JOURNAL of DESIGN THINKING

Assessment of Empathy in Design Thinking Model: A Case Study of Ghanaian Design Company

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DOI: 10.22059/JDT.2023.364812.1101

Received: *4 September 2023,* ***Revised:*** *3 October 2023,* ***Accepted:*** *3 October 2023.*

Abstract

Design thinking recently has become the model employed in solving difficulties and improving products and services in design companies. It is known to be user-centric or human-centric which explains how empathetic it is in its design approach. However, it has been observed that even though design thinking is practiced by Ghanaian design industries, the exploit of empathy is not reflective in various design companies in Ghana, hence a case study to investigate how design companies empathise in their design thinking processes. As a qualitative study, case and participatory research methods were employed using unstructured interviews and participant observation as data collection methods. From the study, it was revealed that 4Heem Apparel similarly practices the traditional classic design model where empathy is employed at the initial stages of design thinking. Even though it does not affect the quality of design, it sidelines the interest of clients and their involvement in product quality hence affecting its innovative product design. It was therefore suggested that; Ghanaian design companies can be more innovative if they will empathise more with their clients in their design thinking processes.

Keywords

Empathy, Design Thinking, Design Process, Design Company, Innovative.

Introduction

Design thinking and innovation are among the top techniques in today's dynamic and competitive corporate environment used to address issues or difficulties and improve service delivery, ground-breaking product design, and sustainable growth. Wyman et al. (2012) assert that the discourse surrounding design thinking promotes creative, team-based problem-solving that advances the investigation of potential avenues for the creation of original products and services as well as enhanced organizational business operations. Design thinking is revealed as a user-centered strategy to novelty that is based on comprehending client demands, quick prototyping, and coming up with original ideas. It revolutionizes how goods, services, processes, and organizations are generated. It compounds what is desirable from a human perspective, feasible in technology and viable economically (Raju, 2022).

Deitte and Omary (2019) confirm that empathize, define, ideate, prototype, and test are the five iterative effective design thinking process stages. Design thinking's primary tenet is empathy for the user experience. This aids in defining the proper issue so that the proper remedies can be created. As we advance, design thinking offers a potent process and a growth mentality to support the creation of innovative solutions.

Carmel–Gilfilen and Portillo (2016) demonstrates how consciously adopting a mindset that prioritizes empathy throughout the design process delivers a headway in design thinking that fills the vacuum created between *good design* and patient-centered care.

According to Woodcock et al. (2017) in order for designers to go beyond the purely utilitarian components of design, a better understanding of consumers is required. There is a higher demand for more empathy in codesign activities since empathy has been identified as a crucial talent by practicing designers.

It is suggested that empathy has evolved into a design dogma instead of a valid criterion for assessing the worth of design remedies for specific end users and components of their experiences. Considering its applicability, considering how embodiment's role in generating empathy has a lot to offer both philosophically and practically (Heylighen & Dong, 2019).

Design companies in Ghana are gradually introducing and developing design thinking into their business landscape for solving problems to ascertain innovative outcomes. Even though there have been numerous pieces of research on design thinking on some Ghanaian companies according to (Voeten, 2016; Sekyi, 2020; Okai-Mensah et al., 2021; Marful et al., 2022; Kanagat & Laford, 2023), there is not enough evidence to assess how empathy as the pivot factor in design thinking is being implemented in Ghanaian design companies. Empathy as illumed by Carmel–Gilfilen and Portillo (2016), Woodcock et al. (2017), and Heylighen and Dong (2019) thorough transition in the design thinking process is of great benefit to the company to fill gaps and produce practical results.

Therefore, the study seeks to study 4Heem Apparel – a Ghanaian company to identify its operational design framework and to assess how Ghanaian companies empathise with clients. 4Heem Apparel was established in 2014 in Kumasi producing branded t-shirts nationwide targeting the Christian community as a niche market.

Literature Review

It is imperative as part of the study to assess the extent to which design thinking is connected to empathy. Again, the discussion of existing theories or models related to empathy in design processes and to highlight studies that examined empathy within the design context.

Definitions of Empathy

The basic principle of human-centered design process is empathy. Within the frame work of the design challenge, the effort made to understand people is known as the empathise mode. This is employed to understand people's motivations for doing things, their emotional and physical requirements, their worldviews and the things that are relevant to them (Spencer, 2022).

In a similar vein, empathy is the capacity to experience another person's feelings. It is the cornerstone of a human-centered design process, which aims to better serve people by understanding them on a deeper level (Stevens, 2021).

According to Prinz (2011), empathy is the process by which we feel the emotion that we think another person is thinking. Frequently, this is based on assumptions drawn from what we see in another person or what we think will be their response to circumstances outside of their control that usually result in that emotion.

The awareness of the emotions and thoughts of another individual is the essence of empathy. The relationship between oneself and others is a crucial component of emotional intelligence since it empowers us as humans to recognize what others are going through as if we were experiencing it (Hirsch, 2007).

Cherry (2023) also proposes that empathy is the capacity to sense what other people feel on an emotional level, see things from their viewpoint, and put yourself in their position. In essence, it involves placing yourself in the position of another person and experiencing their feelings.

It is recommended that several interconnected arrangements of empathy be used as a technique to increase prospects of comprehending users' experiences while keeping in mind the potential impact of designers' innate attitudes. These results provide a new viewpoint on the type, scope, and character of co-creation. A plan for improving design instruction to promote social inclusion and participatory design may be formulated with the use of this experience (Ho et al., 2011).

How Empathy is Used by Designers and Users

An interesting sanitation team (WSUP) in Kumasi, Ghana, used human-centered design approaches and the design thinking philosophy to approach urban sanitation from a fundamentally different perspective. They empathised with residents of low-income neighborhoods about what kind of restroom facilities they needed and came up with commercially viable solutions that actively drive demand (Okyere & Diko, 2022).

Holt (2011) argued that the current shift to empathy-based design, also known as user- or human-centered design, was proposed to be explained by the use of two new, unrelated terms, *absorption* and *theatrically*, and that empathy can be the source of what can be called *tactical* design.

Rijn et al. (2011) explain that direct interaction builds empathy with users among design teams and has a favorable impact on the quality of the product concepts they develop, according to a comparative study that examined the impact of various information sources on design sessions for product concepts for autistic children.

In a study, Lewis et al. (2017) argue that the foundation of the design thinking technique is developing empathy for others. and that such abilities are only required in this world to overcome inertia and find novel methods of value creation that will have favorable social repercussions.

After conducting a poll of students enrolled in an international, multidisciplinary design thinking course, Surma-aho et al. (2018) says that empathy has gained more attention since engineers must comprehend end-user demands to create new solutions.

Haag and Marsden (2019) are of the view that empathy is regarded as being crucial for user-centered design, hence design education needs to take this into account. To overcome egocentric design approaches, that is, to relate to consumers who are different from the design team, empathetic involvement is thought to be particularly crucial.

The empathetic formation compass, according to Smeenk et al. (2019), deepens and expands past work on mixed views with particular dimensions and outlines variables that encourage empathy from a more contextual design standpoint.

It is opined by Stevens (2021) that designers use empathy to truly see through the users' eyes to gather real insights about the user. It requires designers to identify the user needs and behaviors that are latent or unarticulated. It is employed to direct the focus of designers towards the feelings of users on a product and their motivations in certain situations.

According to a study by Shé et al. (2021), the design thinking methodology can be applied by instructional designers to encourage empathy with their pupils. This will ensure that they are completely focused on the course's learning objectives and are able to accomplish them.

Once more, design thinking and innovation have given SMTEs in Ghana diverse ideas are employed to identify the fundamental issues that have been discovered and defined as human-centered, according to a study by Abraham et al. (2022). With the least amount of work, this method will give customers the tools they need to address problems on their own.

According to Bahirat (2022), comprehending users enables designers to address challenges and recognize concerns that clients might not be aware of. Empathy is utilised to uncover hidden problems and is used as one of the greatest strengths of design thinking.

Subsequently, it is noted that the foundation of the design thinking model is based on users' or clients' satisfaction. Chang-Arana et al. (2022) unearth that integrating psychological aspects of design empathy can aid in conceptualizing empathy from a new perspective, providing intriguing new directions for further study.

Kanagat and Lafond (2023) unearth that by Community Benefits Health (CBH), the application of design thinking enhanced community acceptability of particular components of the pilot exercise that was done. It also had an impact on how communal structures, such as government and customary festivities, were used to motivate members of the neighborhood to achieve the reward through empathy.

From the literature gathered, it is explicit that empathy has a strong connection with design thinking in various dimensions of exploits. It gives the opportunity to appreciate people in relation to design challenges. It helps to create meaningful innovations about the physical and emotional needs of clients or users. In summation, empathy is the bedrock of design thinking as it creates a serene atmosphere for designers and users to co-exist on a platform of understanding and involvement where the former seeks to satisfy the latter in terms of product and service delivery.

Methodology

A qualitative research approach was chosen for the study coupled with a case study and participatory research methods as the research design. Bhandari (2023) in a revised statement states that to learn more about ideas, opinions, or experiences, qualitative research collects and analyses non-numerical data (like text, video, or audio). It can be used to discover intricate details about a situation or to come up with new research concepts. The study retrieved primary data gathered from text, recorded audio and video to better understand the operational design framework of 4Heeem Apparel thoroughly and to trigger new study ideas.

De Vaus (2001) postulated that a case study research's unit of analysis might be any one of these: a person, a family, a household, a community, an organization, an event, or even a decision. 4Heem Apparel is the design company or organisation chosen as the unit of analysis for this case study. 4Heem Apparel is well established design company noted for printing t-shirts and souvenirs popularly for Christian communities in Ghana.

In its participatory research approach, this research involves a variety of methodologies and an ideological viewpoint. It's essential tenets are that the study subjects participate as cohorts in the process of enquiries and that their expertise and capacities are acknowledged and valued (Vaughn & Jacquez, 2020).

The entire 4Heem Apparel manufacturing loop i.e., from the manager, secretary, designers, employees, and customers were fully included in the process of inquiry, and their knowledge and skills are strongly recognized in the context of the study.

Subsequently, unstructured interview and participant observation was used to gather relevant data from the participants. It is revealed that interviews with few inquiries are termed informal conversations used by researchers to develop a bond and ease with participants. This approach is efficient in handling delicate issues and requires multiple rounds to gather rich, in-depth information (Qamar, 2023).

The study employed unstructured and participant observation methods to develop the confidence, rapport and trust of participants to give rich and in-depth information for the study. It was identified as a form of conversation to create a serene atmosphere between the researcher and the participants. It is further elaborated that unstructured interviews are recommended for long-term, allowing respondents to express themselves freely without control, resembling controlled conversations skewed towards the interviewer's interests (Corbin & Morse, 2003; Gray, 2021).

Musante and DeWalt (2010) argued that the method of participant observation entails a researcher watching a group of individuals as they go about their daily activities, rituals, interactions, and events in order to study both their open and hidden cultural practices. George (2023) buttresses that participant observation is a study technique involving researchers in a social environment, monitoring participants' behaviours, interactions, and routines to understand their experiences. The researcher by this qualitative research tool learned about the daily activities and design processes routines of 4Heem Apparel for a substantial amount of time. It assisted the researcher in gaining practical experiences to appreciate the new technologies and materials that are employed in t-shirt printing.

Mazhar et al. (2021) emphasize the importance of data collection in research, as it is crucial for investigating problems and is a basic tool in the research process. In the context of the study, a mobile phone was utilised to collect data in audio, pictures and video formats from the design company to be transcribed and analysed.

Interestingly, Seifert et al. (2018) conclude that smartphone-based mobile data gathering offers distinctive and creative opportunities for researching people and processes in real-world settings. Despite its difficulties, it gives researchers the benefit of obtaining real-time reports from individuals in their natural surroundings. Smartphones are recognized as smart data collection devices and as possible research tools in the future.

Aftermath of collected data is its analysis which will assist the study deduce its findings for future discussions. Significantly, Pedamkar (2023) proposed that the method of routinely assessing and compiling interview transcripts, observation notes, or completely unique non-textual materials that the investigator acquires to more fully understand an incident is known as qualitative data analysis.

Kaluza (2023) in his latest review illumes that the major narratives from each of the individual tales of a research group are interpreted in narrative analysis, a type of qualitative data analysis. First-person narrative helps the researcher understand how the subjects felt about something by collecting and organizing the data.

The study utilised narrative analysis to explicate information provided by participants at 4Heem Apparel which included the general manager, secretary, designers, employees and customers. This assisted the researcher to comprehend each participant's involvement and experience in the design processes of the company.

Analysis and Findings

The following paragraphs reveal the data that was retrieved from the 4Heem Apparel design company through unstructured interviews and participant observation methods. The interviews and observations were recorded on a mobile phone which was transcribed for presentation and further discussions in the study.

In this case, a manager, a secretary, a designer, four employees, and 30 clients were interviewed as the population of the study. It must be noted that the information provided was not under any compulsion but of free will for the betterment of the study.

According to the manager and the secretary, 4Heem Apparel started as a co-partnership business in 2010 but was reborn as a registered sole proprietorship company in 2014. It is known nationwide for its unique Christian clothing brand. The company started to design, print and sell t-shirts inscribed with bible quotations as part of their gospel ministration in the Christian fraternity. This production and market target of 4Heem Apparel to date.

Figure 1: *4Heem Apparel Christian Branded T-Shirts.*

Significantly, the company has advanced in technology as far as printing machines and materials are concerned. T-shirts of different fiber content are printed at 4Heem Apparel including cotton blends (cotton/polyester, cotton/lycra, cotton/silk), silk and polyester materials.

Carousel screen-printing machine is the equipment employed for printing purposes with oil-based and water-based inks. The company also produces souvenirs with different printing techniques like sublimation printing and digital embroidery etc.

In its new technology of printing, the company boosts flock printing, direct-to-fabric/film (DTF), Vinyl, and direct-to-print (DTP). However, transfer paper print is said to be relegated in the t-shirt printing business since the inception of DTF, DTP and flock printing methods. According to the employees, direct-to-film and screen printing is the latest printing innovation of the company as this gives a better printing outcome and effect on t-shirts. Additionally, it improves the fastness properties of the inks after the curing stage of the design process.

The Design Processes of 4Heem Apparel

This stage interview was conducted with the manager as the source of the production line, the clients, designers, and the employees. The following paragraphs reveal the outcome of the interview.

It was unearthed that before a design is produced, the client has to provide the company with a design brief or information about how he or she wants the design to be. Sometimes if the client has an existing image or concept, it is worked upon to suit the printing setup of the company which is quite easier in this context.

However, if the client only has a brief in text, the design team which comprises the manager and designer has to research, brainstorm and conceptualise the given brief into design sketches. The sketches are furthermore refined to a state known as *comprehensives*. These comprehensives are the final design layouts normally in two concepts which are presented to the client for selection and possible suggestions and corrections. Once the design comprehensives are finalised and selected by the client, the work is color-separated for screen development. After the screens are produced from the darkroom, it is prepared for printing in the printing chamber. The carousel screen-printing machine is employed to print the t-shirts.

Figure 2: *Carousel Screen Printing Machine.*

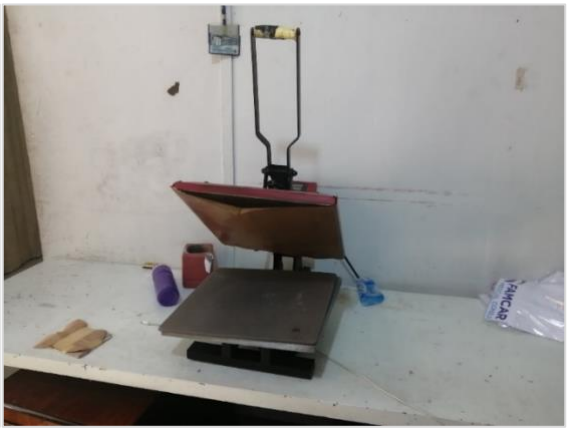

Figure 3: *Heating Pressing Machine (Curing).*

However, before the actual proper printing begins, a test print is done as a sample to check the technicalities of the design in relation to line thicknesses, color schemes, visibility, legibility etc. To an extent, it is modelled for further appreciation and criticism before the actual printing commences. After the actual printing is completed, the t-shirts are cured with a heat-pressing system to finish the product and ready for packaging and delivery. According to the production team, a t-shirt print is only tested when there is a supply of a new product or material. In such cases, vigorous tests like stretch test, wash test and heat test are conducted to authenticate the feasibility of the paste/ink and the t-shirt material in question.

The researcher raised a concern on why the company does not produce t-shirts prototype for customers' appraisal. It was explained that the cost of prototypes is expensive and time-consuming and therefore, the company always advise clients to avoid such extra costs but guarantee the quality of the print or design concept as exhibited in the comprehensive stage. However, the prototype is produced if a client insists or demands for it at their own cost. Unfortunately, there is no apparent test conducted on printed t-shirts as the company is always convinced about its product quality. Clients are also always trustworthy of the company's reputation to deliver the best in terms of quality so there is no demand for product tests in the company.

Figure 4: *Finished T-Shirts Prints Ready for Packaging and Delivery (Field Data, 2023).*

When questioned about instances of rejected goods, it was unearthed that these are rare cases of the company. It was revealed that it has never experienced such cases in the last five years. Admittedly, such recorded cases were due to miscommunication (especially in t-shirt sizes and numbers), printing defects and misinformation. However, these are resolved by reprints and mutual understanding between the company and clients. As far as total rejection of products is concerned, the company have not recorded such incidents.

The operation framework of 4Heem Apparel is presented in Figure 5. This framework summarises the company's operations.

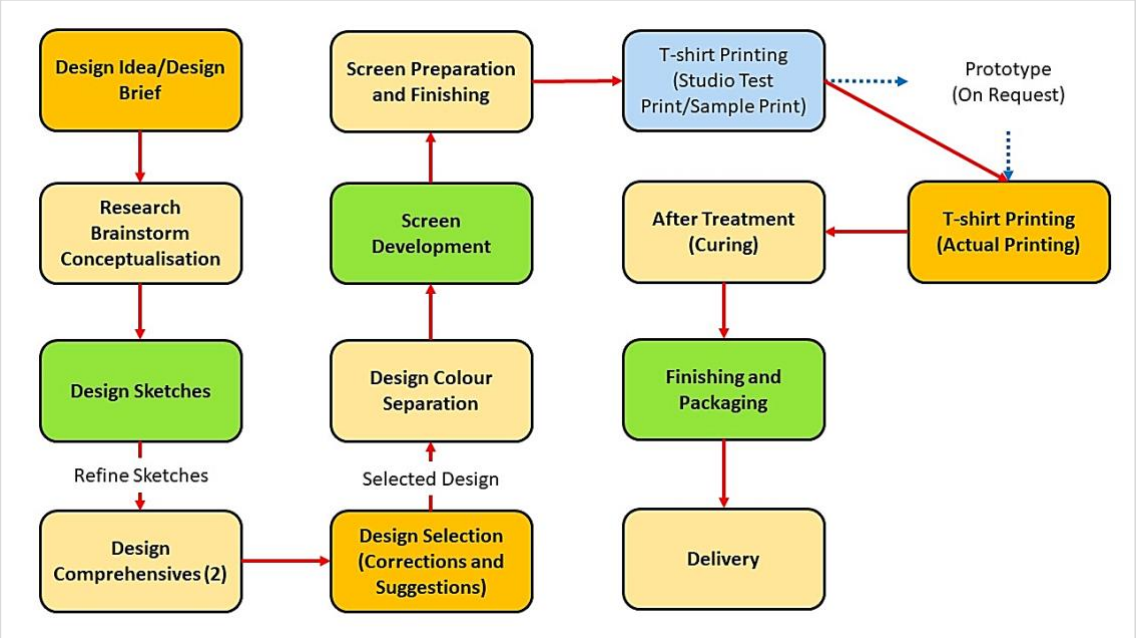

Figure 5: *4Heem Apparel Operational Framework.*

Discussion

Design thinking, according to Connor (2019), is a collaborative, non-linear approach that is wholly human-centric and enables the exploration of numerous solutions to a single problem swiftly and effectively. It enables the entire workforce, not just designers, to challenge methods and come up with a variety of potential solutions.

From the case and participatory study conducted, 4Heem Apparel design company does not explicitly follow an iterative design thinking process but unconsciously empathises with clients as the first step in design thinking processes. However, from the narrative and inductive analysis of the study, it can be deduced that 4Heem Apparel has an elaborative or extended approach design thinking process which does not follow the linear, cyclical or iterative model of design thinking.

Initially, the company empathise with clients from the design idea or design brief stage where clients present the design challenge in an audio or text communique. At this stage, the company make an effort to understand the way clients want things to be done and their conceptual needs about the t-shirt design for a particular event. This step by the company explicitly reveals de meaning of empathy as propelled by (Prinz, 2011; Cherry, 2023).

Subsequently, the design brief is taken through research and brainstorming to define or craft a meaning and actionable statement to the design problem. At this stage, the company begins to identify elements that can be used to address and give insights into the t-shirt designs.

When the elements are defined and gathered, it is imperative to generate the broadest range of design possibilities for the problem. At 4Heem Apparel, the defined elements are utilised to create design sketches which are further refined to suit the ideation stage of the thinking process. This stage gives the edge to create a variety of design ideas for clients to select and simply find a design option.

Interestingly, the company really does a good work at the prototype stage in soft copy and hard copy modes of t-shirt designs. Furthermore, it is at this stage that the company again, practice empathy as a good design thinking process. The refined sketches are converted into comprehensives which are presented to clients to observe and make a design choice. Clients are free at this stage to make suggestions and corrections to the design comprehensives to suit their design preferences.

However, a product prototype is rarely produced by the company because of the costs involved and the company normally advise clients to avoid such costs but assures the quality of print outcome as identified in the chosen comprehensive. But it is produced for clients who insist on demand or request.

Product testing proceeds prototyping to assess the product's feasibility and desirability. As postulated, always test as if you are wrong, but prototype as if you are right since testing gives you the ability to enhance and refine your solutions. At 4Heem Apparel, a sample print of the design is produced to assess the final design outcome before the actual consignment is produced. This further proves the relevance of design thinking as a cost-saving venture for design companies as stated by Dijakovic (2023) in the latest update that utilizing the tools available to designers, design thinking prioritizes the needs of the client, thereby saving time and money on a larger scale. It also fosters a better sense of ownership in the decision-making process.

The sample print serves as a test to analyse any technical challenges of the designs in relation to color scheme, design visibility, design placement and fitness etc., to prevent any risk of cost incurred. At this stage pseudo-users (which comprises of manager, designer and employees) empathise sample prints to make prudent decisions about the T-shirt's designs if necessary. In its general assessment of how empathy is utilised at 4Heem Apparel, it can be summed up that the company is unconsciously empathising in its design process which is giving it successful product and service delivery. Even though 4Heem Apparel has been very successful in its design processes all these years, it is proposed that the company should be conscious about empathy before, during and after production to catapult the company to a competitive level locally and globally. As Dam and Siang (2020) revealed empathy is the basic stage and it gives design solutions that meet all three parameters of a successful product and service i.e., desirability, feasibility and viability.

Convincingly, most Ghanaian companies are practising design thinking in one way or the other but need to stratify the role of empathy in their design thinking models even though their operational framework can be contextualised as a design thinking process as in the case of 4Heem Apparel. By inductive reasoning, it is evidently clear that most Ghanaian companies are employing the traditional model of design thinking which is more of cooperation rather than collaboration throughout the design thinking process. Therefore, the study recommends that Ghanaian design companies should research and develop design thinking models that will suit their operations to produce innovative products and services in their design business landscape.

Conclusion

Design thinking and innovation has become a great influencer in the business world. Its unique user-centric characteristics are employed in various design disciplines to solve complex problems in less expensive ways. As a global phenomenon making a tremendous impact in the business world, the Ghanaian business landscape in one way or the order has embraced design thinking and innovation in education, health, sanitation, business, architecture, etc., to understand the various needs of clients to satisfy and provide feasible and viable solutions.

It is acknowledged that even though Ghanaian companies are practising design thinking and innovation, the study's assessment revealed that the empathic design approach is not highly or consciously implemented in the design thinking processes of Ghanaian companies. However, it is identified in practice by these companies including 4Heem Apparel as employing the traditional classic design model where empathy is employed at the early stages of design thinking and unconsciously along the production line of product designs.

As propelled by Carmel–Gilfilen and Portillo (2016), Woodcock et al. (2017), and Heylighen and Dong (2019) empathising with clients come with great benefits to the consumers and the design company as a whole. Furthermore, it yields innovative ways of solving design problems from a collective whole.

The study is of the view that Ghanaian companies should learn to empathise thoroughly in their design thinking processes to improve the delivery of products and services that will birth innovative products for technological advancement.

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