topics, trendlines, and making near-future trend predictions. On the other hand, qualitative approaches excel in answering "why" questions surrounding the emergence of topics, whether it be due to disruptive innovations or the introduction of new terminologies. Additionally, qualitative approaches can determine if topics are becoming obsolete due to common knowledge (Münster et al., 2021).

Market Potential

Fashion Industry

Goals: safeguard ICH Craftsmanship and Communicate ICH values. Taking sustainability as a value in intangible Cultural Heritage (ICH) Fashion practices in Saudi Arabia.

Market potential analysis

This section will focus on identifying social media keywords, search engine competitors, and content competitors related to Cultural Heritage (CH) fashion in Saudi Arabia. We created targeting audience segmentation and developed a plan for phygital Omnichannel experience, including SEO tools, social media, Digital Media, and phygital experiences along with collaborative and partnership campaigns. Finally, we will define the target audience persona and their possible experiences.

Competitors

Social Media Keywords usage analysis

Research was conducted on active vocabulary used in social media that people use to look for information related to Saudi Arabia heritage fashion or post captions related to Founding Day and the Saudi Cup horse race. These events were studied and evaluated for their impact on raising awareness and generating interest in Saudi CH fashion among today's generations in the nation branding chap-

ter. Also its been taken in consideration the use of General keywords In both Arabic and English languages. After collecting keywords, it will be used to identify competitors using search engines.

Social media founds of keywords

Keywords that generated Saudi CH fashion content:

◆ Pinterest
• Arabic:
ازياء السعودية، ملابس تقليدية سعودية, الأزياء التراثية السعودية

• English:
Saudi Culture fashion, Saudi Arabia traditional dress, saudi arabia traditional Attire, Saudi traditional clothing, Saudi arabia culture traditional dresses Saudi heritage fashion

◆ Instagram
• Arabic:
الأزياء التراثية السعودية، الزي السعودي
#يوم-التأسيس

• English:
Saudi cultural fashion, Heritage fashion, saudi arabia traditional fashion,

◆ Twitter
• Arabic:
الأزياء التراثية السعودية

• English:
Saudi Heritage fashion, Saudi Arabia traditional Attire, traditional brides' gown

◆ TikTok
• Arabic:
#يوم-التأسيس
الأزياء التراثية السعودية، الزي السعودي، أزياء يوم التأسيس السعودي،
لبس التأسيس

• English:
Traditional Saudi dress

◆ General keywords:
• Arabic:
الأزياء التراثية السعودية، الأزياء السعودية، الأزياء التقليدية السعودية، الملابس التقليدية السعودية

• English:
Saudi Arabia Cultural Heritage fashion, Saudi Arabia heritage fashion, Saudi Arabia fashion, Saudi Arabian traditional clothing.

◆ Final keywords:
• Arabic:
ازياء السعودية، الملابس التقليدية السعودية, الأزياء التراثية السعودية الأزياء التقليدية السعودية الزي السعودي

• English:
Saudi Arabia Cultural Heritage fashion, Saudi Culture fashion, Saudi Arabia traditional dress, Saudi Arabia traditional Attire, Saudi traditional clothing, Saudi Arabia culture traditional dresses Saudi heritage fashion, Saudi Arabia traditional clothing, Saudi Arabia fashion.

Identify Competitors using Search Engines in English and Arabic

◆ English language:
• Saudi Arabia Cultural Heritage fashion
#1 Pinterest: Saudi Heritage Fashion Ideas
#2 Arab News Article: "Saudi fashion industry reflects diversity and heritage "

• Saudi heritage fashion
#1 Saudi Fashion Commission: Celebrating Saudi's Heritage Fashion

• Saudi Culture fashion
#1 Saudi Fashion Commission: Vision
#2 Destination KSA: Celebrating Saudi Culture Through Fashion.

• Saudi Arabia traditional dress

• Saudi Arabia traditional attire

• Saudi traditional clothing

• Saudi Arabia traditional clothing
All of these keywords showed same search results:
#1 Saudi Arabia immigration Org: The Diversity of Saudi Arabia Traditional Dress.
#2 National Clothing Org: Traditional clothing of Saudi Arabia. Men in white, women in black.

• Saudi Arabia fashion
#1 Visit Saudi: Mixing tradition with flair: Saudi fashion and beauty trends

• Saudi Arabia culture traditional dresses
#1 The embassy of the kingdom of Saudi Arabia, Washington, DC: Culture & Art

◆ Arabic language:
• **الأزياء التراثية السعودية**
#1 Sayidaty Magazine: في يوم التأسيس تعرفوا على الأزياء التراثية السعودية
#2 Darah pdf: الأزياء التقليدية يف عهد الدولة السعودية الأولى

• **الملابس التقليدية السعودية**

• **الزي السعودي**

• **الأزياء التقليدية السعودية**
All of these keywords showed same search results:
#1 Wikipedia: الزي الوطني السعودي
#2 Darah pdf: الأزياء التقليدية في عهد الدولة السعودية الأولى

• **أزياء السعودية**
#1 Saudi Fashion Commission: الرؤية والتوجهات
#2 Saudi Fashion Commission Instagram: @fashiomoc
#3 Ithra by Aramco: معرض الأزياء السعودي

From the results, we see that the main trusted source and contains information about heritage fashion is the file of the King Abdulaziz Foundation (Darah), "Traditional Saudi Arabian costumes during the era of the first Saudi state" focusing on the historical narration. It is published as a PDF file. We also notice the

presence of local and international magazines that cover national events and fashion. Additionally, the results show that social media platforms require a source of information about heritage fashion alongside the audiences' and media interaction with events that celebrate CH fashion of Saudi. Moreover, we noticed the presence of content from reliable non-profit and non-governmental organizations such as the Mansoojat organization on social media when searching for keywords. Next to that, there is also content from governmental sources which is the founding day fashion guide.pdf produced by the Ministry of Culture in partnership with the King Abdulaziz Foundation, however, we do not see these sources present in the search results. Digital Media publications (Magazines) covers and features articles about Saudi Heritage fashion. However,
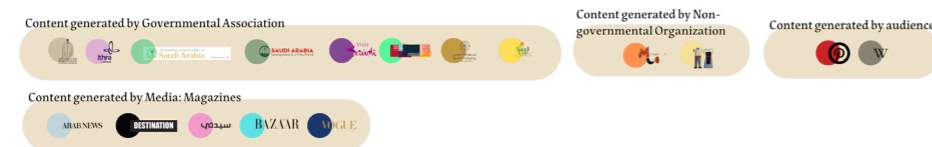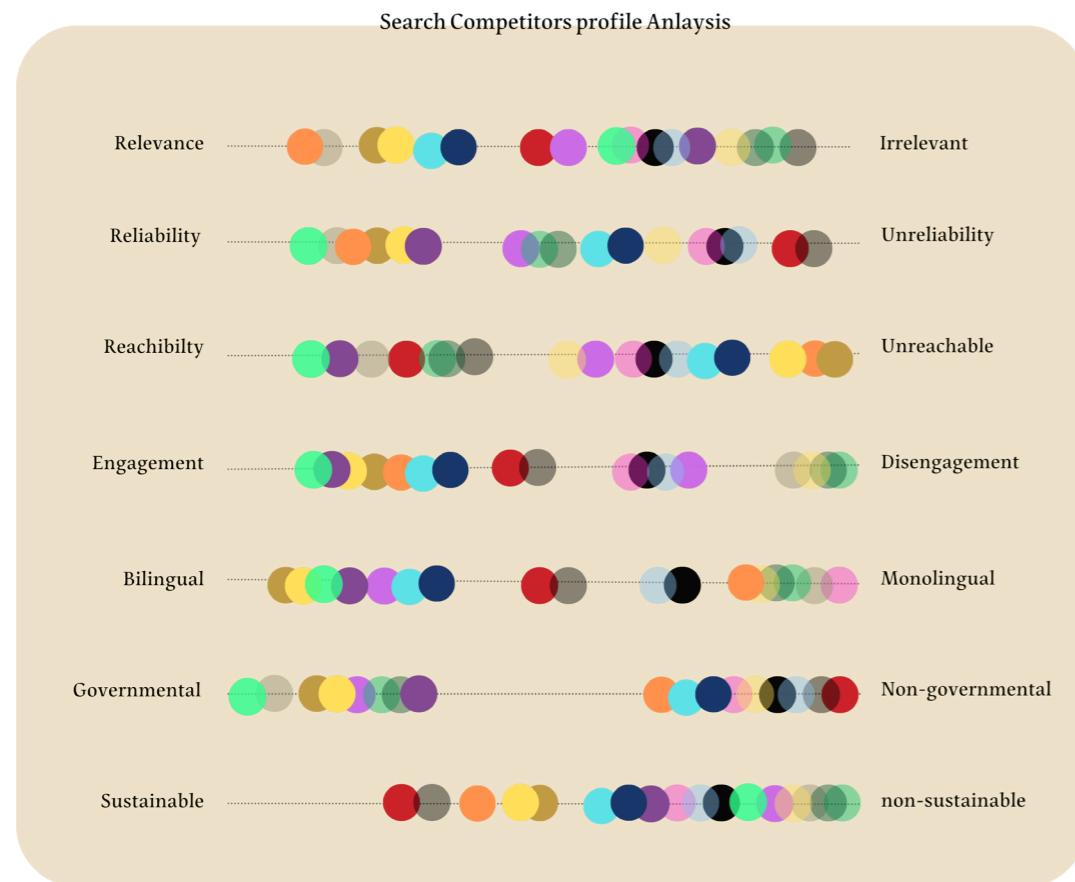
Graph Search Competitors profile Analysis

despite the hype that Vogue Arabia magazine and Harper's Bazaar Arabia magazine are creating to celebrate the heritage fashion of Saudi Arabia to engage the Saudi nation, the research shows it isn't present on the first page of a keyword search, but it does appear on the first page of a picture search.

Stage Findings

We can confirm that the market of reliable information about Saudi Arabia cultural heritage fashion is a blue ocean in which we can surface through:

1. Focusing on Metadata elements that will greatly help surface on search engines.

2. Using the highest trending keywords in the project's narrative.

3. Running advertising campaigns on the institute's social media accounts.

4. Establishing an official account on Pinterest, which is a visual inspiration platform.

Competitors Analysis

In the analysis, we considered not only the keyword identification results, but also sources related to online open access for Saudi Arabia's CH fashion. These sources include the Governmental documents - Founding Day fashion guide.pdf and Saudi Cup dress code.pdf - and the non-profit, non-governmental organization, Mansoojat website. Using the Profile Analysis model, we aimed to gain a comprehensive understanding of the competitors'

strengths and weaknesses, identify areas for improvement using the model. We attempt to measure Consumer desirability (consumer perspective) and Deliverability (firm perspective) Criteria for point-of-difference (POD's) to better understand the project's situation from the two perspectives. We measured: Relevance, Reliability, Engagement, Bilingualism, Governmental, Sustainability. The explanations for each are as follows:

Desirability (consumer perspective) Criteria:

▸▸ Relevance: Refers to the alignment of competitors' content to CH fashion context and activities.

▸▸ Reliability: measures the accuracy and authenticity of competitors' content. This can include the quality of their research, documentation, and representation of cultural heritage fashion content.

▸▸ Reachability: Refers to the level of accessibility and availability of competitors' content. This can include the extent of their online presence, reach on social media, and physical accessibility through events and exhibitions.

Deliverability (firm perspective) Criteria:

▸▸ Engagement: Measures the level of interaction and engagement between competitors and their audience. This can include social media engagement, attendance at events, and customer feedback.

- Bilingualism: Refers to the ability to communicate effectively with audiences including the availability of content in multiple languages and the ability to communicate effectively with audiences from diverse linguistic backgrounds.

- Governmental: Measures the level of support and involvement from government organizations and officials in competitors' activities. This can include funding, partnerships, endorsements, and collaborations.

- Sustainability: Measures the long-term viability and impact of competitors' activities and their ability to maintain their resources, impact, and relevance over time.

Stage Findings

After analyzing the competitors, the following was revealed:

1. 3 out of 8 government entities had content related to heritage clothing.

2. There is a movement in local and international magazines interested in covering news about heritage clothing, and they can be collaborated with for advertising campaigns for the project.

3. The competitors in terms of content type are the Mansoojat Organization and the King Abdulaziz foundation (Darah). However, "Heritagization" project is still considered different in its kind as it focuses on

values behind practices and not just the tangible Cultural heritage artifact.

4. Weakness point in the competitors' sources is linguistic diversity, as they adhere to one language only. The Textile Organization is in English, and the King Abdulaziz Foundation (Darah)is in Arabic only.

5. The Mansoojat Organization and the King Abdulaziz foundation (Darah) can be considered indirect competitors, and their content spread and presence on social media platforms is greater than the website's presence on search engines.

After analyzing search Competitors profiles, the high-performance competitors based on relevance to cultural heritage context, reliability, reachability, as they considered crucial criteria for digitization project. Final Competitors are: Darah.pdf, and Mansoojat organization website.

Documentation   Communication
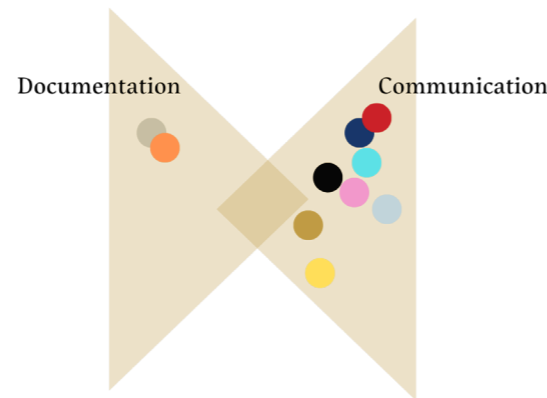
Competitors Content Analysis and positioning

Mansoojat Organization content Analysis:

- Although we see some weakness in the reachability part of Mansoojat, it captures the tangible cultural heritage fashion of each region with good quality of 2D photography, Description, and photography about its environmental surroundings. This gives Mansoojat the attribute of being sustainable in terms of diversity and completeness. But at the same time, it shows that even with the HQ photography it leaves a space for concern about these digital assets long-Vivity in the transitioning period from 2d to 3d digital world.

Graph Mansoojat Organization Website

Darah:

- With the high relevancy and reachability of their pdf around keywords resulting in Arabic language, we can see that it's the reachable governmental source about CH fashion context. In terms of information, Darah covers Tangible Cultural Heritage fashion from all regions in a general historical approach, which qualifies it to be sustainable in terms of completeness and diversity only but does not qualify it in technology use or information accessibility as it contains complex information from integrated resources next to ambiguous photographs At the same time, we find Darah file lack of engagement with the audience. As there is no sign about the source in any social media activity.
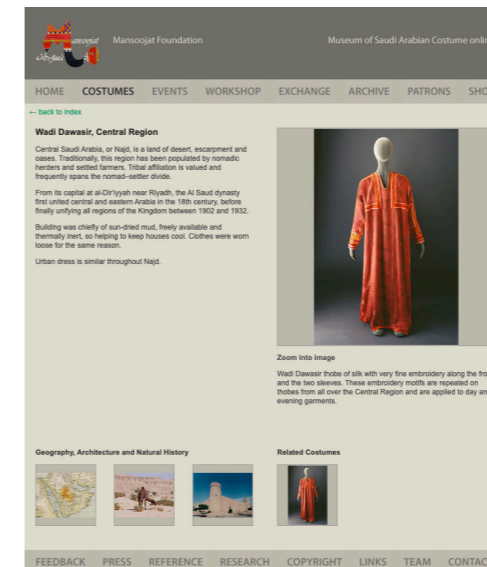
Graph Darah pdf

Competitors Content Analysis

Presentation
Bilingual
Accessibility
ICH fashion
Engagement
Governmental
Sustainable
Reachability
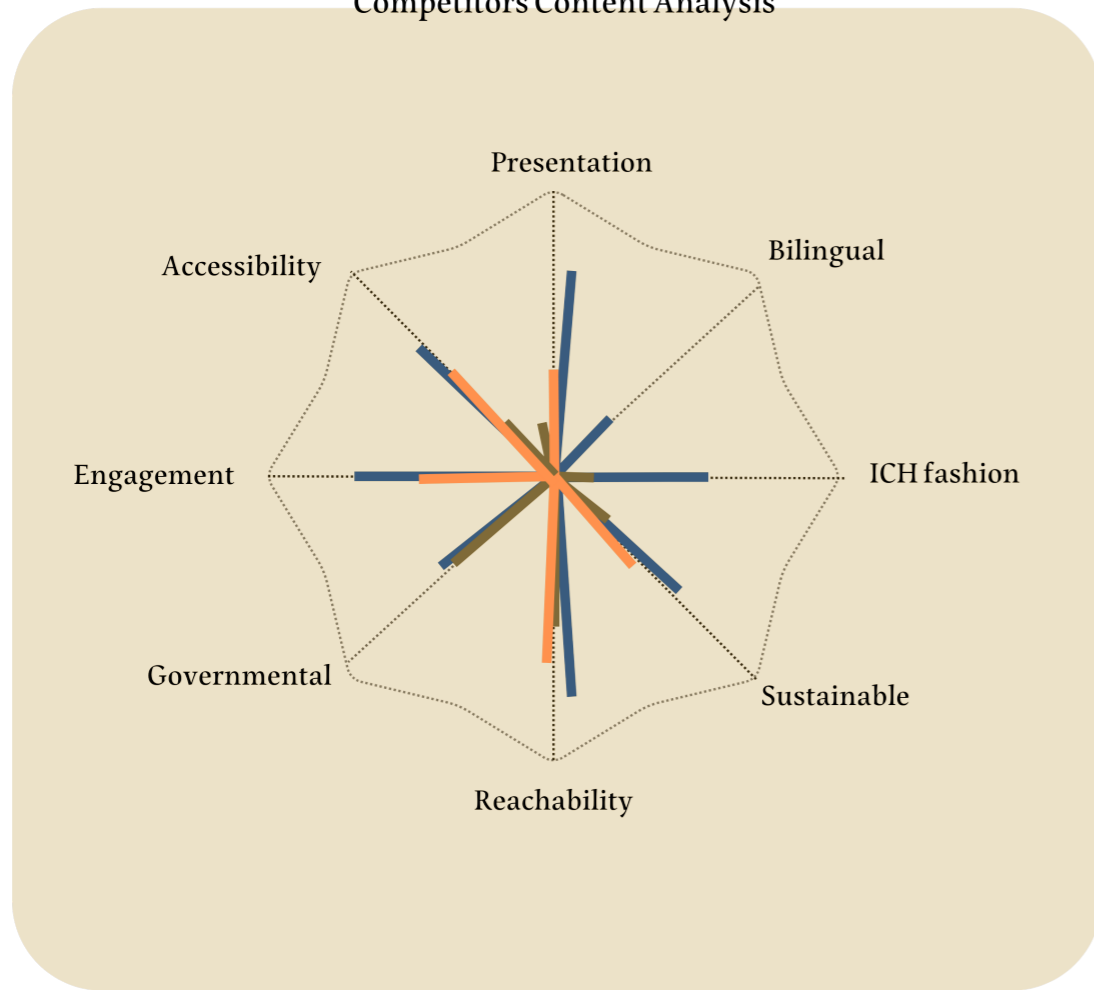
Content generated by
Governmental Association

Content generated by Non-
governmental Organization

TRITA project:
Heritagaization

Graph Competitors content analysis

Audience Segmentation

TRITA Intentionally targets anyone with an interest in this field. Among their diverse audience, we focus on appearing on online research engines of Innovators, Traditionalists, and Environmentalists:

Innovators

People who value creativity, innovation, and modernity. It may be interesting to explore how traditional textiles and fashion can be incorporated into contemporary design, and how they can be used to create contemporary designs.

Traditionalist

Online people who value preserving and honoring traditional culture and fashion practices, seek information about them through online resources. History and culture of traditional fashion interest them, as well as how they have evolved.

Environmentalist

Those who value sustainability, ethical production, and responsible consumption seek information on cultural heritage through online resources, and they are interested in traditional fashion and promoting sustainable fashion practices.

Audience Segmentation

Innovator
People who value creativity, innovation, and modernity. It may be interesting to explore how traditional textiles and fashion can be incorporated into contemporary design, and how they can be used to create contemporary designs.

Audience Persona

"Culture connects brands to their audience"

Field	Value
Name	Khalid
Generation	Millennial
Location	Riyadh
Lifestyle	Urban City
Occupation	Project Manager
Interest	Fashion, Styling, Music, Cambing
Personality	Extrovert, professional, Family oriented
Education	Business School
Motivation	Establishing his own fashion Cultural-brand. Express his Communities Values through CH fashion symbols

Devices usage: Iphone, Ipad, IMac
Social Media: Instagram, Twitter
Average Time: 0 .... 10 (4-5H)

Audience Experience

Stage		Unaware	Aware	Engage	Subscribe	Commit	Active users	Promote
Action	Definition	Identify by unaware audience	Audience members recognize the project name and see it as leading voice in conversations in CH fashion field	Audience starts to seek out and engage with content in owned media	Start direct way of contacting audience members	Will to attend courses, workshops, Events,	Audience ready to become regular	Audience of promoters
	Motivation	Looking for Values reflection in CHF	Arrived to the main page	Check project social media	Follow project account on Instagram	Attempt to use CH sustainable practices	Launch his ready to wear collection based on CH sustainable practices	Khalid spread sustainable CH practices through his collection
Front-Stage	Eperience	🔍	🔗	📰	👤➕	👍	🚀	👕
	Touch point	BAZAAR			Instagram			
Back-Stage	SEO Tool	Meta Description	Backlink	Tag				

Omnichannel

Owned Media: Instagram, Pinterest, Twitter, TikTok
Digital Media: ARAB NEWS, DESTINATION, سيدتي, BAZAAR, VOGUE
Partnership
Project Main page

Graph 1# Audience Segment, Persona, Experience

Audience Segmentation

Traditionalist
People who value preserving and honoring traditional culture and fashion practices, seek information about them through online resources. History and culture of traditional fashion interest them, as well as how they have evolved.

Audience Persona

"Understanding breaks down barriers and builds bridges"

Field	Value
Name	Lara
Generation	Gen X
Location	Palermo
Lifestyle	Nomadic
Occupation	product designer
Interest	Travelling, Nature, Cultures
Personality	Introvert, symbolist, Vegetarian
Education	Product design
Motivation	Lara is visiting Saudi Arabia and she's going around UNESCO historical places in riyadh. She's very interested to know symbolic meaning of Saudi outwear

Devices usage: Smrt phone, Laptop
Social Media
Average Time: 0 .... 10 (1H)

Audience Experience

Stage		Unaware	Aware	Engage	Subscribe	Commit	Active users	Promote
Action	Definition	Identify by unaware audience	Audience members recognize the project name and see it as leading voice in conversations in CH fashion field	Audience starts to seek out and engage with content in owned media	Start direct way of contacting audience members	Will to attend courses, workshops, Events,	Audience ready to become regular	Audience of promoters
	Motivation	Visit Diriyah At-turaif district	Interact with lens effect in TRITA media screen	Send the photo through email	Click on main page link in the mail	Understand the symbolic behind CH dress	Post photo online and tag TRITA	Add main page link in her story post
Front-Stage	Eperience	🚶	📱	✉️	📰	👍	🏷️	🔗
	Touch point		VR				Instagram	Instagram
Back-Stage	SEO Tool		VR		Backlink			Backlink

Omnichannel

Owned Media: Instagram, Pinterest, Twitter, TikTok
Digital Media: ARAB NEWS, DESTINATION, سيدتي, BAZAAR, VOGUE
Partnership
Project Main page

Graph 2# Audience Segment, Persona, Experience
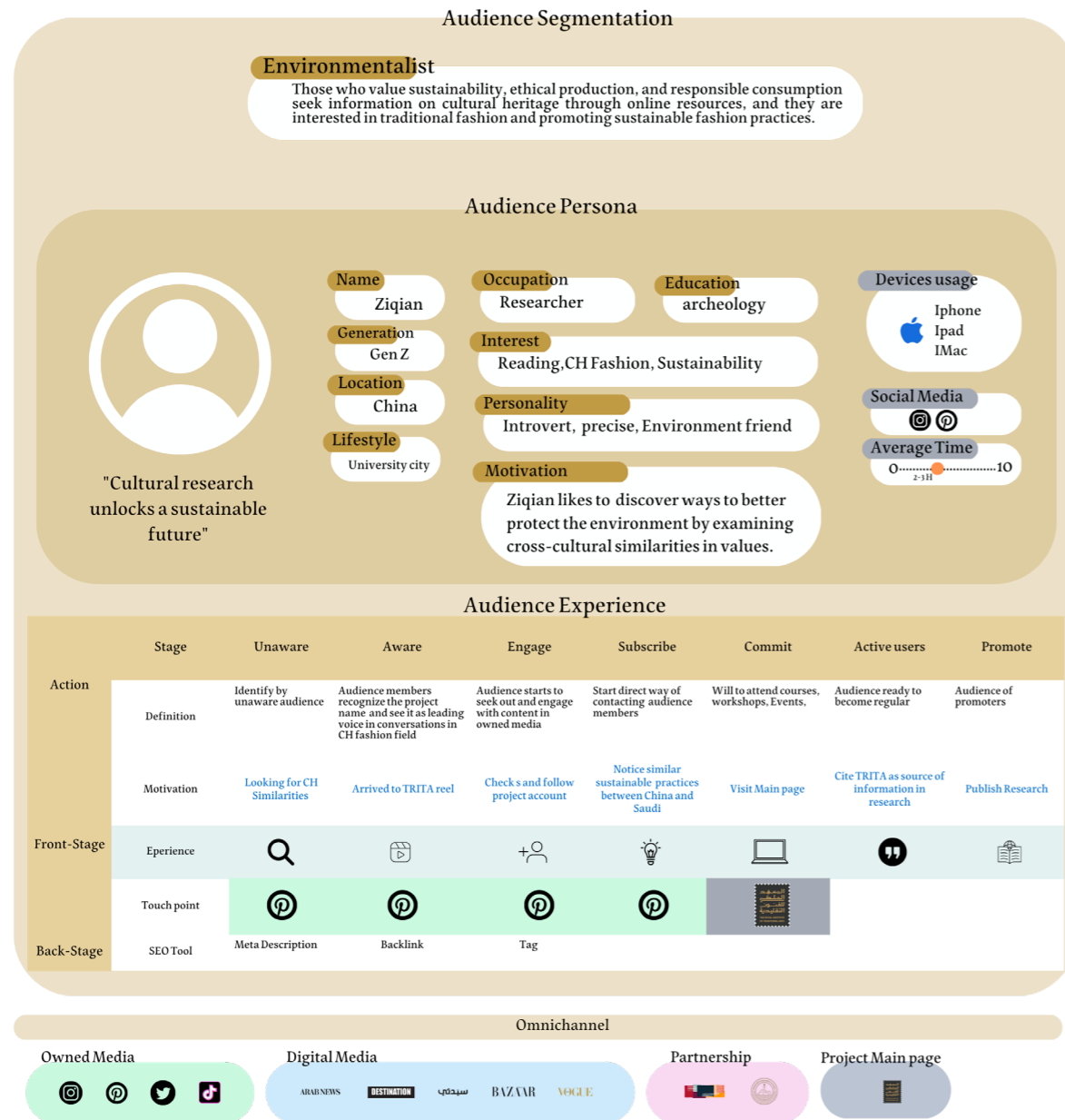
Graph 3# Audience Segment, Persona, Experience

Omni-Channel experience

According to the McKinsey & company, omnichannel is a strategy that provides customers with a seamless and consistent experience across multiple channels, including online, in-store, mobile, and social media. Implementing an omnichannel approach is crucial for delivering customer value and creating a competitive advantage. By providing a seamless experience, customers are more likely to trust and engage with the brand, leading to increased loyalty and customer lifetime value. The article also discusses how companies can execute a successful omnichannel strategy and derive value from it, including understanding the customer journey, leveraging data and analytics, and integrating organizational processes and technology.(Briedis et al., 2021)

◆ **Targeting Tools**
  • SEO Tools

Non-profit cultural heritage organizations can enhance their online visibility and reach by utilizing search engine optimization (SEO) tools (H et al., 2022). With these tools, organizations can implement effective SEO strategies to increase their online presence, attract more visitors, and improve their search engine rankings. Such improvements can help these organizations achieve their objectives and enhance their brand. SEO tools can assist cultural heritage bodies by enabling them to identify the relevant keywords for their website content, optimize website structure and content, and monitor key search engine performance metrics to make informed decisions about website and content improvements. Other than these, SEO tools can also support the organizations in other online marketing endeavors, including social media and email marketing, facilitating audience engagement and growth. (Decker, 2023)

  • Metadata

Ensure using active keywords in Meta description in both languages.

◆ **Project Encounters**

▶▶ Explicit:

1. Official page: TRITA Saudi craftsmanship Archive's

2. Back link: every Collab or article is most including the project link.

3. Project Official Social Media Accounts: Pinterest, Instagram, Twitter, TikTok, Behance

4. Instagram 3d fashion garment lens: Utilizing virtual simulation of garments to create lens effect to enhance different social media platforms' Engagement like Instagram (most used platform for fashion) Pinterest (Fashion visuals are top subject in these platform).

▶▶ Solicit:

1. Facebook Advertisement

2. Digital Webinar: With unfolding strategy company talking about CH fashion and Metaverse

3. International institutions social media

▶▶ Implicit:

1. Cookies: cookies on visitors' browsers retain login credentials, identify customers, and provide insights to more precisely customized experience.

2. Interactive screen in partner space, Diriyah Gate: 3D models can be utilized to create Interactive media for TRITA partnerships like the At-Turaif district in Diryyah. This district allows visitors to tour the evidence of the first Saudi state's birth and witness the style of ancient Najdi and Islamic architecture. It represents a national and international tourism gateway showcasing Najd region's cultural attractions, while also being recognized as a UNESCO heritage and architecture site (Visit Saudi, 2023) A suitable place to present the research sampling.

3. International/ National Digital Magazines:

a. International : Vogue, Harper's Bazaar, Destination KSA, Arabnews.

b. National: Sayidati, Hiya.

▶▶ Unsolicited:

1. Social Media ads.
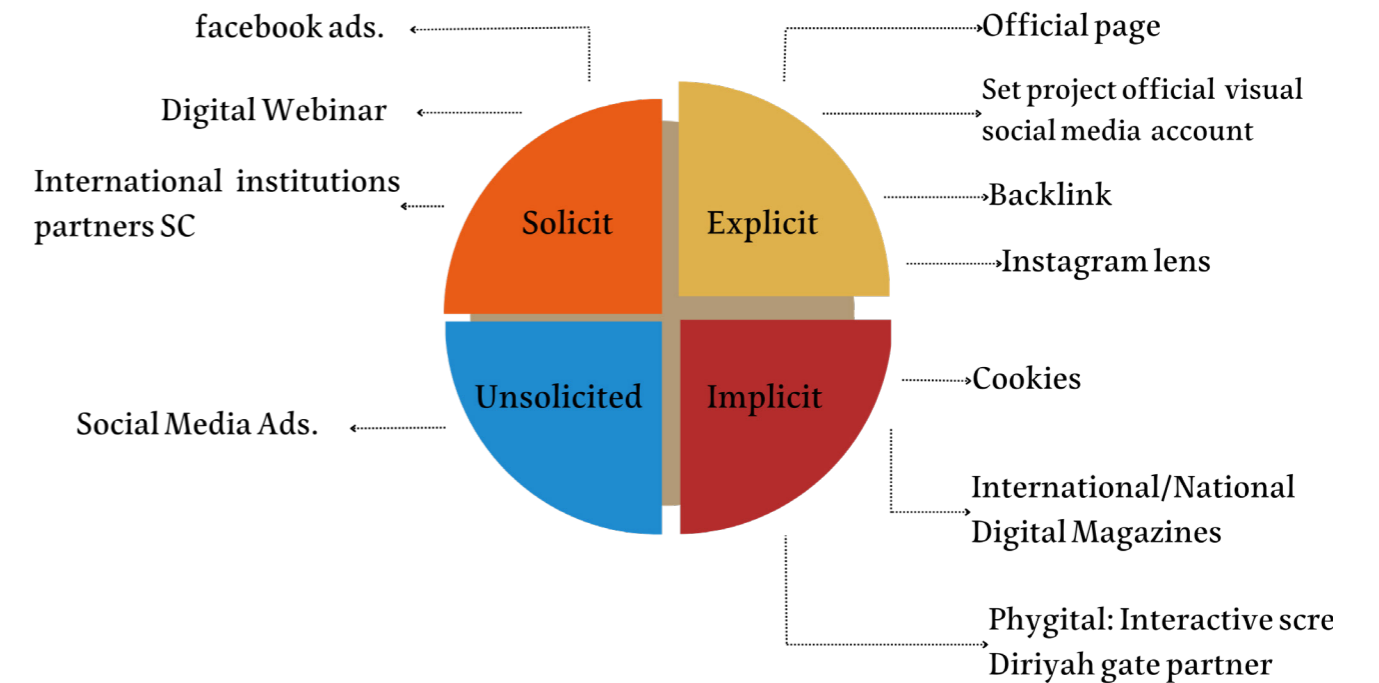
Graph Project Encounters

System

constructing the system started Based on pro-
posing soultions for the challanges mentioned
in the Digital Preservation Policy Framework
by UNESCO, The memory of the World (MoW)
sub-committee. then we initiated our project
business Canva, curated the project process
mapping by linking stages, methodes, technol-
ogies, departments and responsibilties. Last-
ly, we breakdown the system structure using
Work Breakdown Structure (WBS) to provides
clarity and organization.

Introduction

In collaboration with a responsible party for preserv-
ing and promoting culture (TRITA), the researcher trav-
eled to all the sectors within the institute that interact
with digitization projects, such as the communications
department, to learn about the institute's identity and
target audience, and the legal affairs and heritage col-
lege to explore the state of heritage in Saudi Arabia, as
well as reviewing the inventory of memories from the
institute's partners to create a proportional project that
facilitates the information design process.

This process involves collecting suitable references
and analyzing their information in a way that connects
them and helps display them on search engines. Addi-
tionally, the curator focused on gathering information
about sustainability as a value in Saudi fashion practic-
es, peering in mind for any intellectual properties vio-
lation and validate the information's with masters and
expertise, then redesigning them to fit the context size
for the target audience. Re-designing the information
aimed to simplifies understanding of Specialized and
justifying technical information from fashion design
aspect and presenting it in an attractive way using 3D
technology and digital storytelling narration to facilitate
access to the target audience.

System Actions

Overcoming UNESCO Policy Framework Digitization Challanges

To develop a specialized and impactful project that promotes cultural heritage costumes on a global scale, several adaptation strategies have been implemented. The following principles have been considered when building the project:

▶▶ **Preservation Actions**

This project encourages the presence, digitization, and online publication of Saudi and Arabic content online and safeguard it by raising awarness.

▶▶ **Sustainability**

This system is based on variable and adaptable foundations, which can be customized in accordance with the intended direction, which allows for the production of various types of information.

▶▶ **Technology Challenges**

Using industrial fashion production software to digitize the crafting process of ICH fashion. in line with data management elements to preserve information and ease access for both curators/users, and preserve evidence-based storytelling.

▶▶ **Legal framework**

Working with intangible cultural heritage elements provides a space for researcher observation, capture, and interpretation, aligned with activating partnerships with other government non-profit archives, as well as the role of activation and memory protectors associations.

This project encourages the presence, digitization, and online publication of Saudi and Arabic content online and safeguard it by raising awarness.
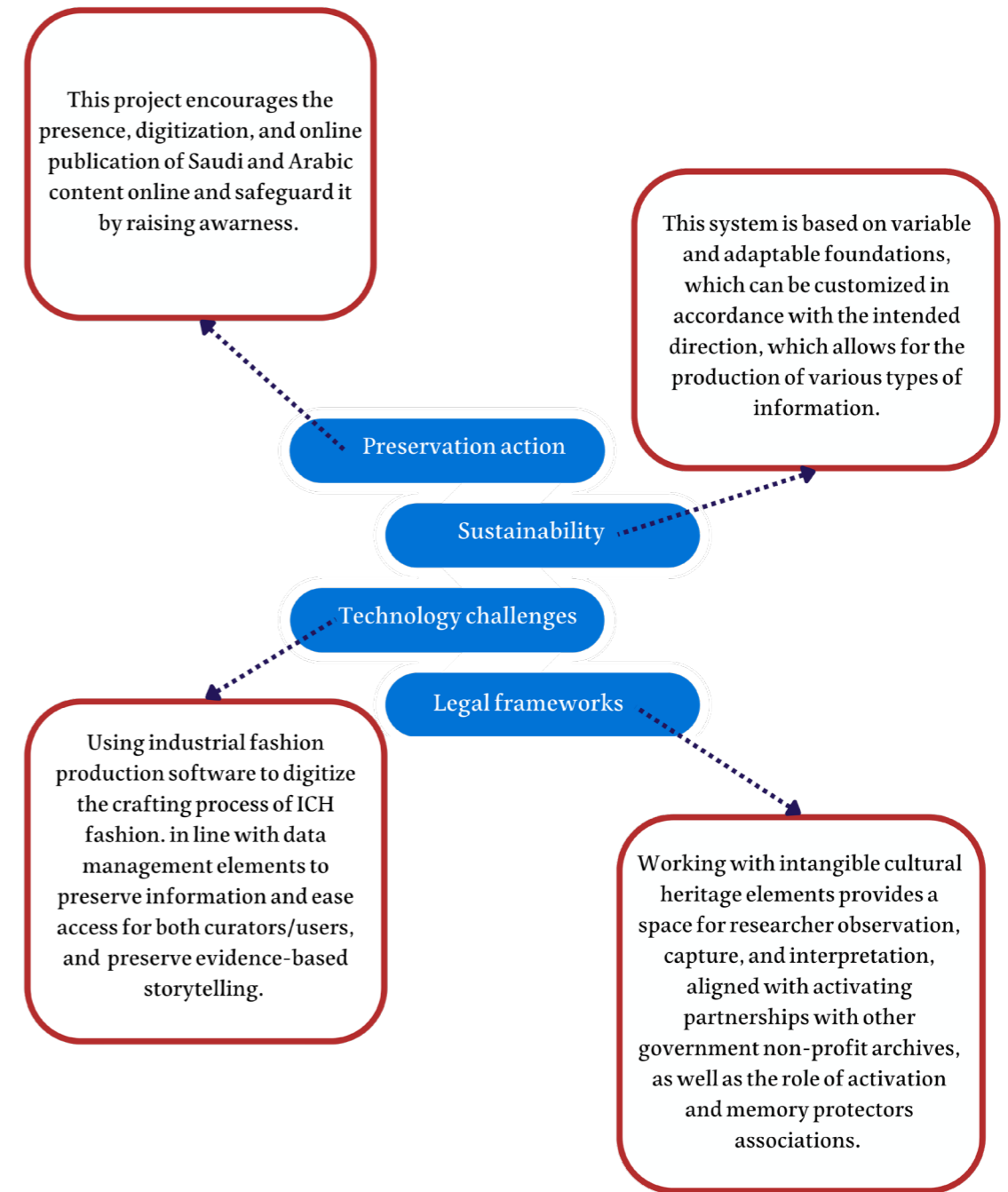
This system is based on variable and adaptable foundations, which can be customized in accordance with the intended direction, which allows for the production of various types of information.

Preservation action

Sustainability

Technology challenges

Legal frameworks

Using industrial fashion production software to digitize the crafting process of ICH fashion. in line with data management elements to preserve information and ease access for both curators/users, and preserve evidence-based storytelling.

Working with intangible cultural heritage elements provides a space for researcher observation, capture, and interpretation, aligned with activating partnerships with other government non-profit archives, as well as the role of activation and memory protectors associations.

Graph 4 Actions to overcome digitization challenges of UNESCO policy framework

Business Canva

The business canvas for a non-profit governmental organization is a strategic tool that outlines key elements for success. It helps identify and define the organization's value proposition, target beneficiaries, key activities, resources, partnerships, and revenue streams. The canvas is particularly useful for planning, aligning stakeholders, and achieving the organization's goals efficiently and effectively.

Partner Network

King Abdulaziz foundation archive

King Abdulaziz Library

Diriyah gate

Digital Researcher/Curator

Key Resources

▶▶**Physical Assets**

Authentic CH garment and Non- digitized primary sources

▶▶**Intellectual properties**

Digitization cultural heritage policies and regulation, Project name, copyrights, beneficier database, Internal library content publishing, CLO3D licences for publish, Partners agreement .

▶▶ **Human resources & skills**

Expertise in CH Saudi fashion ,3D fashion technologies, fashion Technology Education, Digital transformation and data management, TRITA branding and digital marketing and UX design.

▶▶**Financial resources**

governmental support.

Key Activities

Research and analysis archives/ Digitization of ICH fashion / Curating and cataloging digital collections / Creating an online platform/ Marketing and experiences/ Operations and project management/ Developing partnerships/ Developing educational resources and materials.

Value Proposition

▶▶Identify driving values in the crafting process of Saudi CH fashion

▶▶Curate effective system for digitizing Driving Values in the practices of CH Saudi fashion

▶▶Usage of E-commerce tools to reach beneficiaries .

▶▶Establishing an accessible digital point about practices and driving values of Saudi CH fashion on the internet

Relationship

▶▶Project engagement and digital users

▶▶learn more choice with TRITA courses

▶▶project Curator and TRITA expertise communication

▶▶Connect curator with Craft Masters and partnerships

Beneficiaries Segmentation

Digital generations

- Innovators

Cultural fashion Designers, Stylist,

- Traditionalist

Travelers and culture anthustic

- Environmentalist

Researchers interested in sustainability and cultures.

Channles

Direct: Website

Indirect: Social Media channels : Pinterest, Instagram, Tiktok.

phygital : interaction screens with Diriyah gate visitors.

Cost

Technology cost: Storage Cloud software, ClO3d software license, SEO tools.

Project team members salary

Partnerships: Access and accept publishing content fees.

Revenues

Generate Saudi value-driven fashion design thinking

Engage with / Create digital communities

Create interest to safeguard intangible cultural heritage fashion practices.
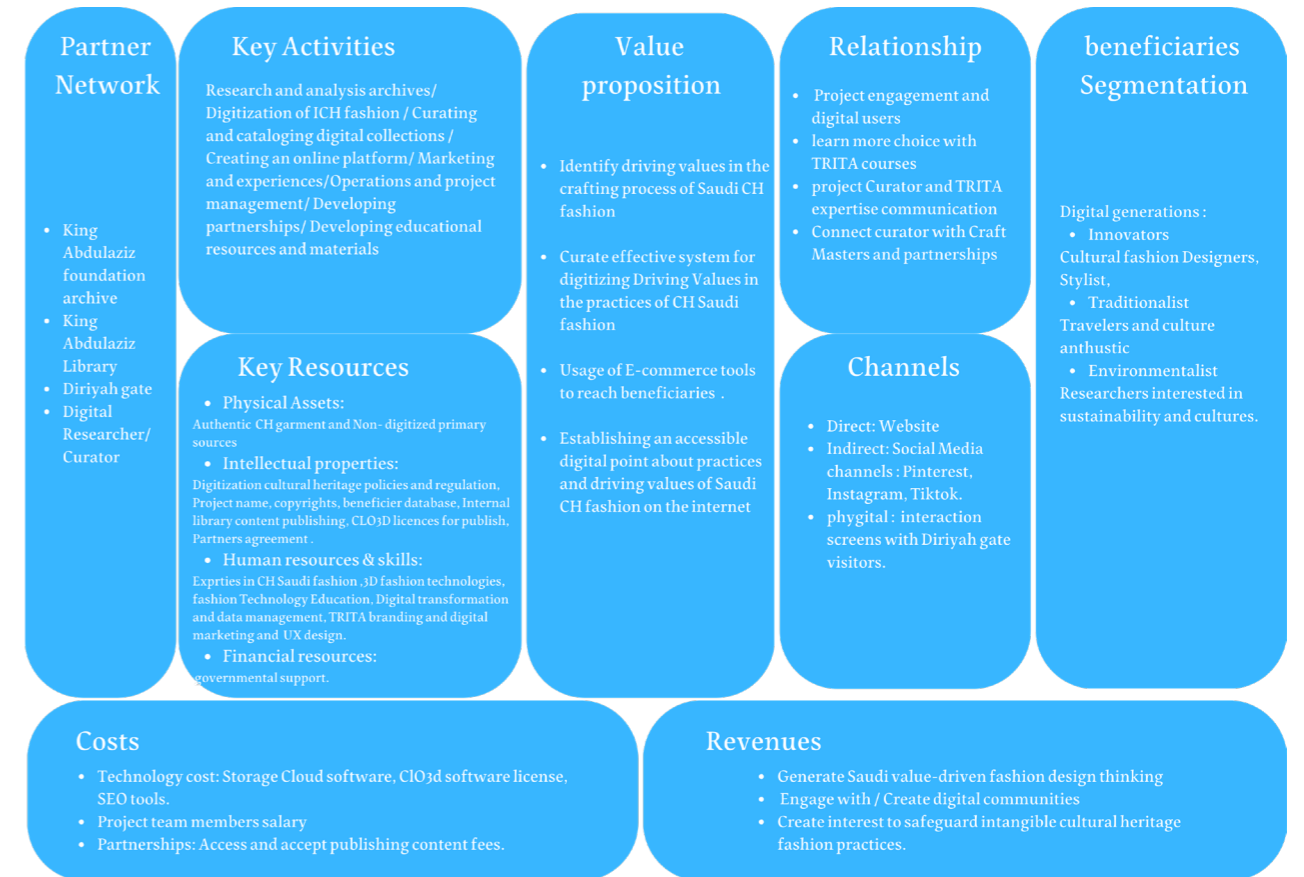
Graph business Canva

Project Process Mapping

Project process mapping visually represents the sequential steps, activities, and interactions in the project's lifecycle. Using flowcharts depict task dependencies, inputs, and outputs. This mapping ensures a clear understanding of the project flow, identifying bottlenecks and improvement opportunities. It aids in planning, communication, and resource allocation, offering a visual depiction of the project's path from initiation to completion.

The project process mapping is guided by the curator in order to create a smooth flow between project idealogy and TRITA. Engaging with TRITA departments in every stage to verify information and ensure alignment with TRITA and verify multiple digitization aspects.

Data Curation and Collection

The process begins with the allocation of information sources from internal library and memory protectors association partners. This is followed by a review by the legal affairs department to ensure no intellectual property violations and alignment with TRITA policies.

Data Analysis

Once the information is verified, the curator analyzes the sources using VRA core metadata standards and a hypothesis that indicates a certain value. The outcomes of this stage are then validated through interaction with TRITA masters.

Data Visualization

After validation, the data travels to data visualization stage where digital transformation of CH information occurs, using narrative and technology tools. There are two paths to take, with four final outcomes:

1. Technology

(i) CLO3D software is used to digitally transfer the crafting process through digital patterns, making it easier to present complex information through virtual simulation of garments and directly deliver content.

(ii) VRA core is used to document key information of the garment, accelerating access and making it searchable through search engines.

2. Storytelling Narrating

Evidence-based storytelling is written using the SGD manual, incorporating Curator writing of data analysis outcomes

In her, the communication department enhances both storytelling and VRA core standard with SEO keywords, the content then moves to the delivery stage.

Delivery of content Stage

In the Delivery of Content Stage, information is delivered in two categories: presentation and representation.

1. Presentation (communication)

For presentation content, there are two components:

(i) Storytelling: The final narrative will be shared with the communication department to ensure it is written in the TRITA narrating style.

(ii) 3D modeling: This component focuses on visually representing the information.

2. Representation (documentation)

For representation, there are two components:

(i) Digital pattern: This component involves delivering the digital pattern.

(ii) VRA core standards: These standards are delivered in an XML file to ensure a smooth transition to the IT department´s software.

After these components are prepared, both categories of content will be submitted to the IT department to be stored directly in the database. The IT department will then embed metadata with the digital assets to make it easily accessible for users and curators of information. Finally, the content will be published in the internal library of the institute.

Activation of data

Once the information is published in the internal library, both the communication and training departments interact with the content. The training department implements the digital pattern in their courses to teach ICH fashion craftsmanship using technology, while the communication department implements the content on the website. Before online publishing, it is important to engage with the curator regarding visualization to ensure the UX experience aligns with the project concept.

Graph Project process mapping
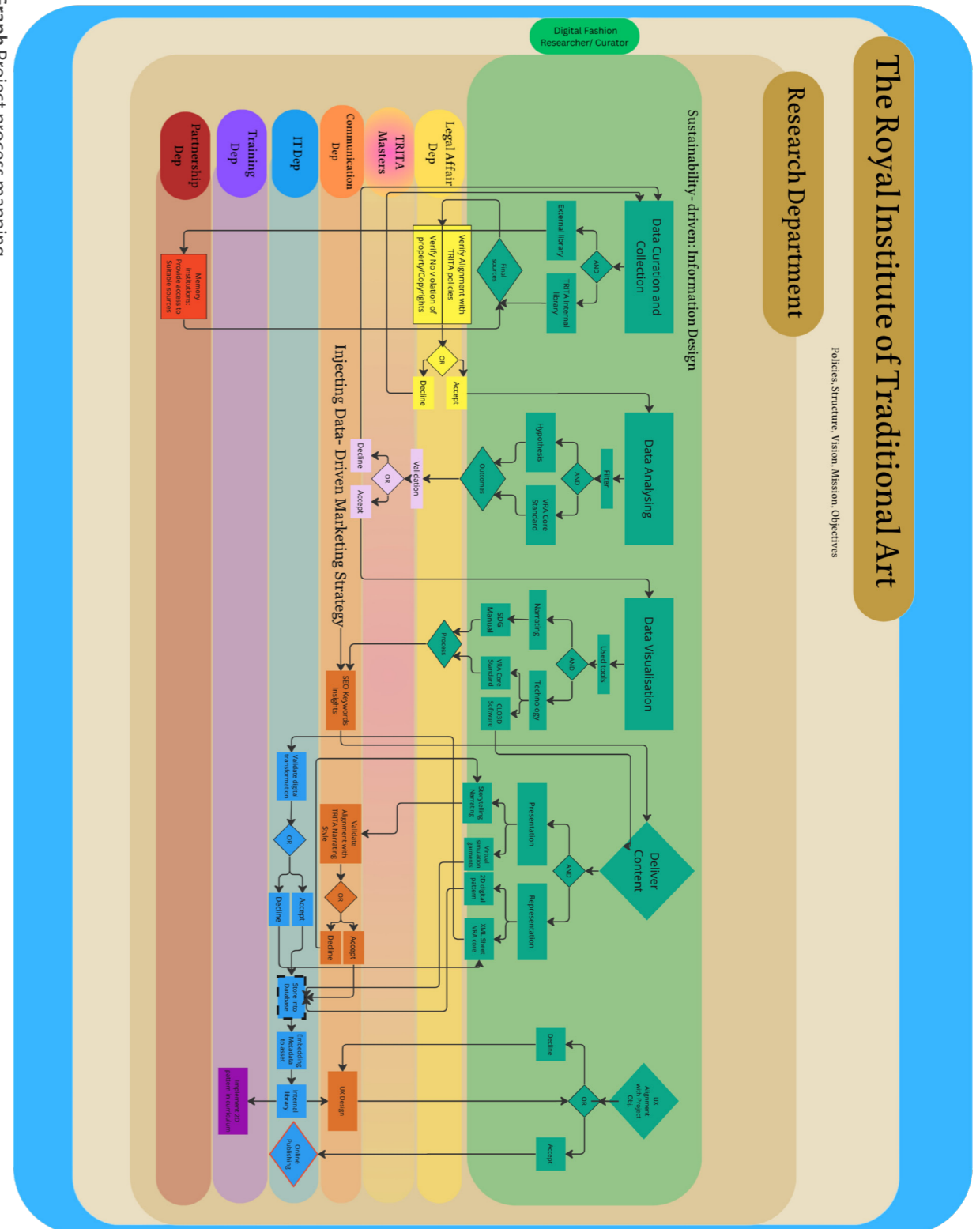
Work Breakdown Structure (WBS)

The Work Breakdown Structure (WBS) is a hierarchical representation, breaking down project scope into manageable components. It provides clarity and organization, visually representing project structure. Tasks and activities are identified, aiding in delegation. The WBS controls the project by defining scope and monitoring progress. It facilitates accurate time and cost estimation. Overall, it is a valuable tool for understanding project structure, planning tasks, and ensuring successful execution.

Project Portfolio placement:

This system has been curated as one of the projects of the Research Department and belongs to the Digitization College in the Institute. The system is established and grows over time through scientific research to ensure the activation and integration of the Research Department with what the digital transformation of the Saudi heritage requires, in order to guarantee the continuity and growth of the project and expand its scope over time.

Responsibilities of the Research Department:

Support Researcher and link with source of information.

Responsibilities of the Digital Research Department:

Approve research and Project Direction.

Project Management: The project is managed by curating CH information and ensuring its compliance with requirements during the information design stages.

- Responsibilities:

1. Guide Value-Driven Information design approach:
- Submitting Final Outcomes of each stage

2. Decision Making of:
- Choose sustainable representation and Accessible presentation technologies

- Align Final UX presentation to project Archetype.

- Choice of SEO keywords

3. Digital Researching:

- Insights on CH Fashion digitization best practices.

- Insights on CH representation technologies.

- Insights on CH presentation technologies.

- Insights on latest Digital fashion Marketing tools.

4. Document:

- CH Fashion to Digital Asset

- 2D pattern

- Evidence of Value-driven practices

- Metadata information

- Storytelling

- Project manager qualities :

A researcher who belongs to the design industry that is being studied, has sufficient knowledge about the CH element, and is familiar with the latest trends in technology, digitization project context , and project management.

Project Team: The team consists of individuals from various departments in the institute to ensure the integration and expansion of the project within the context of knowledge

and cognitive integration, and to add specialization among the institute's staff. Additionally, the presence of a dedicated team that communicates well will have a significant impact on aligning the standards and measurements of different aspects of digitization projects and coordinating the intersection of departments where information is translated into the online publishing phase on the website and usages in the training courses implementation. This is to obtain a comprehensive and compatible image of the harmonious interplay between the project's aspects from various knowledge specialties.

Next, we will list each department, its responsibilities, and the necessary conditions that must be present when choosing a department representative.

Partnerships department:

- Responsibilities: Partners agreement and condition.

- Qualities when selecting a project member: Knowledge in digitization projects corporations.

Training department:

- Responsibilities: Implement Technology in Heritage practices curriculum

- Qualities when selecting a project member: Knowledge in fashion Technology Education and Curriculum.

IT department :

- Responsibilities: Data Management, Data Storage, Embedding Metadata to asset, Validate digital transformation to database, Display info in Internal Library

Qualities when selecting a project member: Knowledge in Digital transformation and data management.

Communication department:

- Responsibilities: Narrating Style of the project, UX Design of the project, SEO Keywords Insight, Omni Channels Experience.

- Qualities when selecting a project member: Knowledge in TRITA branding and digital marketing and TRITA ux team member.

TRITA Masters:

**Responsibilities**: Data Authentication

Qualities when selecting a project member: Master in CH Saudi element

Legal Affairs department:

- Responsibilities: Verify Alignment with TRITA policies, Verify No violation of intellectual property.

- Qualities when selecting a project member: Knowledge in Digitization cultural heritage policies and regulation.

Graph Work Breakdown Structure (WSB)
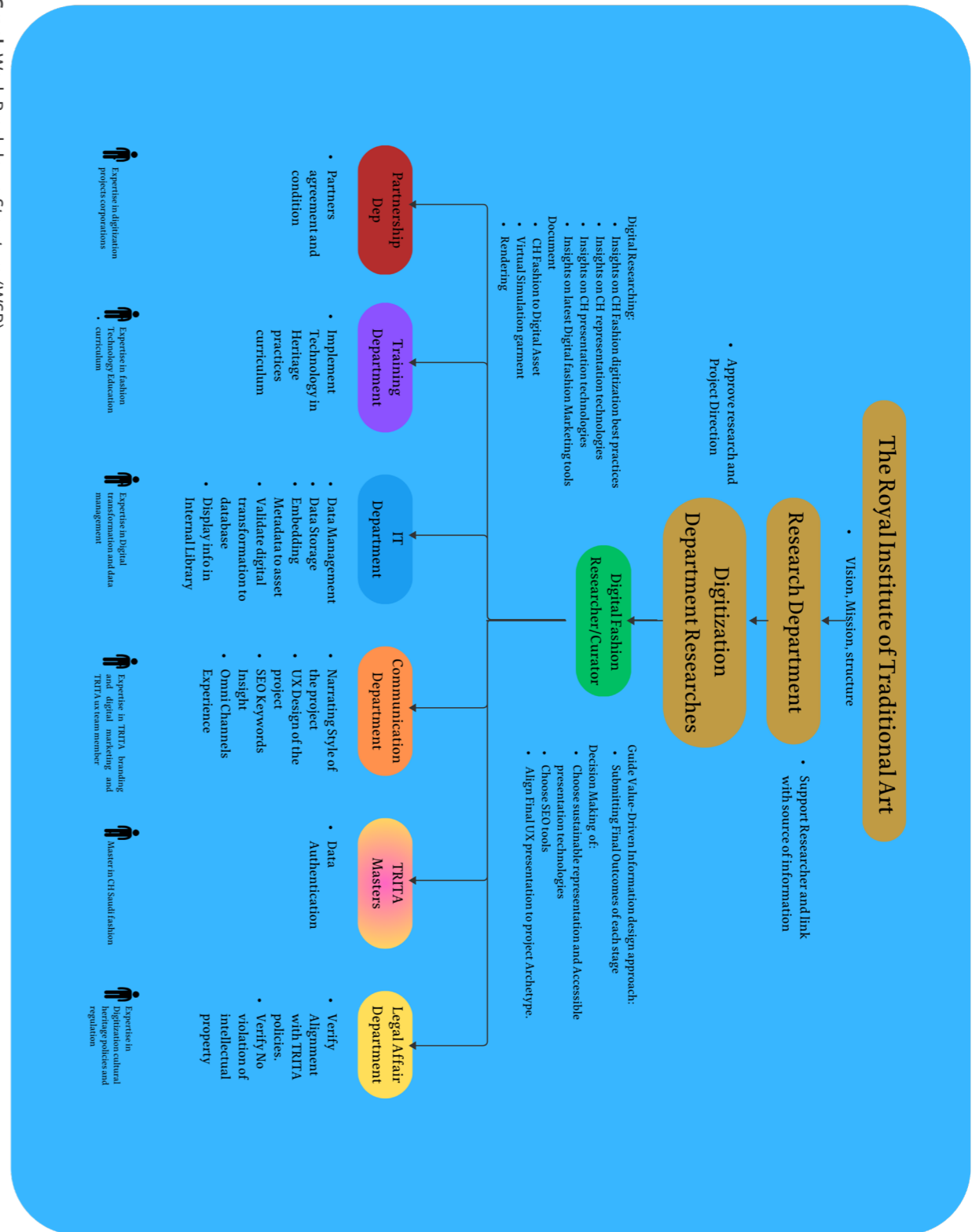
Exploring Al-Miqtaa garment

Sustainable practices in the crafting process

Vev Design platform for UX

To showcase our UX proposal for TRITA, we have chosen to use the Vev design platform. Vev is an advanced and open creation platform that combines the power of no-code and code to unleash creativity. It allows designers, content creators, and developers to work seamlessly in one platform. We have opted for this platform based on its impressive features: (i) Vev allows us to link the web design to existing domains. This is important for TRITA as it will provide a seamless experience for users. (ii)Vev offers a 3D object element, which enables us to add hotspots with additional information that users can interact with. This brings the power of data visualization to UX design, enhancing the overall user experience. For 3D objects, it works with .glb/gltf file formats for 3D objects. These file formats are optimized for mobile and can be viewed almost instantaneously. Additionally, they are the only formats that contain a full PBR shader and textures. We can also integrate 3D objects from popular tools like Spline or Sketchfab, further enhancing the creative possibilities. (iii) having scrollytelling feature which is a web design format used to tell dynamic, multimedia stories that unfold as readers scroll through a website.
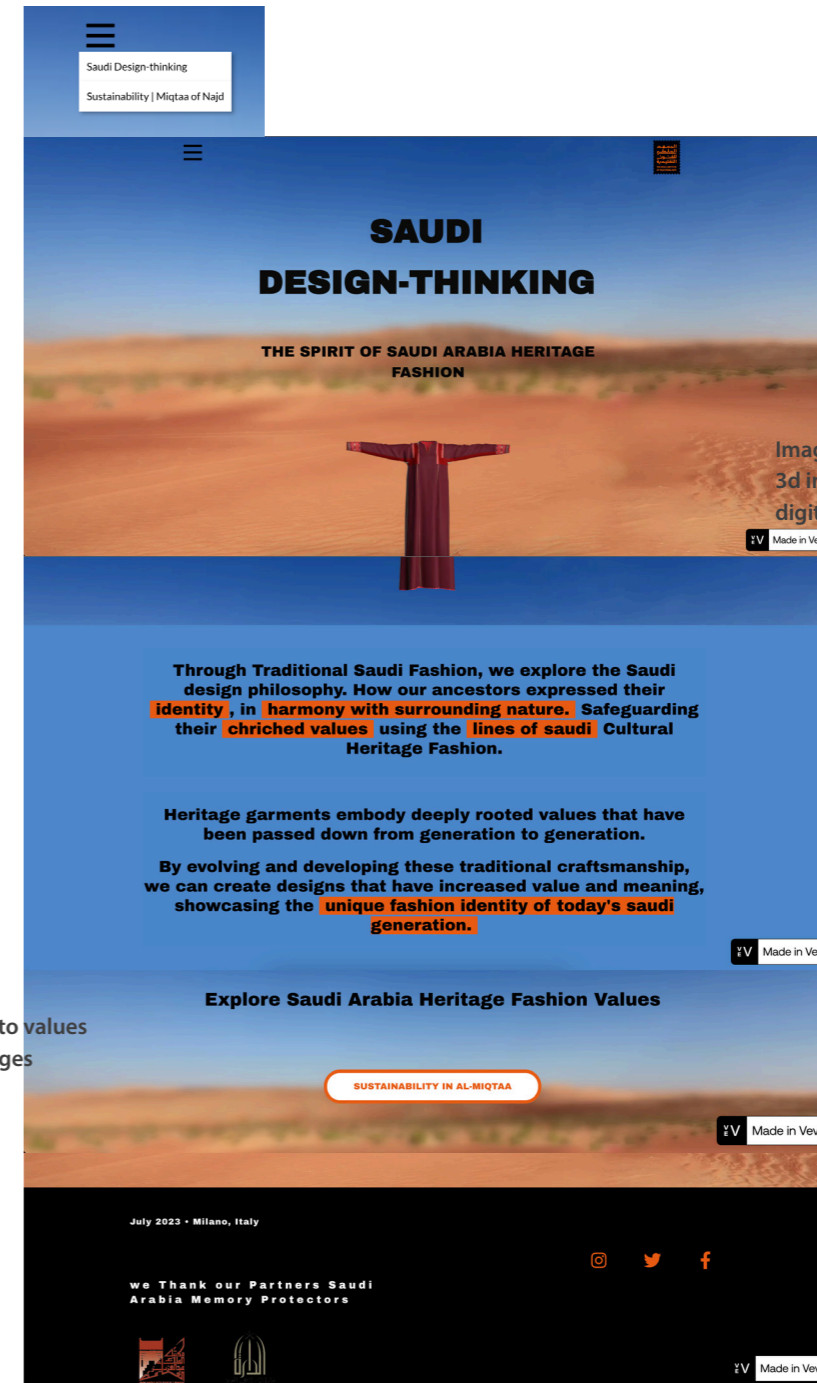

Image slideshow to show 3d images of Saudi CH digitized garments

buttons to go to values conceptual pages

Graph Menu bar, Main page. section 1,2,3,Footer

**Section menu pinned in
the page to move with user**

Graph Sustainability in Al-Miqtaa page section 1,2
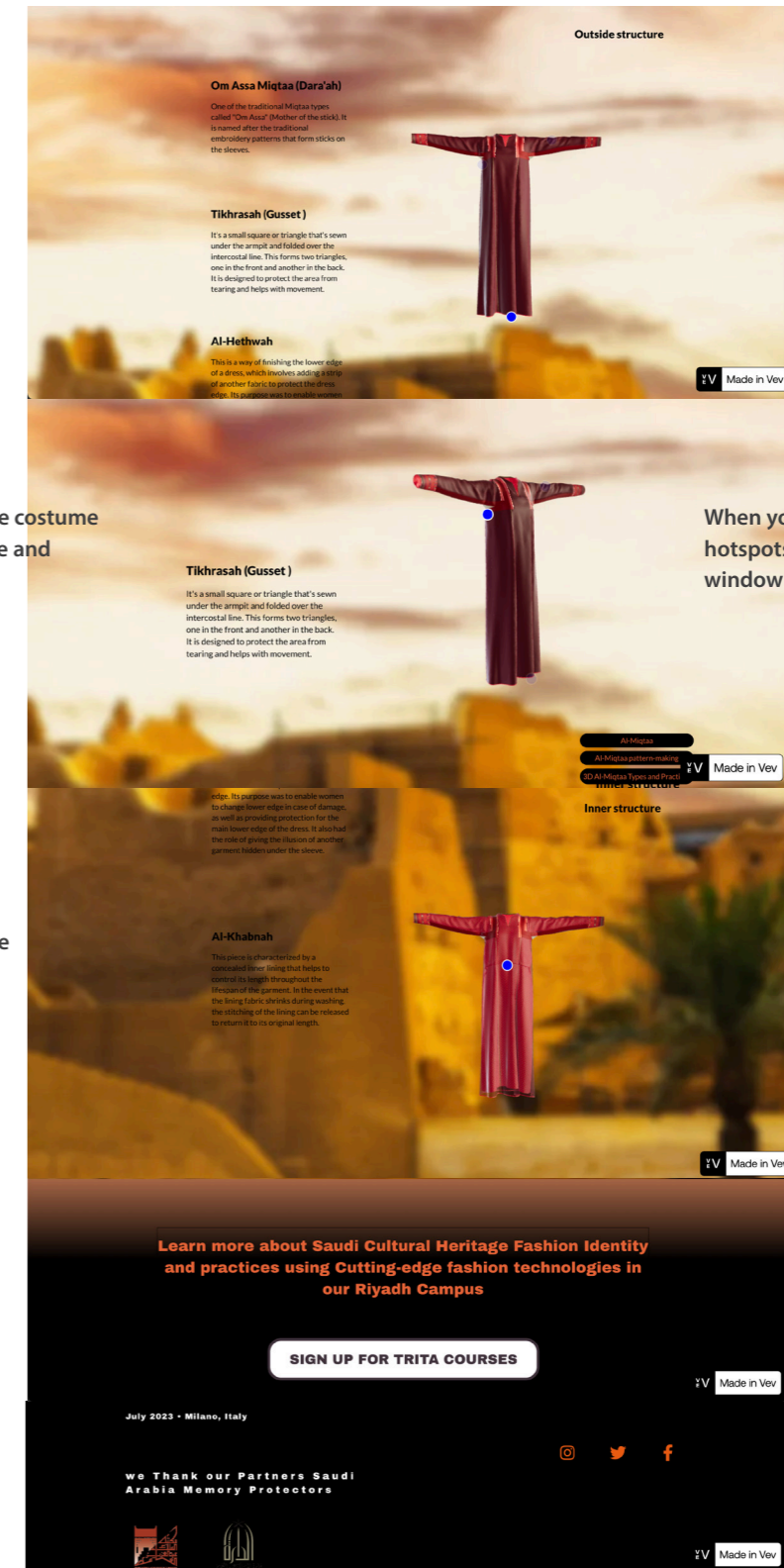
**Here we show the costume
outside structure and
texture**

**When you Click on the blue
hotspots the information
window pop-up solo**

**Here we show the
costume inner
structure and
texture**

Graph Sustainability
in Al-Miqtaa page
section 3,4,footer

Findings

Saudi Nation fashion Branding

The Kingdom has made significant efforts to activate and redefine its heritage. Government initiatives have yielded beneficial results in increasing public awareness of the cultural heritage of different regions and their distinctive traditional clothing through inclusive images. We see the state's interest in reinvigorating its heritage by highlighting it in national and international events such as Founding Day, which is a domestic event, and the Saud Cup for horses, which is an international event. Information on traditional attire is generally presented in a broad, distant manner and there is a need to bring the people closer to detailed information and redefine traditional clothing in a manner that facilitates technical, visual, and comprehensible access to information. To complete the circle of heritage preservation and achieve stronger results in terms of authenticity in Saudi designs.

Digitization projects

The researcher determined that heritage digitization projects vary in their objectives, the condition of the heritage, and the type and policy of the responsible organization. There is a degree of freedom in selecting the format and representation method of the project, while adhering to the digitization project standards in order to preserve authenticity, consider intellectual and legal rights, and utilize technology that properly preserves the type of information for to ensuring project sustainability.

Sourcing Saudi CH fashion online

The researcher found that the available information online does not focus on the values and reasons behind the designs and lacks information that can be relied upon for digitizing traditional clothing and grasp new generation interest.

CH Fashion of Saudi Arabia Attributes

Saudi CH fashion has its own unique story that distinguishes it from other global traditional attire that is beneficial to generate authentic evidence storytelling through primary documentations.

Information design as Methodology for digitizing and promoting heritage

One of the research findings is the possibility of digitizing information on ICH Fashion by redesigning the information. This allows the digital fashion research to highlight design lines, preserve digital patterns, and control scenarios to direct the targeted audience

Sustainable design-thinking in the C H fashion of Saudi Arabia

The researcher was able to prove the theory of sustainability value in ICH fashion of Najd Region. the CH fashion has features and practices that are sustainable because they originated in an economically and environmentally challenging environment. This was the result of the analyzing stage and been verified through the open Interview with Dr. Laila AL-Bassam. She is an expert of cultural heritage fashion and first to collect and document these artifacts. She also indicated that most Cultural Heritage fashion of Saudi Arabia has a sustainable design-thinking approach, and it deserves to be studied in depth.

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