Eindhoven University of Technology

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Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres
Investigating user-oriented preferences of cultural creative professionals for ateliers in creative hubs using participatory ranking

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Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

Investigating user-oriented preferences of cultural creative professionals for ateliers in creative hubs using participatory ranking

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Preface

Since I was a teenager, the built environment has always fascinated me. After quickly discovering a career as a Lego designer would probably be out of my reach, I shifted my focus towards a more concrete career path. I fell in love with the built environment from the moment I participated in an internship at an architectural firm in Amsterdam. Although my main task was to conduct customer surveys, the fact that I could walk through the heart of Amsterdam and start realising the impact of buildings on me and my feelings was unforgettable. The experience led me straight to study at the faculty of the Built Environment at Eindhoven University of Technology. However, I never became an architect. Though I started an architecture major. It took me on a detour where I discovered a passion for the intricate systems of the built environment and its eternal development, and I am very happy to bring this experience to a conclusion.

Here before you lies my final work to achieve a goal successfully I have spent a long time procrastinating towards. I want to sincerely thank Rianne for her patience and guidance during this project. Her excellent guidance kept pushing me forward even though I did not know where to look. In addition, I want to thank Theo for his insights into the methodologies I had a difficult time with, and I want to thank Astrid for joining my graduation committee on the last notice and for providing detailed, constructive feedback.

On a personal note, I want to thank my ever-supportive social circles. Congo, thank you very much for putting up with me and being the most memorable part of my student life. Groen is goed, Congo!

Dear Alissa, Bauke, Bouke, Carmen, Daan, Ellen, Laura, Marieke, Martijn, Merel, Puck, and Sven, thank you all for being part of the greatest group of friends someone can wish for, and I look forward to meeting you all in the built environment field as an official burger.

Finally, I want to express my gratitude towards Robin and my parents for always supporting me no matter what, even though how aggravating it might have been. I hope I made you proud.

I am looking forward to starting my career within the built environment and will be excited to start addressing the current problems the built environment has!

Niels van Hest

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Summary

Existing scientific research on the creative worker cluster shows its socio-economic benefits on city regeneration and neighbourhood rejuvenation (Evens, 2005; Peck, 2005; Markussen, 2006) and explores macroeconomic forces and general building aspects affecting creativity, leaving a gap in understanding the specific workspace values of cultural creative workers (Florida, 2002; Pratt, 2009; Liu et al., 2013; Motalebi & Parvaneh, 2021). Understanding this group's location and building aspect preferences becomes paramount in facilitating new venues for cultural creative workers, retaining creative talent and fostering added benefits on neighbourhood rejuvenation (Evans et al., 2006). To address the research gap on workspace preferences, this research investigated the prioritised workspace aspects for cultural creative workers in Dutch urban centres. The main research question is, therefore: *What are the prioritised, preferred physical workspace aspects of cultural creative workers in Dutch urban centres?*

To answer this question, this research aimed to identify key workspace aspects valued by cultural creative workers, employing a structured interview approach that integrated findings from literature with participant inputs.

First, the study identifies its target group based on previous research about the creative industries, creative class and creative entrepreneurs and creates a profile to capture what cultural creative workers are. Drawing on Kooyman's (2009) identification of industry characteristics, the target group description seeks to encompass a fitting range of professionals working in creative workspaces. This group communicates cultural properties like embeddedness, tradition, art, and non-commercial while incorporating entrepreneurial properties like demand-driven, success-oriented, and creation. While acknowledging the dominance of self-employment in the cultural and creative industries, as noted by HKU (2010), this thesis argues that not all creative individuals fit the entrepreneur mould and incorporate not solely creative entrepreneurs. The target group is defined through five creative industries (UNCTAD, 2010), namely, traditional cultural expression, visual arts, performing arts, design, and creative services.

The study continued with a thorough literature review to compile potential workspace aspects, which were then categorised into themes and compiled into a comprehensive list. Cultural creative workers (n=20) participated in the study, initially recalling important workspace aspects from their experiences in individual structured interviews. The participants were asked to identify their top ten workspace aspects based on their experiences, similarities with the literature, and predetermined aspects.

The results showed that cultural creative workers rank affordability, spaciousness, presence of other like-minded creatives, natural light and spatial adaptability of a workspace as the most import. In total, 36 aspects were identified as important. Other important aspects include flexible contracts, business facilities, and resource-sharing capabilities. The study also found that long-term contracts and shared workspaces were generally frowned upon. The study brought new aspects not previously emphasised in the literature to light, such as the

importance of business facilities, accessibility, safety, and the inclusion of rental heavy machinery. A diversity of subjects characterises cultural creative workspace preferences.

The research also sought to understand whether the preferences were consistent across different cultural creative worker industries. However, due to the small samples the industries were aggregated in their creative domains (UNCTAD, 2010). A creative domain is an umbrella term for creative industries. A Kruskal-Wallis test indicated no significant differences regarding these preferences among the three creative domains: heritage, arts and functional creations (H 0,931; p-value 0,63). However, utilising a data mining analysis, lift ratio calculations revealed a majority of strong correlations for the functional creations domain. In order of highest score to lower score, the functional creations domain had correlations with the aspects of facilities (1,8), ability to share knowledge (1,6), high ceilings (1,8) and heavy machinery (2,3). Heritage had strong connections to natural light (1,6), urban areas (1,9) and large windows (2,2). Arts had significant lift ratios with interior personalisation (2,3) separation between home and the workplace (2,0) and gardens and green space (1,5). Nevertheless, the lift ratios did not undermine the ranking scores because the most important aspects showed little variation in lift ratios. This underscores the shared appreciation of affordability, spaciousness and the presence of like-minded creatives.

The research has some limitations. Although beneficial for quantitative data extraction, the interview methodology did not fully leverage the potential of qualitative inquiry to explore the nuances of participants' responses. This approach may have limited the depth of understanding regarding the personal and contextual significance of the workspace aspects. Another notable limitation arises from the methodology of presenting a broad set of aspects to participants. The extensive range of aspects, derived from literature and participant additions, risked overwhelming participants, potentially affecting the robustness of their responses. This approach was chosen despite existing research cautioning against the cognitive overload in large choice sets, prioritising data completeness over potential impacts on data reliability. In summary, while this research offers important insights into the preferences of culturally creative workspace users, its methodology and data collection limitations point to areas where future research could expand and deepen the understanding of this topic.

The study paints a nuanced picture of cultural creative workers' workspace preferences, marked by diversity and influenced by various factors. While it provides a foundational understanding, the variability within the cultural creative worker cluster suggests that generalisations of these findings should be approached with caution.

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

Samenvatting

Bestaand wetenschappelijk onderzoek naar het cluster van creatieve professionals gaat in op de sociaaleconomische voordelen ervan op het gebied van stadsvernieuwing en buurtversterking (Evens, 2005; Peck, 2005; Markussen, 2006) en verkent de macro-economische krachten en algemene bouwaspecten die de creativiteit beïnvloeden. Dit laat een onderzoekkloof achter in het begrip van de specifieke werkplekvoorkeuren van cultureel creatieve professionals (Florida, 2002; Pratt, 2009; Liu et al., 2013; Motalebi & Parvaneh, 2021). Het begrijpen van de locatie- en bouwaspect voorkeuren van deze groep wordt van groot belang om nieuwe locaties voor cultureel creatieve professionals te faciliteren, creatief talent te behouden en extra voordelen voor buurtcohesie te bevorderen (Evans et al., 2006). Om de onderzoekskloof over werkplekvoorkeuren aan te pakken, onderzocht dit onderzoek de geprioriteerde werkplekaspecten van cultureel creatieve professionals in Nederlandse stedelijke centra. De hoofdvraag is daarom: Wat zijn de geprioriteerde, gewenste fysieke werkplekaspecten van cultureel creatieve professionals in Nederlandse stedelijke centra?

Om deze vraag te beantwoorden, streefde dit onderzoek ernaar om de belangrijkste werkplekaspecten die gewaardeerd worden door cultureel creatieve professionals te identificeren, door gebruik te maken van een gestructureerde interviewmethode die bevindingen uit de literatuur integreerde met input van deelnemers.

Allereest identificeert de studie haar doelgroep op basis van eerder onderzoek naar de creatieve industrieën, de 'creative class' en creatieve ondernemers en creëert een profiel om vast te kunnen leggen wat cultureel creatieve professionals zijn. Gebaseerd op de identificatie van industrie-eigenschappen door Kooyman (2009), richt de omschrijving van de doelgroep zich op het specificeren van een geschikte reeks professionals die gebruikmaken van creatieve werkruimtes. Deze groep draagt culturele eigenschappen uit zoals integratie, traditie, kunst en niet-commercieel, terwijl ze ondernemende eigenschappen als markt gedreven, succesgericht en creatie eigen maken. Deze scriptie erkent dat zelfstandig ondernemerschap een dominante rol speelt in de culturele en creatieve industrieën, zoals geïdentificeerd door de HKU (2010). Echter, het argumenteert dat niet alle creatieve individuen zich passen binnen het ondernemersmodel en benadrukt dat de sector niet uitsluitend uit creatieve ondernemers bestaat. De doelgroep wordt gedefinieerd door vijf creatieve industrieën (UNCTAD, 2010), namelijk traditionele culturele expressie, beeldende kunst, uitvoerende kunsten, design en creatieve diensten.

Vervolgens werd er door een grondige literatuurstudie een lijst van potentiële werkplekaspecten samen gesteld. Die werden gecategoriseerd in thema's en samengevoegd in een uitgebreide lijst. Cultureel creatieve professionals (n=20) namen deel aan de studie, waarbij zij tijdens individuele gestructureerde interviews gevraagd werd naar belangrijke werkplekaspecten uit hun ervaringen. De deelnemers werd gevraagd om hun top tien werkplekaspecten te identificeren op basis van hun ervaringen en vooraf bepaalde lijst van literatuur aspecten.

De resultaten toonden aan dat cultureel creatieve professionals betaalbaarheid, ruimtelijkheid, de aanwezigheid van andere gelijkgestemde creatievelingen, natuurlijk licht en

ruimtelijke aanpasbaarheid van een werkplek het belangrijkst vinden. In totaal werden 36 aspecten geïdentificeerd als belangrijk. Andere belangrijke aspecten zijn flexibele contracten, bedrijfsfaciliteiten en mogelijkheden voor het delen van middelen. De resultaten lieten ook zien dat langlopende contracten en gedeelde werkruimtes over het algemeen werden afgekeurd. De studie bracht nieuwe aspecten aan het licht die niet eerder in de literatuur werden benadrukt, zoals het belang van bedrijfsfaciliteiten, toegankelijkheid, veiligheid en de toestemming voor of aanwezigheid van zware machines. Een diversiteit aan onderwerpen kenmerkt de voorkeuren van cultureel creatieve professionals voor werkruimtes.

Het onderzoek zocht ook uit of de voorkeuren consistent waren verspreid over verschillende industrieën van cultureel creatieve professionals. Echter, vanwege de kleine steekproeven werden de industrieën geaggregeerd in hun creatieve domeinen (UNCTAD, 2010). Een creatief domein is een overkoepelende term voor creatieve industrieën. Een Kruskal-Wallis-test gaf geen significante verschillen aan wat betreft deze voorkeuren onder de drie creatieve domeinen: erfgoed, kunsten en functionele creaties (H 0,931; p-waarde 0,63). Echter, door gebruik te maken van een data mining-analyse, onthulde lift ratio berekeningen een meerderheid van sterke correlaties voor het domein van functionele creaties. In volgorde van hoogste score naar lagere score, had het domein van functionele creaties correlaties met de aspecten van faciliteiten (1,8), kennis delen (1,6), hoge plafonds (1,8) en zware machines (2,3). Erfgoed had sterke connecties met natuurlijk licht (1,6), stedelijke gebieden (1,9) en grote ramen (2,2). Kunst had significante lift ratio's met interieurpersonalisatie (2,3) scheiding tussen thuis en de werkplek (2,0) en tuinen en groene ruimtes (1,5). Desalniettemin ondermijnden de lift ratio's de rangscores niet omdat de belangrijkste aspecten weinig variatie in lift ratio's vertoonden. Dit benadrukt de gedeelde waardering van betaalbaarheid, ruimtelijkheid en de aanwezigheid van gelijkgestemde creatievelingen onder de cultureel creatieve professionals.

Het onderzoek heeft enkele beperkingen. Hoewel de interviewmethodologie effectief was voor het verzamelen van kwantitatieve gegevens, zij het kostbaar, heeft de interviewmethodologie niet optimaal gebruik gemaakt van de mogelijkheden van kwalitatief onderzoek om de subtiele nuances in de reacties van de deelnemers diepgaand te verkennen. Deze methode heeft mogelijk de diepgang van de inzichten in persoonlijke en contextuele betekenis van de werkplekaspecten beperkt. Een andere opmerkelijke beperking komt voort uit de methodologie van het presenteren van een breed scala aan aspecten aan deelnemers. De uitgebreide lijst aan aspecten die is afgeleid van literatuur en toevoegingen van deelnemers, riskeerde de deelnemers te overweldigen. Dit had mogelijk invloed op de robuustheid van hun reacties. Deze benadering werd gekozen ondanks bestaand onderzoek dat waarschuwt voor cognitieve overbelasting in grote keuzesets. In dit geval is gekozen voor volledigheid van data reviewing dan voor de potentiële impact op gegevensbetrouwbaarheid. Samenvattend, dit onderzoek biedt belangrijke inzichten in de voorkeuren van gebruikers van cultureel creatieve werkruimtes, maar de methodologische en gegevensverzamelingsbeperkingen wijzen naar onzekerheden waar toekomstig onderzoek zich verder in kan verdiepen.

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Deze scriptie schetst een informatierijk beeld van de werkruimtevoorkeuren van cultureel creatieve vaklieden. Dit beeld wordt gekenmerkt door diverse voorkeuren, maar bovenal betaalbaarheid en ruimtelijkheid. Hoewel het onderzoek een fundamenteel begrip biedt, suggereert de variabiliteit binnen het cluster van culturele creatieve professionals dat generalisaties van deze bevindingen met voorzichtigheid aangenomen mogen worden.

Abstract

This study delves into the workspace preferences of cultural creative workers, a significant yet under-researched group in creative industries. It bridges a gap in the existing literature by focusing on specific workspace values crucial for this group, particularly for workspaces in Dutch urban centres. Employing structured interviews, the research integrates a comprehensive literature review with practical insights from interviews with 20 cultural creative workers. The key findings reinforce the importance of affordability in workspace selection. However, it highlights additional aspects like spaciousness, natural light, and the presence of like-minded creatives. Contrary to some literature, aspects like long-term contracts and shared workspaces ranked lower in preference, underscoring the desire for flexible, individualised work environments. This thesis presents an overview of the cultural and creative industries, building on the traditional scope of creative entrepreneurship to include a select range of professionals based on their work environment needs. Despite finding no significant differences in workspace preferences across different creative domains within the cultural segment, the research reveals a diverse and complex set of needs within this community. However, limitations in methodology and data collection suggest that these findings should be interpreted with caution and serve as a basis for more in-depth future research. The study concludes that while it offers foundational insights into the preferences of cultural creative workers, the inherent diversity within this cluster makes it challenging to generalise these findings across the broader creative industry.

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Chapter 1, Introduction

1.1 Background

1.1.1 Creative workers

Creative industries producing cultural goods generate a large and steadily increasing share of international trade, employment, and gross domestic product locally, regionally, and nationally. Creativity is the bedrock of innovation and product development in the current era. Economic value from goods like media, design, computer systems, and food products flows from places embracing a creative economy. The people who work in creative occupations and industries are drawn to sites that offer a critical mass of creative and cultural activity (Evans et al., 2006). Their defining trait of working in a creative occupation distinguishes them as "creatives".

Creatives are collected in different fields of professions, unified in their ability to create meaningful new forms (Florida, 2002). In a cultural sense, these creative occupations are identified as arts, crafts, architecture, music and performance. Moreover, modern professions are acknowledged, including software engineering, advertising, design, and research and development (Howkins, 2007). In 2008, the UN trade conference published on creatives, the creative economy and its potential for developed and developing countries because the creative economy adequately mitigated financial turmoil during and after the 2008 financial crisis (UNCTAD, 2018). Furthermore, the UN trade conference report recognised four domains among the creative industries: Heritage, Arts, Media and Functional creations.

This research will focus on cultural creative workers, a group in the creative domains of heritage, arts and functional creations, sharing traits with creative entrepreneurs (Cnossen et al., 2019) and bohemians, a group identified by Florida (2002). Creatives and, by extension, creative entrepreneurs balance their work between cultural and commercial impact, driven by their passion for cultural creation, while jumping at commercial opportunities (Cnossen et al., 2019). Cultural creative occupations are part of the arts, crafts, music, performance, and design industries. According to Florida, bohemians have two roles within the creative class: being part of the creative class and a sign of a diverse and tolerant urban milieu; thus, their presence is alluring to others from the creative class (Florida, 2002). These others are what Florida calls the 'creative core' and 'creative professionals'. The 'creative core' are workers "whose economic function is to create new ideas, new technology or new creative content" (Florida, 2002, p. 68). 'Creative professionals' are engaged in complex problem-solving involving individual judgement and high levels of education. The presence of the creative class in cities is considered an indicator of economic and social growth. Existing literature has identified this group's added value on regions economically, culturally and regeneratively (Howkins, 2001; Florida, 2002; Boschma & Fritsch, 2009; Evans, 2009b; Stroper & Scott, 2009). Their impact in the United States and Western Europe is significant (Boschma & Fritsch, 2009; Abel & Gabe, 2011). A geo-economic distribution analysis by Boschma and Fritsch showed a substantial effect on regional employment growth for every creative class group, creative

core, creative professionals, and cultural creative workers in the Netherlands, suggesting that cultural creative workers significantly impact city employment growth.

1.1.2 Location choice

In the 20th century, the rise of the post-industrial city led to the abandonment of city factory sites. New factories were established outside city limits, and urban growth spread past these previously peripheral sites. After the turn of the millennium, cultural creative workers started locating themselves in these undesirable industrial areas out of necessity. Their desire to live in an urban context and constant struggle to find affordable and inspiring locations brought them to post-industrial fringe areas. The big draw was ample studio space and cheap rent close to the city (Pratt, 2009). Once settled, due to little to no governance, opportunities arose to express themselves in public spaces, physically as well as socially. Their 'buzz' and public art transformed decaying areas into new interesting, attractive and cultural nodes, places like New York's SoHo (Zukin, 1982), Hoxton in London (Pratt, 2009), South of the Market (SOMA) in San Francisco (Wolfe, 1999), Berlin (Colomb, 2012) and the NDSM wharf in Amsterdam (Savini & Dembski, 2016). This phenomenon started an urban process called gentrification, where lower-class worker residents in urban neighbourhoods are displaced through the influx of new residents (Glass, 1964). This process consists of 4 steps: 1) Creatives find undesirable fringe areas in a city in pursuit of affordable workspace. Once there, 2) their creativity and do-it-yourself attitude turn a previously undesirable location into an exciting brewing location. 3) Their cultural activity leads to rising land value. It attracts other creatives and the upper-middle class, which 4) leads to new development plans by policymakers and real-estate developers seeing the area's potential rise. Consequently, this also increases land value (Caves, 2003). Through this process, the ones who laid the groundwork eventually become victims of their initiative. Cultural creative workers who did not profit directly from the increase in value are faced with increasing rents to a point where staying at their location becomes impossible—forcing those unfortunate and unable to pay rent to search for spaces elsewhere.

The phenomenon of cultural creative workers leaving behind industrial sites, deprived neighbourhoods, and fringe belt areas after transforming them into new, upcoming areas for middle-class urban citizens is a cycle that has been observed repeatedly. This trend highlights cultural creative workers' impact on the areas they choose to inhabit and nurture, ultimately creating vibrant urban spaces. Although the original inhabitants were driven away through increased land prices, the areas received increasing investments from the government, developers, and businesses due to their newfound attractiveness to other citizens.

However, artists and cultural creative workers can positively affect their neighbourhoods when their residency is secured. They actively support their social environment and are central players in neighbourhood rejuvenation as they form personal connections with their neighbourhood (Markusen 2006, 1937). Furthermore, they are associated with springboarding further cultural activities in neighbourhoods, proving to be robust vehicles for social cohesion (Evans, 2006). Having identified this potential of cultural creative workers for an area, municipalities have become bent on preserving spaces for this group (Evans et al., 2006).

The housing shortage in the Netherlands explains another factor for municipalities' attention to preserving creative city spaces (Rotterdam municipality, 2017). The Netherlands has seen a significant increase in housing demand in the past decade. At the same time, the supply of houses cannot meet demand due to the after-effects of the 2008 economic crisis and increasing material costs associated with the energy transition. Funding for construction projects halted, and specialised personnel is hard to come by. Through this after-effect, the current housing shortage has significantly affected non-residential properties in the city because dedicated creative studios and galleries are transformed into houses to accommodate the insatiable housing market.

So far, little research has been done to investigate the workspace preferences of cultural creative workers. The nature of their work is a driving factor in their preferences and ability to make choices. As project-based workers, creatives have inconsistent work schedules and intermittent income streams. Their ability to produce is deeply connected to their physical environment. Workspaces are necessary resources to provide a place for creation.

In the interest of cultural creative workers having to relocate repeatedly over time, the ability to make choices to relocate must be present. Cultural creative workers can be expected to consider multiple options when relocating. However, due to the precariousness of having no workspace available, this choice could be removed from the equation, as any place with enough room can be turned into a workspace. When the choice arises between a lousy space and no space, the answer is quickly found because a lousy space makes it possible to work while the other does not. On the other hand, a decision-making process is likely to be present. Considering urban centres offer a variety of real estate possibilities, it is likely that cultural creative workers, like any other cognitive individual, will seek the optimal choice in the market in order to maximise the utility of a space. When choosing between two undesirable options, a selection procedure should be present.

To provide durable locations suited for cultural creative workers, understanding how cultural creative workers prioritise workspace aspects can assist real estate developers and city planners in deciding which aspects to incorporate in creating such locations (Vivant, 2013). Despite this call for research ten years ago, research has not yet considered this dilemma cultural creative workers face and how they weigh aspects of a new workspace. Physical and environmental workspace aspects have been identified before, for instance large spaces, cheap spaces, and urban spaces. However, a deeper study on the needs and hierarchy of workspace aspects was not found.

1.2 Research aim

This research aims to create exploratory insights into cultural creative workers' preferences for workspace aspects, revealing additional workspace aspects not seen before or reappraising known stigmas by identifying a ranking of importance. The main research question is formulated accordingly:

What are the prioritised, preferred physical workspace aspects of cultural creative workers in Dutch urban centres?

In contribution to this question, the following sub-questions are raised:

1) What are cultural creative workers, and what does their work behold?
2) Which workspace aspects are relevant to cultural creative workspaces?
3) In what order do cultural creative workers rank the aspects of creative workspaces?
4) What kind of advice can be given to urban planners and real estate developers using the workspace preferences?

1.3 Relevance

1.3.1 Practical

There is increased pressure on creatives to relocate to new affordable spaces and the desire of municipalities to preserve the cultural value creatives generate for urban regenerative benefits (Peck, 2005). This target group consists of individuals with different occupations and varying needs. The term creatives describes a broad scope of industries. Organically, creatives have sought low-cost workspaces. They found undesirable and unrestricted locations in a city where they would leave their mark. Artists and cultural creative workers begin to be identified as central players in neighbourhood rejuvenation as they form a connection with their neighbourhood and play active roles in supporting their social environment (Markusen 2006, 1937) and perform the task of springboarding further cultural activities in the neighbourhood which prove strong vehicles for social cohesion (Evans, 2005). In addition, market forces show interest in developing workspaces for this group (Vivant, 2013, p. 61). They are indicating commercial interest in selling points for workspaces for cultural creative workers. Although the target group has varying needs, low cost and ample space have been the cornerstone of creative space creation (Pratt, 2008; Liu et al.,2013). Understanding cultural creative workers' desires will support the durable creation of workplaces that positively affect their neighbourhoods.

1.3.2 Scientific

The literature shows knowledge gaps in its research on the selection criteria of urban cultural creative workers. How cultural creative workers choose their workspaces and weigh costs and benefits in their selection criteria has not been researched in detail. Their emergence in specific locations in metropolitan urban centres has been studied (Zukin, 1989; Evans et al., 2006; Pratt, 2008), while their effect on regions and areas is discussed through the effort of Florida's book (Florida, 2002) and the succeeding criticism thereof (Peck, 2005; Atkinson &

Easthope, 2009; Martin-Brelot et al., 2010). However, this perspective is rooted in socio-economical assessments of city-making and economic development. Papers in reaction to Florida's notions kept within the socio-economic research field. The preferences and selection criteria of creatives are seldom considered, arguably because they tend to relocate to cheaper locations organically. Research by Pratt (2009) indicates a link between creatives, cheap rent, and ample studio space. Liu et al. endorse this as cultural creative workers need large open spaces to work on unique projects and cheap spaces as their income is intermittent (Liu et al., 2013). Woldoff et al. found that cultural creative workers foster urban aspirations independent of their upbringing (Woldoff et al., 2011). Despite lacking significant evidence, this supports Florida's claims that creatives desire urban and tolerant areas (Florida, 2002).

Moreover, their living preferences are researched in several papers (Liu et al., 2013; Motalebi & Parvaneh, 2021). In these articles, artist residencies are the subject of analysis and their influence on the creativity of artists. Understandably, invoking creativity could be a significant physical feature of a cultural creative workspace. Additionally, Tang (2020) discusses the relationship between place and creative production for cultural creative workers. Creativity is an integral part of cultural creative workers and their work. The difference in weight aspects like creativity and cost have on location choice has not been studied. Therefore, this topic can add to understanding creatives and their workspace preferences and how these impact their decision-making. Motalebi and Parvaneh, in particular, investigated the physical aspects of artist residencies with space to live and work and the relationship the space has on invoking creativity for artists [creatives]. Their study aimed to find features that induce perceived creativity and assist in creative work according to the users. In comparison, this thesis will look at the preferred aspects of users without creativity as the main pursuit. Creatives have to make choices with limited funds. When looking for work locations, personal requirements must be met to select a space. What would cultural creative workers prefer most, and how do they rank those options in a comparison? An inspiring workplace could be a goal for creatives. However, finding out what those goals are is not the primary objective of this study. Instead, it asks what aspects are needed to achieve their goals and how they relate to each other relatively. In doing so, adding to the literature by identifying aspects important to creatives for selecting workspace and investigating a hierarchy within those aspects.

1.4 Reading guide

Figure 1 shows the process of this research. After the introduction in Chapter 1, a literature review is conducted in Chapter 2 to answer sub-questions 1 and 2. The literature review aims to define the research target group to create profiles to find the right people to interview. Furthermore, Chapter 3 delves into the literature on creative workspace aspects to categorise and list potentially relevant aspects. The list is used in the following chapter to present to cultural creative workers.

Chapter 4 will introduce the methodology for the research on the preferences of creative workspaces. The research combines structured interviews with participatory ranking to acquire user preference data. Street sampling at creative hubs is practised to acquire participants. First, users are asked occupational questions to identify them as the target

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group. Then, participants are asked to recall workplace aspects important to workspace selection. Next, a predetermined list of workspace aspects is presented. Participants are asked to recognise similar items, and these are merged. Hereafter, the participant is asked to select the ten most important aspects from their compiled list of recalled and predefined aspects and order these into a hierarchy list. This exercise creates a top ten of the most important creative workspace aspects, which will be used in Chapter 5 to find out how cultural creatives rank workspace aspects.

Chapter 5 shall elaborate on the data preparation and analysis of the user input. A total ranked list is created from the user input, revealing the most preferred aspects. The list will be reviewed. This will lead to answering sub-question three: In what order do cultural creative workers rank workspace aspects? This list is then interpreted based on multiple levels. After that, the generalisability of the ranked list is investigated.

Chapter 6 will discuss the results and limitations of the data analysis. It will conclude what a preferred workspace would entail. This can assist real estate agents and urban planners in their asset management. This answers sub-question four and the main research question.

1. Introduction	→	2. Literature review	→	3. Methodology	→	4. Data analysis	→	5. Results and case review	→	6. Conclusion and discussion
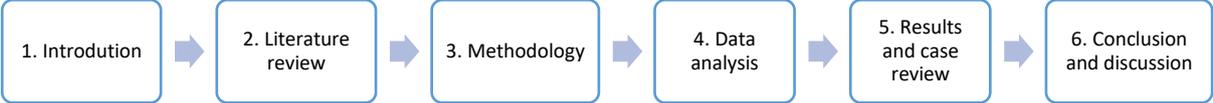
Figure 1: Research steps

Chapter 2 Cultural Creative Workers

This chapter sets out to find characterisations with which cultural creative workers can be described to answer the sub-question: "What are cultural creative workers, and what does their work behold?". This chapter seeks to understand the driving forces of cultural creative workers and the structure of creative industries. It finishes with classifying industries involved in the cultural creative worker spectrum based on their work environment needs. The source of increased interest in cultural creative workers is examined through the creative economy creative class and creative entrepreneur concepts. These concepts offer a foundational understanding of cultural creative workers. By extension, the firm composition of the cultural creative workers unveils their nature. Lastly, a selection and distinction of suitable industries of the cultural creative cluster are presented to be used for this research.

2.1 Introduction

The turn of the 21st century brought significant changes in the global economy and culture, largely influenced by the emergence of an increased interest in creative cultural workers. To understand these workers better, this chapter looks into the history of several key concepts at the heart of cultural and creative work. It explores these concepts to reveal the nature and work profiles of this target group, highlighting their increasing importance in modern economic and cultural settings.

This exploration includes topics such as Richard Florida's idea of the creative class, the role of creative entrepreneurs and the creative economy and its industries. The aim is to build an understanding of the characteristics of cultural and creative work found in these social concepts and sectors. Examining the creative class and creative entrepreneurs offers insights into their influence, motivations, and work ethics. Additionally, an analysis of the creative industries sheds light on the specific job roles and opportunities associated with this target group. This insight aims to aid the categorisation of workers associated with creative workspaces and provides a foundation for the sampling strategy in the research methodology.

2.2 Creatives

Workers employed in creative and entrepreneurial occupations are what Florida (2002) coins as "creatives". The first popularisation of the word started at the turn of the 21st century. Economists discovered a new trend in economic development where creative businesses and workers were deemed related to the growth of the gross domestic product, city regeneration and employment (Florida, 2002; McGrananan & Wojan, 2007).

Florida (2002) considers the increase in creative industries employment as the rise of a new social class, which he called the creative class. He distinguishes the people part of the creative class (creatives) as "people whose role is to create meaningful new forms based on economic forces" (Florida, 2002; p. 68). Florida distinguishes three groups in his creative class: the super creative core, creative professionals and bohemians. The super creative core consists of workers "whose economic function is to create new ideas, new technology or new creative content" (Florida, 2002, p. 69). This group is primarily responsible for an increase in innovative

growth. The second group, creative professionals, are engaged in complex problem-solving involving individual judgement and high levels of education. Fundamentally, innovation is fuelled by generating new ideas and their practical implementation. Increased innovation provides companies with a competitive advantage. As a result, it leads to increased product consumption and wealth generation. Therefore, creativity became a leading requirement for innovation. Thus, creative workers and the creative industries they are part of became integral for idea generation and creation, becoming valuable assets and factors for growth. The last group, bohemians, signify a diverse and tolerant urban milieu. They are often involved in cultural endeavours like arts, music, performing arts, design, writing and other cultural industries. According to Florida, their open-minded attitude and cultural vibrancy appeal to others in the creative class. It is, therefore, that their presence is alluring to the other two groups. This leads to a tendency of creatives to agglomerate in areas of diverse and tolerant milieus (Florida, 2002; Boschma & Fritsch, 2009). Bohemians are, thus, believed to attract economically interesting groups.

Möller and Tubadji (2008) are going against Florida's claims about bohemians attracting the members of the other groups within the creative class. They opposed the notion of agglomeration and did not find suggestive evidence that the creative class was moving towards culturally creative populated areas in West Germany (Möller & Tubadji, 2008). However, Boschma and Fritsch (2009) analysed cases in multiple Western European countries, including West Germany and the Netherlands. Their results showed a close relationship between the presence of bohemians and the other creative class groups in six West European countries, specifically in the Netherlands, supporting the notion of Florida that bohemians are attractive to other creative class groups. Thus, bohemians in Western Europe can be understood to attract other creatives from the creative class. They are, therefore, a valuable asset in any city willing to improve its creative and innovative industries. However, bohemians are different to the other creative class groups mentioned by Florida because their goals are not intrinsically economic but cultural and tolerant. Bohemians are, thus, part of the cultural and creative cluster because of their cultural and tolerant goals. On the other hand, Creatives encompass a larger group of professionals who use creativity without necessarily being culturally motivated.

2.3 Creative entrepreneur

This section explores the firm composition, nature, and drive of cultural creative workers to elaborate further on the cultural creative cluster. According to Kooyman (2009), the majority of cultural creative firms are made up of small to medium businesses, often organised as self-employed business owners (HKU, 2009). This trend towards smaller businesses is significant, as larger firms are rare in the sector. This firm composition might be influenced by the group's need for self-actualisation, as discussed by Eikhof & Haunschild (2006, p. 234) and McRobbie (2015, p. 74).

Following the perceived majority of self-employed individuals within the cultural creative sector, the literature introduces the concept of 'the creative entrepreneur'. This term describes creative individuals in small firms, characterising most of them as possessing entrepreneurial traits and tendencies, as noted by NESTA (2003). However, Carey and Naudin

(2006) highlighted a lack of consensus about the frame, claiming that all cultural creative workers are entrepreneurial. They argued for hesitance to assume all these self-employed individuals have entrepreneurial traits. Despite this, they argued that it could be assumed that cultural creative careers resemble the motivational aspects of entrepreneurial "push" and "pull" theory (Carey & Naudin, 2006, p521). Push factors refer to dissatisfaction with salaried jobs, while pull factors include personal needs for self-fulfilment and a desire to own one's time management.

In addition to these driving forces, additional literature investigates the nature of creative entrepreneurs. According to Ellmeier (2003: 26), the cultural entrepreneur can be described as, on average, a multi-skilled, flexible person, psychologically resilient, independent and single individual—someone who rises to whatever opportunity to be had in art, music or the media. Moreover, creative entrepreneurs can have a strong "do-it-yourself" attitude (Scott, 2012), usually fuelled by the unique creative capabilities that make them active and constant producers of cultural outputs.

The 'creative entrepreneur' shows critical differences from traditional views of entrepreneurship developed in economics and management (Bocconcelli et al., 2020). The first difference is related to the motivations and goals underlying entrepreneurial action. Various contributions highlight that creative entrepreneurs are usually guided by economic and culture-related goals, in which the balance is often oriented towards the latter (Eikhof & Haunschild, 2006; Gundolf et al., 2018; Cnossen et al., 2019; Bocconcelli et al., 2020). The double identity of the cultural entrepreneur is of a unique kind: their identity as an artist provides them with work motivation and passion for pursuing self-actualisation and their identity as a 'small firm' which enables them to make a living out of an artist (Eikhof & Haunschild, 2006, p. 234; McRobbie, 2015, p. 74). Although Cnossen et al. suggest the existence of a trade-off between autonomy and commercial viability. Exhibiting this balance, a creative entrepreneur must maintain between cultural goals and commercial ones (Cnossen et al., 2019).

On the other hand, Smit (2011) uses the term "creative entrepreneur" to exemplify this trade-off, pointing out that the interviewees in her study are not only artists but have specific business obligations as architects and designers. Smit does not include science, engineering, and other high-human capital sectors in the study's definition of the creative economy (Florida, 2002). Rather, it restricts the definition to sectors producing mainly aesthetic and symbolic value (Smit, 2011). This suggests common ground between the definition of Smit and bohemians of the creative class, which is more aligned with aesthetic and symbolic creation.

The literature on creative entrepreneurs provides insight into their cultural motivations and emphasises their connection to the market as businesses while maintaining self-actualisation through their cultural pursuits as individuals. The creative entrepreneur concept underscores and embraces this duality, unlike the broader creative class that distinguishes between cultural motivation and economic orientation. However, 'creative entrepreneur' is advised not to be used as a blanket term (Carey & Naudin, 2006). While commerce is integral to cultural creative work, not every creative worker is self-employed (Kooyman, 2009). Thus, while

helpful for understanding the drive and motivations of the cultural sector, this term may not capture the full diversity of cultural creative workers.

Locally embedded

Furthermore, creative entrepreneurs aim to create cultural value, especially with and for the benefit of their community (Dufays & Huybrechts, 2017), exhibiting the embeddedness of this group with their neighbourhood (Markusen, 2006, p1937; Evans, 2006). In the eyes of a creative entrepreneur and, by extension, the cultural creative workers, the market only represents a tool for them to achieve cultural value. The collective factor of entrepreneurial action is relevant in cultural entrepreneurship. Supporting communities can represent dense social networks of artists, technicians, and designers, which are activated by creative entrepreneurs, placing emphasis on friendship, shared values, and interests and building an exchange system of favours in which each individual is a "subject of value" and provides the resource basis for undertaking temporary projects and initiatives over time (Scott, 2012). This socially grounded, collective, informal, and bottom-up approach to organising activities in cultural and creative contexts is usually due to the inherent scarcity of financial and organisational resources (Ellmeier, 2003). This means that to succeed, a creative entrepreneur needs to work together with their communities to facilitate their goals. In doing so, they create meaningful connections, often built on a system of favours (Scott, 2012), wherein multiple creative people trade their skills to assist each other. This embeddedness is the large appeal of cultural creative worker collectives in neighbourhoods for policymakers (Evans, 2006).

2.4 Creative Industries

The previous sections examined the nature of individuals in the cultural and creative sectors. To further understand the work of cultural creative workers, it is necessary to expand the perspective and examine the creative economy. This shift in focus moves from individual workers and entrepreneurs to the broader types of work performed within creative industries. These industries serve as a means to categorise and identify cultural creative workers. The following section introduces the creative industries and seeks to distinguish workers into identifiable clusters. Doing so strengthens the identification of culturally creative workers and sheds light on what kind of work is done in cultural and creative industries.

At the turn of the century, the creative economy was first mentioned in a report from the United Kingdom's Department for Culture, Media and Sport (DCMS). The report noted the rise of the "creative economy" or "creative industries," which they described as "industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property" (Department for Culture Media and Sport, 2001), clearly recognising a link between creativity and economic development. The two criteria for identifying creative industries are creativity as the main productive input and the ability to market ideas to generate value (Santagata, 2007).

In 2018, the UN recognised the creative economy as a catalyst for change and for building more inclusive, connected, collaborative societies. Creative activities are also a key driver of sustainable development (UNESCO, 2013), and a World Intellectual Property Organization

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(WIPO) study from 2013 estimates their contribution of around 5% to the national GDP in terms of employment creation (WIPO, 2013). In their report, the UN Conference on Trade and Development (UNCTAD) mentions that trading in creative goods and services is expected to be a growing economic force. Its contribution to GDP and global trade has been increased through the digital economy and e-commerce and is expected to increase (UNCTAD, 2018). The report portrays the creative economy as a valuable force to inspire future and present generations to protect and care for their environment and, by doing so, contribute to sustainable development goals.

Defining cultural and creative industries

Kooyman (2009) provides generalisable characteristics to define the cultural and creative industries, such as unconventional employment, multitasking across multiple jobs, extended working hours, and unpredictable scheduling. These industries are also marked by cultural uniqueness, a short product lifecycle, a highly competitive environment teeming with skilled professionals, and a reliance on labour-intensive inputs alongside a substantial knowledge base. However, identifying sectors or industries related to the creative economy is a debated issue. Different models and classifications exist as a result. Creative industries historically included cultural industries like architecture, film, music, publishing, performing art, and visual arts. When the DCMS defined the creative industries, they included 20th-century occupations like advertising, video gaming, software development and computer services (Figure 2). At the turn of the century, the increased attention towards the creative economy was largely due to upcoming information systems and software sectors, which showed greater growth rates than other sectors (Evans, 2009, p. 1019; Vivant, 2013, p. 58). This integration of the new information economy, helmed by software industries, in combination with the historical, cultural image of creative occupations like artists and crafts persons, is what legislative bodies started branding as the creative industries.

Howkins (2007) extended the classification of creative industries. He has systemised fifteen creative sectors in the creative economy: Advertising, Architecture, Art, Crafts, Design, Fashion, Film, Music, Performing arts, Publishing, Research and development, Software, Toys and games, TV and radio and Computer games (J. Howkins, 2007). Howkins' classification broadens the insight into the occupational territory and range of the creative cluster, distinguishing more distinct clusters grounded in creativity. His interpretation includes toy making while at the same time recognising research and development as a creative endeavour. It consists of a diverse group of occupations of technological and historical backgrounds. Florida gives an even broader perspective in his book 'The Rise of the Creative Class' (2002). Florida presented a list of occupations he believes are part of the creative class, a new social class distinguished by their primary aptitude for creativity. More on his definition is discussed later on. His list includes occupations in management, finance, and healthcare, which Florida sees as belonging to the collective of creatives due to their ability to deal with complex problem-solving. However, several researchers have since refuted this idea, which appears to be generally accepted. (Peck, 2005; Atkinson & Easthope, 2009; Martin-Brelot et al., 2010). In contrast to Howkins and Florida, Galloway and Dunlop (2007) find the definition by DCMS to be too wide, as it does not refer to "symbolic meaning and could involve any

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type of creative activity", such as scientific innovation. They pleaded for differentiation in cultural creativity and separation from the economic pursuits demonstrated in creative industry policy. This shows the difficulty of defining the creative industries, where the historical cultural elements are combined with commercial new-age technologies. The task of defining sectors within the creative economy remains contentious.

Creative industry models

Multiple model variants exist to determine what industries are part of the core of the creative industries. Figure 2 shows a summary of the models collected by UNCTAD (2010). Each model looks differently at creative industries. The symbolic text model treats "high" or "serious" arts as the social and political elite's domain, shifting the focus to popular culture. This approach describes how a society's culture is shaped and shared through the industrial creation, distribution, and consumption of symbolic content or messages. These messages are delivered through various media channels, including film, broadcasting, and print media. At the same time, the concentric circle model argues that these industries' unique characteristics lie in the cultural value of the goods they produce. The stronger the cultural element in a given product or service, the greater the justification for categorising its producing industry as cultural (Throsby, 2001). The model sees the core creative arts as industries where creative ideas take shape in the form of sound, text and image. This is the circle's core, with culture at its centre and commercial at its edge. As one moves away from the core, cultural and commercial content balance diminishes. Lastly, the WIPO copyright model is based on sectors that are either directly or indirectly engaged in generating, manufacturing, producing, broadcasting, and distributing works protected by copyright, as the World Intellectual Property Organization outlined in 2003. The emphasis is on intellectual property as the tangible manifestation of the creativity spent in creating goods and services. The model differentiates between industries that are the originators of intellectual property and those that facilitate its delivery to end-users. Additionally, a subset of "partial" copyright industries exists where intellectual property plays only a secondary role in their operations.

1. UK DCMS model	2. Symbolic texts model	3. Concentric circles model	4. WIPO copyright model
Advertising	**Core cultural industries**	**Core creative arts**	**Core copyright industries**
Architecture	Advertising	Literature	Advertising
Art and antiques market	Film	Music	Collecting societies
Crafts	Internet	Performing arts	Film and video
Design	Music	Visual arts	Music
Fashion	Publishing		Performing arts
Film and video	Television and radio	**Other core cultural industries**	Publishing
Music	Video and computer games	Film	Software
Performing arts		Museums and libraries	Television and radio
Publishing	**Peripheral cultural industries**		Visual and graphic art
Software	Creative arts	**Wider cultural industries**	
Television and radio		Heritage services	**Interdependent copyright industries**
Video and computer games	**Borderline cultural industries**	Publishing	Blank recording material
	Consumer electronics	Sound recording	Consumer electronics
	Fashion	Television and radio	Musical instruments
	Software	Video and computer games	Paper
	Sport		Photocopiers, photographic equipment
		Related industries	
		Advertising	**Partial copyright industries**
		Architecture	Architecture
		Design	Clothing, footwear
		Fashion	Design
			Fashion
			Household goods
			Toys

Figure 2: Classification system for the creative industries derived from different models (UNCTAD, 2010)

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From these interpretations of the creative economy, the UNCTAD cultivated their definition of the creative industries and the following categorisation. The UNCTAD classification of creative industries is divided into four broad domains: heritage, arts, media and functional creations. Moreover, the classification facilitates an understanding of the cross-sectional relationship between industries. Like the concentric circles model, the report argues for a scale from cultural to commercial production, describing these as upstream (cultural) and downstream (market-oriented). When a product is designed with a strong commercial focus, it tends to lose some of its unique cultural identity. This theorem is based on the replicability of a creative good or product. Upstream activities are considered unique, short-lived, and tied to cultural contexts like time, space, or audience. In comparison, downstream products have low reproduction costs and transferability to other sectors (UNCTAD, 2010).
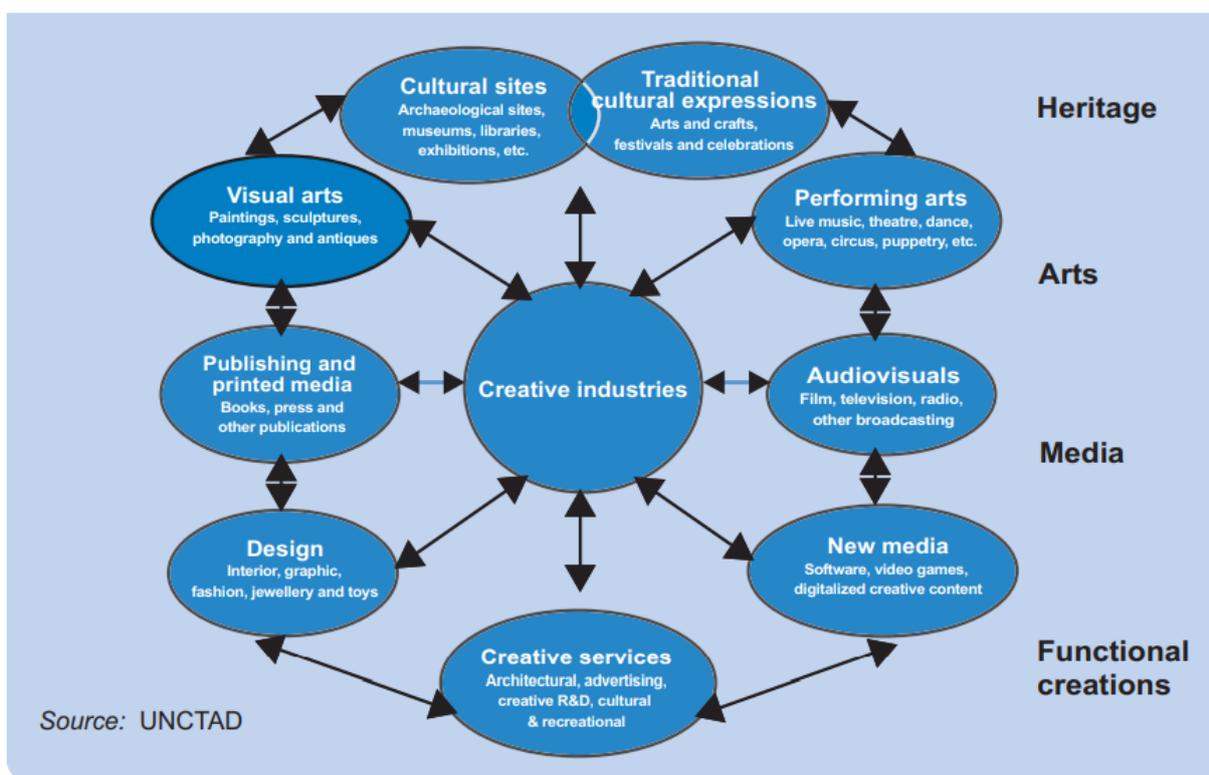
Figure 3: UNCTAD classification of creative industries (2010)

Figure 3 displays the cultural-commercial scale vertically. Upstream industries are shown at the top and downstream at the bottom. Heritage serves as the cornerstone of creative and cultural industries, encompassing historical, anthropological, ethnic, aesthetic, and societal elements. Subcategories include traditional cultural expressions like crafts, festivals, and cultural sites such as archaeological locales and museums. Arts is pivotal in creative industries influenced by heritage and cultural identity. The arts industries are subdivided into visual arts, encompassing painting, sculpture, and photography, and performing arts, which include live music, theatre, and dance. Media is another significant category within the creative industries, focusing on content for broad audiences. Subgroups include publishing and print media, covering books and press, and audiovisuals, such as film and television. Finally, functional

creations represent a more demand-driven and service-oriented. Categories include design, spanning interior, graphic, fashion, jewellery, and toys design; new media, covering software, video games, and digitalised creative content; and creative services, including architectural services, advertising, cultural and recreational, creative research and development, digital, and other related creative services.

Concluding, this section explored the varying definitions and models of creative industries, emphasising the fluidity and diversity of the sector. The creative economy and its industries are a multifaceted, evolving domain with various sectors, ideologies, and social constructs. Its development and expansion have significant implications for economic growth, societal advancement, and cultural fulfilment. Although various models have been invented, the perspectives diverge. Some incorporate everything, while others dictate the need for a hierarchy or distinction of core creative fields. Scholars and institutions, including DCMS, Howkins, Florida, Galloway and Dunlop, and the UNCTAD, provided their perspectives on what creative industries entail. The classifications range from a broad spectrum that includes almost all creative endeavours to a more narrowed perspective focusing on traditional arts and crafts. The UNCTAD model seems the most comprehensive; it does not necessitate a hierarchy in industries like some models. It acknowledges the rift between reproducibility and unique cultural products and even proposes broader groups in the form of creative domains to facilitate comparison.

2.6 Cultural Creative Workspace Needs

The creative industries presented in the UNCTAD model offer a complete overview of the work done by cultural creative workers. However, by discriminating creative industries based on the workspace needs of workers in the industries, the target group can be identified and aligned with the research scope on ateliers and creative workspaces. The industry 'cultural sites' in the 'heritage' domain in the UNCTAD model contain locations like archaeological locales and museums. These sites primarily focus on preserving and displaying historical and anthropological significance, differing from the active, creative production often associated with ateliers. The industry 'new media', part of the 'functional creations' category, includes software, video games, and other digital creative content. This domain is notably service-oriented and demand-driven. Its work is digitally centric and primarily considered office work. Therefore, it arguably has a limited need for the tangible space of traditional ateliers. 'Publishing and printed media', situated within the 'media' domain, is geared towards providing content for a wide-ranging audience. With the trends moving towards digital platforms, the sector is shifting away from traditional workspaces such as ateliers. Moreover, the 'audiovisual' industry, also a part of the 'media' domain, encapsulates activities related to film and television. The unique requirements of this sector, such as production studios and on-location filming, do not necessarily align with the conventional atelier environment. To sum it up, although these categories hold great value within the creative industries, their specific operational needs and the nature of their tasks might not fit with the traditional application and perception of ateliers. Leaving them out of atelier-focused studies could yield more accurate insights into sectors that conventionally depend on these spaces for their creative endeavours.

Unlike the 'new media' industry that predominantly relies on digital platforms, the industries 'creative services' and 'design' encompass many activities that often require diverse workspaces tailored to their processes. Many elements within those industries benefit from the physical spaces offered by ateliers. The tactile nature of several tasks within 'creative services' and 'design', whether sketching for graphic design or crafting physical mock-ups, demands the space that an atelier provides. Additionally, these spaces facilitate the collaborative nature of projects in this domain.

The exclusion of certain industries has led to the following list of industries: traditional cultural expressions, visual arts, performing arts, design and creative services. Figure X demonstrates the total number of industries associated with cultural and creative workers that require and benefit from ateliers. In addition, the creative domains associated with them are mentioned, and the job profiles are presented to showcase the bandwidth of cultural creative work for this group.

Furthermore, unlike the UNCTAD model and other models, where some establish a reproduction scale, this selection emphasises the relationship of cultural creative work relative to the environments where it is produced. This approach offers detailed perspectives related to cultural and creative work preferences.

Creative domain

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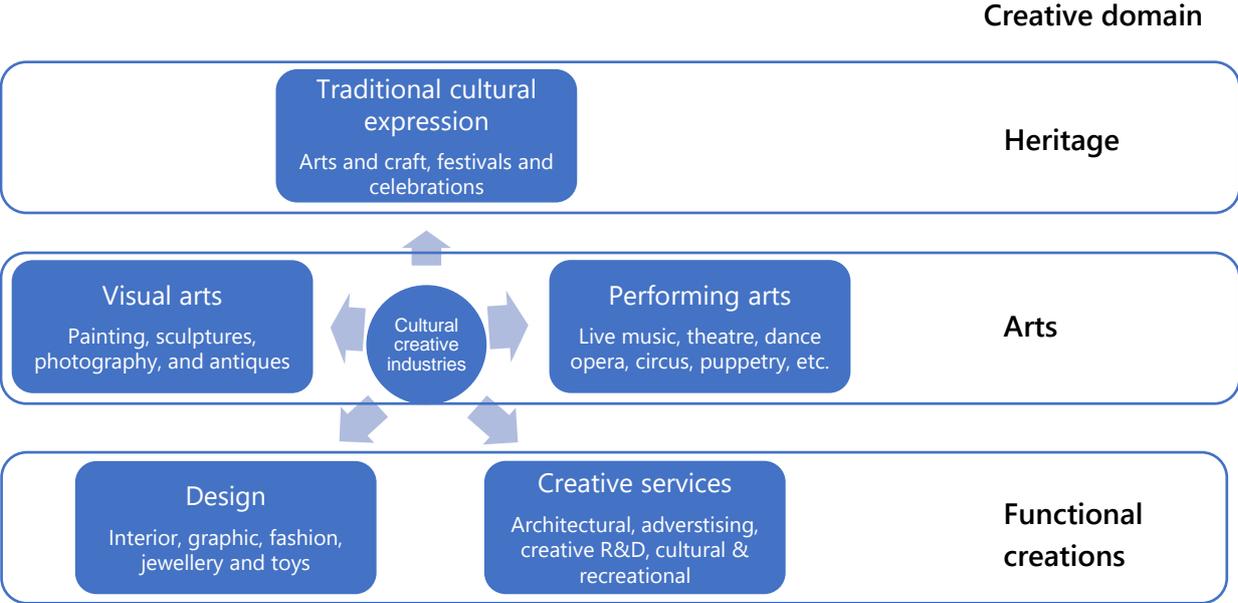
2.7 Conclusion

From the literature study, the first sub-question can then be answered:

What are cultural creative workers, and what does their work behold?

Cultural creative workers are characterised by their creative output and role as indicators of diverse and tolerant urban environments. They are deeply embedded in their local communities and often work collectively, using dense social networks and informal organisational approaches to achieve their goals (Ellmeier, 2003). Their presence in an area tends to attract other creative class members. Cultural creative workers are unique in melding artistic and business elements, working for economic gain and fulfilling culture-related goals.

Cultural creative workers share their traits considerably with the creative professional concepts: creative class and creative entrepreneurs. However, the existing concepts overlook the full spectrum of culturally creative workers. Specifically, the notion of creative entrepreneurs fails to encompass those without business ownership or entrepreneurial creativity. To address this gap, this thesis introduces the 'cultural creative worker' as its target group within the creative industries. This group encapsulates professionals, not limited to self-employment, who embody the mindset and values akin to creative entrepreneurs, as Bocconcelli et al. (2020) described. They also strive to create and sustain vibrant, artistic, and tolerant environments, resonating with the bohemians in Florida's classification (Florida, 2002). In addition, Kooyman (2009) formulates characteristics such as unconventional employment, extended working hours, and unpredictable scheduling. These industries are also marked by cultural uniqueness, a short product lifecycle, and a highly competitive environment teeming with skilled workers.

Building upon the premise that not every creative individual is an entrepreneur, this thesis argues for a target group to encompass the cultural and creative workers based on their job profile and work environment. This aids in identifying a distinct group driven by passion and commercial success in project work. This duality presents challenges and enables a sense of self-actualisation and work motivation. Cultural creative workers are generally multi-skilled, flexible, and resilient individuals with a DIY attitude fuelled by their artistic capabilities.

Cultural creative workers refer to a subgroup of workers within the creative economy. The work of cultural creative workers involves the creation of meaningful new forms based on economic forces, as described by Florida (2002). They contribute to developing and expressing cultural identity, artistic expression, and aesthetic innovation within society. Through their artistic and cultural endeavours, they enrich and shape the creative landscape of their respective industries and communities (Markussen, 2006). Their work is rooted in the cultural and historical fields of creative occupations. They encompass various sectors, such as arts, crafts, design, fashion, film, music, and performing arts, as classified by Howkins (2001). UNCTAD (2010) recognises these industries as part of domains in heritage and arts, with a unique design industry in the demand-driven domain. The creative industries, namely traditional cultural expression, visual arts, performing arts, design, and creative services, are considered to identify the target group based on their workspace needs.

Chapter 3 Workspace aspects

This chapter answers sub-question 2, 'What are potentially relevant workspace aspects for cultural and creative workers?'. The chapter begins by describing cultural creative workspace, also known as ateliers or studios, and its shifting definition. Furthermore, the literature on creative workspace aspects is explored to develop a list of aspects of interest to cultural creative workers in their work environment. Underlying themes of the aspects are introduced based on shared traits. Aspects from comparable creative workplaces, work environments or offices are consulted to add to this list of attributes for the analysis. The chapter presents a preliminary list of potentially relevant aspects to users for review and verification. The chapter ends with a reviewed list of relevant aspects and a conclusion. The final list of workspace aspects is used in Chapter 4 to present to cultural creative workers to judge the importance of the aspects and answer the research question 'What are the prioritised, preferred physical workspace aspects of cultural creative workers?'.

3.1 Introduction

Workspaces exhibit differences in a multitude of aspects. A space is designed according to the type of work performed. In an office where desk work is performed, workspaces are predominantly defined as desks or cubicles for individual workers. In factories or distribution centres, workspaces are less defined and instead refer to floors with machinery or loading docks for transport carriers. For cultural creative workers, a workspace has different setups. Some need only a workbench and desk, while others can do with large open spaces for performances and studio work, and others need complex spaces where unique materials and equipment can be stored and used. Researchers mention large open spaces more often (Pratt, 2009; Liu et al., 2013) because the appeal of such spaces comes from the freedom cultural creative workers have over such spaces. They adapt and modify space to whatever needs they have. However, the definition or specific requirements for what constitutes a large space in the literature are not mentioned.

Looking at the Dutch building code, workspaces for cultural creative workers are called ateliers. In their legal description, ateliers can be seen as an industrial function. However, ateliers could be interpreted as office workspaces, too. The law is not definitive and leaves room for interpretation. The building requirements and, by extension, the quality of stay is different for offices compared to industrial functions. The regard for the quality of stay in an industrial function is legally inferior to dwelling and office functions because the presence of people in these industrial spaces is secondary to its function. For instance, the amount of light penetration required in factories is limited compared to offices. The construction team's interpretation defines which regulations to uphold, significantly impacting the workspace's result.

So, legal and literary uncertainties arise on what cultural creative workspaces are. Therefore, this chapter seeks to answer which physical aspects can be linked to workspaces directed at cultural creative workers.

3.2 Classification principles

Research into prioritising physical spatial aspects of workspaces for cultural creative workers is rare. Therefore, a holistic review of workspace aspects for cultural creative workers is unavailable. The few existing studies on workspace aspects for cultural creative workspaces are reviewed to compose a list of possibly relevant spatial aspects for the whole group. The accumulation of these aspects should pose a preliminary outlook for cultural creative workers to assess their preferred workspaces.

The literature on workspaces for cultural creative workers was sought through keywords using synonyms. The term cultural creative used by this paper is generally not used in the literature. Other studies refer to artists, creatives, creative workers, bohemians, creative entrepreneurs, or cultural entrepreneurs. These terms all relate to the target group in some way, as proposed in Chapter 2.1. These keywords were combined with workspace, work environment, work studio, atelier and workshop to create search queries. Papers were selected based on their relevance to the search criteria or connection to the other synonyms used in searching literature. After identifying multiple search criteria in the title or abstract, relevant papers would be read in further detail to uncover potential aspects related to cultural creative workers and workspace.

In addition, articles related to work environment aspects in co-working spaces, innovation spaces, or start-up hubs were included to provide additional perspectives. These could be potentially interesting as their users also have roots in the creative industries: highly educated workers, where creativity and innovation are regarded as core identifiers of their work, although more related to commercial than cultural creativity.

One study, in particular, investigated the physical environment similarly to this research. In their study, Motalebi and Parvaneh (2021) investigated the relationship between the built environment of artist residencies and creativity. Artist residencies are typically designed as secluded spaces where artists can live, work, and focus exclusively on their creative pursuits. To clarify, Motalebi and Parvaneh investigated workspaces, including living quarters, whereas this research focuses solely on workspaces as part of creative hubs. In their interviews with artists, Motalebi and Parvaneh identify several themes: Nature, Colour, Flexibility, Form, Material, Shared environment, Light, Complexity, and Spatial diversity. Their study design looked at the creative-inducing aspects of a building, whereas this study looks at a broad front of aspects and preferences. Similarly, this study grouped various relatable aspects into themes based on examining the literature related to workspace preferences. However, these identified themes differ from the previously mentioned ones by Motalebi and Parvaneh.

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

Based on related aspects identified in the literature (see Table 1), the following themes were constructed: Bustle, Cost, Décor, Flexibility, Innovation, Lighting, Location and Room Dynamics.

- **Bustle** encompasses the energetic atmosphere of a workspace, factoring in the social interactions among individuals. It explores how a workspace's liveliness or "bustle" can influence the creative process. The term "bustle" encapsulates social and cultural elements that collectively influence people's workspace preferences.
- **Cost** is a straightforward theme that addresses the financial implications of renting or maintaining a workspace. This factor is crucial for anyone contemplating the viability of their work or business environment.
- **Décor** focuses on the aesthetics of a workspace, including wall colour and overall design. Décor represents the impact visual elements have on creativity and productivity.
- **Flexibility** explores what kind of relevance adaptability has for users and their changing spatial needs. It presents aspects for modifying or configuring a space to match individual requirements, whether for collaboration or solitary work.
- Learning and developing skills is a constant requirement for creative professionals. **Innovation** represents specific physical spaces dedicated to such practices.
- **Lighting** is a universal aspect essential for any space. Creative professionals, like others, have distinct preferences concerning the quality and type of lighting that fosters their best work.
- **Location** investigates the geographical aspects of creative workspaces, emphasising the aspects of accessibility to services and other amenities that creative professionals may require.
- The theme **Room Dynamics** specifies aspects of the closed workspace beyond physical properties like size. This theme considers the balance between spaciousness, privacy, and shared space in room configuration in creative workspaces. It addresses privacy versus openness and how these factors affect the creative workflow.

Table 1 showcases the complete list of aspects for each theme. Further elaboration and literature background are provided after the table per theme. Each theme section ends with a summary of the aspects part of the theme.

Table 1: Overview of theme categorisation of the literature review on cultural creative workspace aspects

THEME	Cultural creative workspace aspect	Gill, 2002	Ley, 2003	Evans et al., 2006	Evans, 2009b	Liot, 2009	Cunningham, 2011	Woldoff et al., 2011	Liu et al., 2013	Lee, 2016	Weijs-Perrée et al., 2018	Harrington, 2020	Tang, 2020	Motalebi & Parvaneh, 2021
BUSTLE	Presence of other creatives nearby	✓										✓	✓	✓
	Nearby art and cultural activities or amenities							✓	✓					
	Permeable space: People can see you work or walk in when working											✓		✓
	Exposure to new ideas in the workspace					✓			✓			✓		
	To not be alone	✓												
	Information sharing and receiving	✓				✓								
	Sharing resources as part of a community					✓								
COST	Affordable rent						✓		✓				✓	
	Long-term contract, predefined rental periods			✓										
	Flexible contract ends at any time				✓									
DÉCOR	Simple-shaped objects													✓
	Bright colours													✓
	Gardens and greenspace													✓
FLEXIBLE SPACE	Adaptability, the possibility to rearrange the workspace													✓
	Possibility to personalise your workspace.													✓
	Open layout to work in, no individual closed spaces									✓	✓			
INNOVATION	Technological interfaces, smart screens or tablets integrated into the space								✓					
	Dedicated spaces for idea brainstorming								✓					
LIGHTING	Natural light													✓
	Large windows													✓
LOCATION	In an urban, highly populated area	✓	✓					✓	✓			✓		
	Specialised material vendors nearby											✓		
	Assistant labour pool within reach											✓		
	Exposure to audiences and critics											✓		
	Nearby access to vendors, galleries, venues and shops								✓			✓		
	Government policy on cultural workspaces								✓				✓	
ROOM DYNAMICS	Lots of space								✓					
	Privacy											✓		
	Work and private space separated													✓
	Sharing a closed-off workspace					✓			✓					
	Adjustable furniture in the workspace													✓
	High ceilings													✓

3.2.1 Bustle

The literature presents a perspective in which cultural creative workers seek activities attributed to commotion or continuous exciting activity, and often related to the bustle of urban life and being near many people and places (Woldoff et al., 2011; Liu et al., 2013;

Harrington, 2020). Creative-oriented people, in search of inspiration and creativity, seek environments that provide such stimuli (Harrington, 2020). A study conducted by Woldoff et al. (2011) discovered that young cultural creative workers, specifically college students majoring in art, music, theatre, and graphic design, demonstrate a preference for urban residential life and bohemian cultural amenities such as coffee shops, used bookstores, tattoo parlours, live music venues, antique stores, vintage clothing stores, organic food markets, and libraries. Non-creative students did not share this preference, which suggests a correlation between creative majors and bustle preferences. While this sample may not entirely represent all cultural creative occupations, it does imply that creative individuals generally prefer urban centres and cultural amenities.

Moreover, other creative-oriented people are seen as a creative stimulus. Cultural creative workers often find inspiration in neighbourhoods populated by fellow creatives, leading to a reinforcing cycle where more creatives are attracted to these areas. Large urban cities play an instrumental role in this dynamic as places where diverse populations and ideas intersect. They offer a constant stream of new perspectives, experiences, and values, fuelling the creativity of those within these creative clusters. This environment inspires and facilitates collaborations and the organisation of cultural events. Liu et al. (2013) note that such flows of people and activities provide the necessary stimuli for cultural creative workers to thrive and produce art and cultural events.

Regarding workspaces for cultural creative workers, Harrington (2020) suggests that socially permeable workspaces are ideal. This means these workspaces should allow for social activities or socialising when culturally creative workers feel like engaging in such activities. This means their workstation is open to invasion from spontaneous interaction. The exposure can lead to new ideas and inspiration, which is most important to cultural creative workers. Tang (2020) found similar insights because her study showed that culturally creative respondents consider the presence of similar-minded people as a major factor in their artistic collaboration. Moreover, Motalebi and Parvaneh (2021) found that cultural creative workers believed that having other cultural creative workers around them to communicate with is invaluable and a driver of the creative process. However, some cultural creative workers oppose these interactions as they disrupt their focus. Gill's study (2002) attests that culturally creative workers desire proximity to others doing similar work. Contact with other cultural creative workers is a vital source of information about new and changing technologies, problem-solving, and future work opportunities and, in addition, essential to combat isolation.

Some cultural creative workers prefer socialising outside their workspace in nearby cafes and boutiques, while others attend events organised by established artistic groups. These groups provide an opportunity to reason with others and seek assistance or inspiration. However, some are concerned about these interactions disrupting their focus. Such groups exist as workspace collectives, too. Liot argues that collectives or "group forming" function as social circles. Group forming offers access to materials, equipment, space, and a platform for sharing experiences and information. They are a place for circulating information and sharing resources but also for developing relationships that generate new information and open new

doors for culturally creative workers. They offer a framework for joint learning professional skills and self-training. Collectives can also support responding to calls for projects and attest to the qualifications of members (Liot, 2009). Lastly, collectivisation is a strategic tool for cultural creative workers to mediate their financial precarity. Collectives support obtaining public subsidies more easily from local authorities, and through collectives, individual cultural creative workers can claim the same funding methods as those enjoyed by theatre companies (Liot, 2009). It also presents cultural creative workers with companions to share costs with, set up investments or work on projects, which alone would not be possible (Liot, 2009).

This section results in the aspects: Presence of other creatives nearby, Nearby art and cultural activities or amenities, Permeable space: People can see your work or walk in when working, Exposure to new ideas in the workspace, Not being alone, Information sharing and receiving, and Sharing resources as part of a community.

3.2.2 Cost

Aspiring artists and cultural creative workers often face the challenge of finding spacious and affordable environments that encourage creativity and allow for uninterrupted work periods. They must weigh the trade-off between renting properties that are cheap, spacious, and located in areas close to existing art-related activities, low noise, and freedom of expression (Liu et al., 2013). This is particularly challenging because uncertainty in selling their work results in a lack of steady income to pay for a rental. Affordable, suitable space is crucial to attracting and retaining creative talent and enabling them to run successful creative businesses. Tang (2020) sees this in her empirical analysis: low rent is a significant base for fruitful creative enterprise growth. Equally important are social networks and governmental management practices. Cunningham (2011) sees the precarity of their work as the reason cultural creative workers seek bottom rental costs, as artists' income fluctuates when payment only comes at the end of a contract. Which does not lend itself easily to the monthly rent cycle. Affordable space should be available on long-term leases to ensure the stability and survival of creative businesses (Evans et al., 2006). However, a duality in contract typology needs to be considered. While long-term contracts offer security, flexible lease contracts combined with accessible accommodation of physical expansion can allow some cultural creative workers to thrive within a resident and mobile artistic community, as Evans (2009b) stated. Although cultural creative workers are highly mobile, they want to be in charge of their mobility. Flexible leases create opportunities for expansion or quick relocation if needed, and they should not be addressed as a means to ease grounds for termination. The agreements regarding lease period or extension options should be clear from the start.

This results in the following aspects: Affordable rent, Long-term contracts with predefined rental periods, and Flexible contracts that end at any time.

3.2.3 Décor

Motalebi and Parvaneh (2021) found that opinions on shapes, colours, and volumes in design varied. However, the majority agreed that sharp shapes and angles should not be used in exterior space design and instead preferred simple-shaped objects. As for colour, the majority of their sample, particularly women, favoured bright colours for both the interior and exterior, although the specific colour choices were personal. Light grey, white, and neutral

colours were preferred in resting rooms. Interestingly, female artists placed greater importance on integrating natural environments, like gardens and greenspaces, into their creative work than male artists.

The aspects distinguished in this section are Simple-shaped objects as décor, Bright colours as décor, and Gardens and greenspace.

3.2.4 Flexibility

The workplace of cultural creative workers also depends on the work performed in such spaces. Their career is a bulimic one; the work is primarily contract-based. Therefore, cultural creative workers are highly mobile, will experience multiple career pathways, and are subject to varying workloads during a project (Pratt, 2000; Cunningham, 2011). Not only will assignments vary per client, but this also affects the requirement for product development. This indicates a high need for flexibility regarding the space's adaptability because creatives need to be able to adapt their work environment when they procure a new assignment. Motalebi and Parvaneh (2021) found multiple reasons for the need for flexibility. For instance, adapting space and equipment within a space was very important to cultural creative workers. Moreover, flexibility is thought to provide cultural creative workers with a means of making the space their own, creating a personalised space. Lastly, women in the study mainly reported flexibility and personalisation as two of the three most important factors of space selection (Motalebi & Parvaneh, 2021). Looking at innovation spaces and buildings where start-ups begin their business, Moultrie (2007) evaluated creative and innovation spaces. These spaces were designed to accumulate creative energy and support creative thinking for group sessions. Her evaluation regarded the flexibility of space, the reconfigurability and the alternative use of space and resources. The idea behind a flexible space for innovation spaces is to ease the flow of ideas. An open layout is considered by Lee (2016) to increase interaction and communication between co-workers. It offers the freedom and autonomy to choose and change workspace. For example, Weijs-Perrée et al. (2018) showed that people working in the creative industry prefer a flexible layout with shared areas, meeting spaces and a representative interior for their organisation in co-working spaces.

So, while cultural creative workers seek flexibility to change the layout of space, flexibility can also support teamwork, collaboration, and the flow of ideas in open layouts. This is generally the case in more commercial-oriented creative fields.

Aspects of this theme are Adaptability, the possibility to rearrange the workspace, the Possibility to personalise your workspace, and the Open layout to work in with no individual closed spaces.

3.2.5 Innovation

Inspiration is not the only creativity-invigorating aspect. With start-up companies, innovation is closely related to creativity. Many innovative start-up companies in Michigan seem to prioritise creating technology interfaces for collaboration, spaces for idea generation and areas for employees to take a short break or socialise. In a study by Lee (2016), balanced layouts, technology interfaces for collaboration, and spaces for idea generation are the three most important physical work environmental characteristics for start-up companies to

produce creative, innovative ideas and services for growth and competitiveness in the market. Creativity and inspiration are a large part of cultural creative workers' creation process, and these physical characteristics could support the process, too, although their importance is linked to group work.

The balanced layout is constructed from two attributes: flexible and open spaces and balance between work modes. Flexible and open spaces to support workflow for conceptual creative ideas to evolve to realisation and to encourage communication, interaction and collaboration between team members in a workspace; balance between work modes to provide different types of spaces for different work modes. To facilitate both teamwork and collaboration and support individual focus work when required. Technology interfaces for collaboration are designed to aid teamwork through various tools. These tools can be manual and low-tech, such as writing surfaces and pin-up tools, or electronic and high-tech, such as wireless connectivity and audio-visual display tools. These applications enable access to information, group sharing, and the creation and display of information. Idea generation happens in spaces where people gather to generate ideas through brainstorming, doodling, design improvisation, model-making, and role-playing. These spaces come in different forms: meeting spaces intended for formal meetings, typically closed and equipped with appropriate low-/high-tech tools; informal meeting spaces for informal meetings where tools for doodling are provided; and impromptu meeting spaces for less intentional meetings, typically provided in the hallways, corners or other paths of traffic to increase serendipitous interaction.

Aspects identified are 'technological interfaces, smart screens or tablets integrated into the space and dedicated spaces for idea brainstorming. The aspect of 'balanced layout' is omitted due to the focus on space flexibility and teamwork, which are mentioned in other themes.

3.2.6 Lighting
Regarding lighting, people's needs vary depending on their work type. However, one thing that remains constant is the desire for good lighting that can be controlled. Many cultural creative workers mentioned the importance of natural light in their responses (Motalebi & Parvaneh, 2021). This is where windows come into play as they serve as entrances to natural light. Interestingly, in most responses, female artists tended to have larger windows in their workplaces, which allowed more natural light to enter. Both men and women considered the existence of windows essential for taking breaks and leaving the workspace for a short period. It is worth noting that most people prefer seeing natural surroundings through windows instead of urban-built spaces (Motalebi & Parvaneh, 2021).

The following aspects are recognised for the theme lighting: natural light and large windows.

3.2.7 Location
When considering potential sites for cultural creative work, several factors must be considered, including the reputation of resident artists, the presence of consumption activities, state policy directions, the quality of the built environment, and the creative atmosphere (Liu et al., 2013). Tang (2020) adds that social networks and governmental management practices are equally important. In Beijing, the location pattern of art villages

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(cultural creative workspaces) is characterised by the metropolitan fringe, with all art villages situated in outer suburbs, urban fringes, and remote areas (Liu et al., 2013). Cultural creative workers seek abandoned rural factories and farmhouses close to urban services. This contrasts the location of creative hubs in other world cities, where artists clustered in the inner city near art-related activities, gradually radiating outwards to fringe areas. Moreover, a survey by Gill (2002) revealed that many individuals aspire to work in the city's cultural district or technology hub. Among these, cultural creative workers seek out authentic locations to work in, often avoiding suburbs and shopping malls that they perceive as emblematic of mass-market consumerism and a lack of individual taste (Ley, 2003). On the other hand, entrepreneurs value cultural creative workers' enriching cultural influence on spaces and often leverage it to their advantage, using the artistic bustle appeal created through the presence of the cultural creative workers for commercial and marketing gain.

The location and environment where culturally creative workers work can be important to their success and productivity. Urban areas with high population densities offer numerous advantages, such as access to specialised materials, human capital with specialised skills, financial support from sponsors and patrons, broad exposure to audiences, critics, scouts, and agents, and access to outlets, venues, and galleries (Harrington, 2020). Studies have shown that cultural creative workers prefer urban centres (Gill, 2002; Ley, 2003; Woldoff et al., 2011; Harrington, 2020). However, some cultural creative workers prefer solitude or seek peace outside bustling cities.

Aspects from the literature include an urban, highly populated area; Specialised material vendors nearby; Assistant labour pool within reach; Exposure to audiences and critics; Nearby access to vendors, galleries, venues and shops; and Government policy on cultural workspaces.

3.2.8 Room Dynamics

Room dynamics are essential to understanding cultural creative workers' multifaceted needs and preferences regarding their workspaces. Harrington (2020) emphasises the importance of designated and protected workspaces as a physical and psychological shelter for focused, self-imposed work. These spaces should be designated solely for work and to promote the right mindset when entering the room or sitting at the work desk. A space should be protected because the creator can leave the work in their workspace without fearing outside interference. A work in progress is sacred to cultural creative workers. They fear exposing unfinished work without their consent (Harrington, 2020).

Designated workspaces align with the findings of Motalebi and Parvaneh (2021), who argue for well-equipped work and rest spaces complemented by ergonomic furniture like adjustable desks and chairs. In addition, they mentioned the need for sufficient space for discussion with guests, other artists, and visitors. Moreover, the study found that cultural creative workers also preferred high ceilings and spaciousness, which helped create a positive mood. The size of a room is integral to its dynamics because different sizes allow for different room dynamics. Liu et al. (2013) emphasised that large studio space is an embedded feature in artistic creation, giving cultural creative workers the freedom to store equipment and design their rooms according to their needs.

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At the same time, the trend towards collective workspaces, highlighted by Liot (2009), suggests that shared layouts that encourage collaboration are increasingly becoming the norm. He describes the occurrence of larger spaces that are shared with multiple individuals. Lee (2016) builds on this by advocating for balanced workspaces that accommodate various work modes, whether collaborative or individualistic, stressing the need for individual and focused workspaces within larger collective workspaces. Lastly, Gill's study (2002) adds that cultural creative workers, particularly women, want a clear separation between home and work, preferring to operate from another space, mainly a rented studio or workshop.

Aspects of this theme are Spaciousness, Spaces solely for work, Privacy, Work and private life separated, Shared spaces, High ceilings and Adjustable furniture.

3.3 Conclusion

Relevant workspace aspects for culturally creative workers were assessed in workspace literature to answer the research question. Various aspects emerged as relevant. Multiple overarching themes were identified as relevant to the bigger picture of workspace selection. With overarching themes of bustle, cost, décor, flexibility, innovation, lighting, location, and room design, this chapter lists potentially relevant workspace aspects for cultural creative workers. Urban, bustling locations offer cultural amenities and networking, though some creatives opt for quieter places. Cost considerations, amplified by income uncertainties, highlight the potential benefits of collectivisation for shared expenses. The décor and atmosphere in workspaces reflect diverse creative preferences. The chapter underscores the value of flexibility in both space and lease terms, especially given the contract-based work nature of cultural creative workers. Dedicated room designs, ergonomic features, and opportunities for social interactions enhance the workspace's utility. Innovative elements and lighting, especially natural light, also hold significance. These aspects were identified from the literature. However, the list is extensive and might overwhelm participants when presented during the research phase. Therefore, a preliminary screening with users was utilised to try and find aspects that could be omitted.

3.3.1 Preliminary user review

After the literature study identified multiple workspace aspects, a few cultural creative workers were approached to verify whether the aspects connected to their workspace selection experiences. This exercise aimed to determine if the list of items gathered from the literature was relevant and relatable to the target audience before the actual data collection. Another goal of this exercise was identifying any aspects that could be removed, as the current long list may overwhelm the participants. Lastly, participants evaluated the clarity and wording of the aspects.

Four cultural creative workers from a creative hub in Eindhoven were individually and anonymously asked to determine whether the literature list related to their priorities when evaluating a workspace. Comments about the aspects made by the four cultural creative workers were noted and included in Appendix A. During the inquiry, the researcher asked whether an attribute was important, and the participant responded with a yes or no. It is important to note that no ranking is conducted in this process. The sole purpose was to check whether certain aspects were considered when selecting workspaces.

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Misunderstandings in the wording of the aspects were adapted for the next research phase, and the adaptations are presented.

Appendix B presents the complete list of evaluated aspects per user. Of the 34 attributes, 32 were evaluated as important in workspace selection. The fact that the small sample size acknowledged 94% of the attributes from the literature review suggests that further investigation is warranted. All wording changes and feedback from the group have been adapted and presented in Table 2.

The inquiries resulted in rewording some descriptions to make them more easily understandable for the target group. In order to make the list more manageable, some of the least reported aspects have been removed. The aspect "lowering costs by sharing resources" was merged with "sharing resources as part of a community" because the respondents noted they are practically similar. The "space solely for work" aspect was also removed as the interviewees considered it obvious to have a space solely for work. Because, in reality, cultural creative workers rent spaces solely for work. Finally, the two aspects, "bright colours" and "technology-driven, having access to high-end tools like tablets or displays in the workspace", were omitted as none of the participants considered them important.

The preliminary review was used to omit irrelevant aspects and clarify words. This chapter concludes with a list of 30 relevant workspace aspects for comparison with the perception of cultural creative workers in the following chapters to answer the main research question of how these aspects are ranked.

Table 2: Revised workspace aspect list

THEME	REVISED ASPECT WORDING
BUSTLE	Presence of other creatives nearby
	Nearby art and cultural activities or amenities
	Permeable space: People can see your work or walk in when working
	Exposure to new ideas in the workspace
	To not be alone
	Information sharing and receiving
	Sharing resources as part of a community
COST	Affordable rent
	Long-term contract, predefined rental periods
	Flexible contract ends at any time
DÉCOR	Simple-shaped objects
	Gardens and greenspace
FLEXIBLE SPACE	Adaptability, the possibility to rearrange the workspace
	Possibility to personalise your workspace.
	Open layout to work in, no individual closed spaces
INNOVATION	Dedicated spaces for idea brainstorming
LIGHTING	Natural light
	Large windows
LOCATION	In an urban, highly populated area
	Specialised material vendors nearby
	Assistant labour pool within reach

	Exposure to audiences and critics
	Nearby access to vendors, galleries, venues and shops
	Municipal policy on cultural workspaces
ROOM DYNAMICS	Lots of space
	Privacy
	Work and private space separated
	Sharing a closed-off workspace
	High ceilings
	Adjustable furniture in the workspace

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Chapter 4, Methodology

The workplace environment shapes individuals' experiences, productivity, and overall well-being. Understanding the preferences and priorities of distinct vocation segments becomes paramount. This thesis explores how various aspects of workspaces are prioritised through a selection exercise conducted with cultural creative workers. This chapter outlines the methodology employed to investigate the distribution of workspace preferences of cultural creative workers, answering research sub-question 3: "In what order do cultural creative workers rank attributes for creative workspaces?". First, the research method and its decision process are introduced. Second, the research design is detailed, including all steps to take when preparing and performing the method. Lastly, techniques to mitigate bias and ensure reliability are argued for.

4.1 Introduction

The research methodology aims to evaluate cultural creative workers' workspace preferences and answer the sub-question: In what order do cultural creative workers rank attributes for creative workspaces? Several methodologies were considered for the research to extract the information from the target group selected in Chapter 2, and ultimately, the choice was made to formulate a structured interview in which individual interviews were combined with participator ranking methods.

The first consideration taken is the importance of direct communication. The definitions of workplace aspects, terms and concepts can have different meanings for people, even when carefully worded. It is important to recognise that cultural creative workers may not have the same level of familiarity with workplace terminology as the researcher. This calls for a flexible approach to communication. Because the workspace aspects have been simplified into written descriptive sentences, the problem of conveying the right meaning arises. This can lead to interpretation problems in a strictly written scenario, which should be avoided (Choy, 2014). Direct one-on-one communication allows the researcher to respond directly to the interviewee's questions about the descriptions of the aspects. The interpretation of aspects is vital to the analysis and methodology. Therefore, the option for direct communication about these subjects where necessary is important for the methodology.

Secondly, during interviews, the researcher sits alongside the interviewee, which enables the researcher to provide context when necessary or ask follow-up questions based on the interviewee's responses. In contrast, with surveys, the researcher does not play an active role in assessing answers. This task can only be done after the participants fill in their answers. This also can lead to misinterpretations at the sender and recipient level because researchers depend on the clarity of participant answers, and participants might face difficulty understanding the terminology, as previously mentioned. Therefore, making the researcher responsible for interpretation is beneficial because they better grasp the terminology and ensure accurate interpretations of aspects. Correctly interpreting and documenting participant responses is crucial for extracting meaningful insights from the interviewees.

A third consideration is the target group's schedule. Because cultural creative workers work from deadline to deadline (Pratt, 2000; Cunningham, 2011), it greatly depends on when they

are approached. Their availability can be fleeting and an unpredictable factor. An approaching deadline might cause a potential participant to reconsider participation. Furthermore, the expectation is that cultural creative workers can make time individually more easily than organising group review sessions due to their varied work schedules. This assumption leads to favouring individual appointments over group meetings individually or repeatedly. This approach aims to minimise disruption of their workflow while optimising the effectiveness of the research process in understanding their perspectives.

Despite the advantages, interviews also have downsides compared to other methodologies. Interviews are time-consuming and resource-intensive (Choy, 2014). As a result, sample sizes for interviews are smaller, meaning statistical generalisability is limited, and sampling bias can have a larger effect. Interviewer bias needs to be taken into account, too. The researcher can have preconceived notions and unintentionally influence the research during one-on-one contact. However, interview guidelines exist to train researchers and negate researcher biases. However, younger researchers are more prone to these (Fontana & Frey, 2000). Lastly, the data obtained through worded interviews and its coding and interpretation are subjective in nature, resulting in additional interpretation biases and should be accounted for.

Concluding, one-time one-on-one interviews have multiple advantages considering the target group. The direct interaction with the target group can clarify definitions for both researcher and participant, negating misinterpretations. One-time interviews cater to the target group's volatile schedules. Although subjectiveness and interpretation biases form a threat, clear communication and guidelines should negate their impact.

4.2 Research design

The research was designed as a qualitative study, employing mixed methods of semi-structured interviews and participatory ranking. This section details the established research approach. First, the participant sample and suitable locations for their acquisition were identified. Subsequently, the interview techniques have been outlined, detailing the approach to posing questions and presenting the exercise description. Considerations of reliability, validity, and sample saturation were discussed. This section concludes with an overview of the data preparation and analysis techniques applied in the subsequent chapter.

4.2.1 Participants and Recruitment

The participants targeted for this study are cultural creative workers, a demographic recognised for their unique perspectives on workspace preferences. A group known for their creative thinking, affinity for artistic expression, and inclination towards meaningful work experiences characterised by their affinity for cultural expression, creativity, and non-conformist thinking. The sampling strategy aims to provide a diverse cross-section of the target group. Chapter 2.4 showcased the broadness and diversity of the cultural creative worker cluster. Industries that were representative of the cultural creative worker clusters were then selected. The research selected UN-identified creative domains and subsidiary creative industries to identify representative participants. Five industries were included, and these five represent three creative domains. The connection between the industries and domains is shown. Job profiles related to the industries have been specified to provide a general understanding of what kind of workers are sought.

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Heritage
- **Traditional cultural expressions**
  Job profiles specific to this industry: Arts and craft, cultural creation, artistic expression

Arts
- **Visual arts**
  Job profiles specific to this industry: Painting, photography, sculpture and antiques
- **Performing arts**
  Job profiles specific to this industry: Live music, theatre, dance, opera and puppetry

Functional creations
- **Design**
  Job profiles specific to this industry: Interior design, graphic design, fashion, jewellery and toys
- **Creative services**
  Job profiles specific to this industry: Architectural, tattooing and advertising.

Speaking to these different backgrounds in creative industries enhances the richness and breadth of perspectives, allowing for a broad understanding of workspace preferences. The sample size needed to be large enough to sustain diversity while allowing for multiple cases of similar backgrounds. At least two individuals from each industry were sought after to ensure representation, requiring ten responses. Mason (2010) stated that qualitative research samples depended on the nature of the research but did find a common line between 20 and 35 interviews most used by PhD researchers. However, he debated this range's fairness and suggested that PhD researchers select larger samples "to be on the safe side" (Mason, 2010). The minimum of ten participants seemed underwhelming, set by the theory of speaking to two representatives. To incorporate Manson's advice, the aim was to recruit a sample of 25 individuals in creative industries, which could satisfy the broad perspectives of the representatives in the creative cluster with a minimum of 2 representatives per industry.

The sampling strategy for recruiting interview participants involved a targeted approach at cultural workspace hubs, akin to street interviews, where individuals were directly approached for their time or to set up meetings. This method specifically focused on individuals with job profiles linked to the creative industries, ensuring the selection of fitting candidates. The snowball sampling technique was also employed, capitalising on the assumption that creatives in the cultural sector tend to form strong social networks (Markusen 2006, 1937). Asking participants to refer acquaintances broadens the network of potential participants. A referral created an initial level of trust with new participants because contact with the interviewer came through a known and presumably trusted connection, aiding in receiving fair responses (Fontana & Frey, 2020) and potentially strengthening the willingness of participants to contribute to the research.

The interviews have been conducted in Eindhoven, a city in the Netherlands. Eindhoven, the fifth-largest city in the Netherlands, is known for its strong focus on innovation and design. The city hosts the Dutch Design Week, an internationally acclaimed design event, and is home to the Design Academy, a prestigious institution for design education (Richards et al.,

2015). Additionally, Eindhoven offers a variety of design education providers, both practical and theoretical. Several sites in the city of Eindhoven have been identified as cultural and creative hubs. These include Microlab, Sectie C, Plan B, Spoor K and de Kruisruimte ateliers, with the final two not previously identified by the researcher. These two were discovered through referrals from earlier participants, thereby illustrating the concept of interconnected creative networks, as expounded by Scott (2012). Each of these spaces is known for providing workspaces that cater to the creative sector, with the first three being particularly renowned in the city for this purpose. These spaces provide workspaces for creative work commercially. Microlab stands out as a hub for creative workspaces and a diverse co-working space targeting various businesses. It accommodates around 200 businesses ranging from layers and marketing agencies to furniture artisans and industrial designers, demonstrating its substantial diversity. It provides several additional services, including free coffee, community building and shared facilities, which it provides through memberships with its clients in contrast to regular rental contracts. Sectie C is another significant location, offering space to over 250 creative entrepreneurs. It is the largest centre for the creative and entrepreneurial activity of the four locations. It provides traditional rental agreements without additional services. All of the latter three locations provide a direct rental agreement. Plan B contributes to this landscape with over 80 spaces, and Spoor K and de Kruisruimte ateliers, though smaller in scale, provide 20 and roughly 15 workspaces. The sites vary in size, capacity, costs, user cross-section and services, providing diverse user experiences in creative workspaces.

4.2.2 Data gathering

The research methodology uses semi-structured interview techniques in conjunction with participatory ranking. This assisted in uncovering workspace aspects from participants. The interview process consisted of two stages. A script for the first part was formed to ask questions and gather responses consistently, while the second part was more lenient and open for discussion or clarification. The aim was to present each participant with identical exercises and questions to offer a consistent interview experience. Maintaining a constituent interview technique enhanced the comparability of the responses while allowing perspectives to be shared through questions and participant feedback.

First, the interviewee was asked a range of personal demographic questions. The question "What is your job profile?" gathered data to link the participant with a cultural creative worker cluster. Furthermore, understanding the years of experience aided in determining their seniority in their respective field. This data, when analysed, might reveal patterns associated with levels of seniority. As Evans (2006) discussed, experienced cultural creative workers have made a name for themselves and require less exposure, which can affect their spatial preferences. Lastly, probing into the commute time and city of residence aimed at portraying the geographical scope around creative hubs. The interview questions are presented in Appendix C.

After answering the personal questions, the exercise and stage two started. Participants were requested to recall crucial aspects of workspace selection, with a maximum of ten. These aspects are what they considered when selecting an optimal workspace. The goal was to uncover the perceived preferences of respondents. Each recalled aspect was written down on

individual cards. These cards were used as a tool for participants to sort the aspects and aid the ranking process. A photograph of the recalled cards was taken to ensure proper documentation for later analysis. These aspects are named recalled aspects from this point on.

Subsequently, the participants were presented with predefined aspects from the literature review. Those aspects, printed on cards similar to the ones used in the previous stage, provided the participant with additional workspace aspects for comparison. The participant was asked to review the predefined aspects and select cases important to workspace selection. Afterwards, the participants were asked to create a selection and rank the ten most important aspects considering creative workspaces. The complete collection of predefined cards is shown in Appendix B.

Beforehand, the participant was informed to note cases where it felt recalled and predefined aspects had similar meanings. In cases where an aspect from the participant's recalled list mirrored the meaning of one on the predetermined list, the aspects were combined and regarded as one, and this is called a recognised aspect. This allowed for aggregating participant aspects into established meanings from the literature and discriminating between known aspects (predetermined) and unknown aspects (recalled). For example, if a participant recalled 'price' as a key aspect and encountered 'affordable rent' in the predefined list in the second stage, they were asked if the two were synonymous. If

Figure 4: Ten preferred aspects, including recognised aspects

agreed upon, these aspects were regarded as one aspect and took up one spot in the top 10 if selected. Figure 4 shows an example where recalled aspects were recognised with predefined aspects. In this case, the recalled aspect 'daylight' was recognised with the predefined aspect 'natural light'.

The thirty predefined aspects and potentially ten recalled aspects were presented in a tabular format of the paper pieces to assist with visualisation and ease of understanding for the participant. The interviewee was told they could rearrange the paper pieces in any way necessary for sorting them. They were advised to select between important aspects first and then refine the selection to the ten most important aspects.

Although the questions and tasks were consistent for all participants, the nature of the task allowed for a broad-spectrum interpretation. Additionally, responses from participants were unpredictable. Clarifying questions regarding the recalled aspects ensured alignment between the interviewer and the participant. It was, therefore, crucial for the interviewer to retain the flexibility to inquire further about what specific aspects implied, though this was not necessary for every aspect. Furthermore, participants shared insights about certain aspects. Probing these insights was invaluable in uncovering other potential aspects not initially considered. As the task required participants to determine whether their responses aligned with the literature's aspects, there was an opportunity for a dialogue. The interview

method was specifically chosen to allow the researcher to provide immediate clarification or to draw attention to aspects that align with those on the predefined list from the literature.

4.2.3 Reliability and validity

Maintaining the reliability and validity of the research methodology is crucial to ensure the credibility and trustworthiness of the study's findings. Reliability ensures consistency and replicability, internal validity ensures that the research accurately measures what it intends to measure, and external validity means outcomes apply to other contexts. In the context of this study on cultural creative workers' workspace preferences, the following considerations are undertaken to enhance both reliability and validity.

Reliability

Measures have been implemented to ensure a consistent and robust interview process to enhance the dependability of the research methodology. A semi-structured interview technique was adopted, utilising a consistent set of questions and prompts for all participants, addressing the inherent subjectivity of the research scope. Recognising this subjectivity, the approach aimed to align participant responses to maintain reliability.

The semi-structured approach was designed to reduce response variations that might arise from differing interview formats, thus bolstering the study's dependability. Interview guidelines recommended by Fontana & Frey (2000) were incorporated, leading to several specific measures:

- Each interview began with an open and friendly conversation, helping participants feel at ease.
- Open-ended questions were posed to stimulate participants' deeper, more insightful responses.
- When participants required clarification on concepts, standardised examples were used. This strategy helped minimise variations in interpretation.
- Interviews were conducted in participants' workspaces. If others were present, a secluded space was sought to ensure privacy.
- After participants completed their rankings, their understanding of each aspect was explored. This helped align the interpretations of both the researcher and the participant.

These measures aimed to mitigate subjectivity and enhance understanding. The role of the interviewer was recognised as critical in minimising non-sampling errors. Adhering to these guidelines significantly reduced the likelihood of response errors and other related inaccuracies, as Fontana and Frey (2000) suggested.

Internal validity

A structured methodology was used to bolster research validity. Internal validity is fortified by incorporating a list of workspace aspects drawn from previous research and user input, ensuring comprehensive coverage of preferences during interviews. Employing a triangulation strategy, participant-recalled aspects are compared with a predetermined list to understand what aspects are known and which are not. Participants are then asked to prioritise their preferences using their recalled aspects and those from the literature, ensuring

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alignment between their views and the broader research context. This approach, similar in spirit to member checks, validates the data and solidifies its credibility.

External validity

External validity is bolstered through instrumenting UN-defined creative industries, as the definition of job clusters is universally recognised. Previous studies appear not to have explored this group regarding workspace preferences. The sample is kept broad to incorporate multiple viewpoints. This enhances external validity when considering users of creative workspaces because various creative industry users use such spaces. Although the sample does not represent the complete population, measures have been taken to incorporate multiple viewpoints and enhance saturation. The target group was asked about their preferences for the built environment, both physical, economic and social. This study is only generalisable to people looking for creative workspaces. This study specifically examines individuals working in creative environments, often with limited financial means, although this characteristic has not been incorporated into the research.

Saturation

Interviews were conducted over three weeks, from 04-09-23 to 22-09-23. During this time, the interviewer conducted interviews on six separate occasions. Interviews took place at five creative workspace hubs as follows: Microlab Strijp-S (7 interviews), Kruisruimte ateliers (2 interviews), Spoor-k (3 interviews), and Sectie-C (9 interviews). Out of the 25 participants that were approached, 21 were available for an interview. Although a mechanic was interviewed, he was left out of the analysis as he did not fit into any creative industries. Therefore, a total of 20 valid interviews were conducted. With these 20 interviews, minimum saturation was reached, as the requirement of at least two individuals with backgrounds in each of the five selected creative industries was fulfilled, and the range identified by Mason (2010) was met.

4.3 Data preparation and statistical techniques

The gathered data will undergo multiple analyses. Each respondent provided unique responses due to the exercise to recall important aspects. The responses needed to be coded into comparable definitions to analyse all unique responses comparatively. Furthermore, the analysis of the responses was conducted using a multi-faceted approach. Each aspect was examined individually, focusing on the frequency of mentions to enable further in-depth analysis. Subsequently, the core question of this research was addressed by evaluating the ranked importance of these aspects as determined by the participants. The allocation of points to each aspect reflected their overall prioritisation. The study also investigates the significance of various aspects based on their ranking order. A preliminary investigation is provided into the first, second, and third ranks regarding importance. Furthermore, the relationship between different aspects was explored to ascertain if certain aspects are more commonly associated with creative domains than others. This was achieved by calculating the lift ratio and determining if specific preferences correlate with others.

4.3.1 Unifying responses

To analyse the interview responses, the data are categorised into two distinct types: personal data related to each participant and data concerning various aspects of workspaces. The aspect data is further subdivided into two primary categories: predefined and recalled

aspects. Predefined aspects were identified during the literature review presented in Chapter 2. These represent the anticipated aspects of importance for workspace evaluation. Recalled aspects are the elements that participants spontaneously identified as significant when discussing workspace attributes during stage 1. This could uncover new priorities not previously considered. The recalled aspects are further broken down into two subcategories.

- *Newly* recalled aspects are those mentioned by participants that did not share similarities with any predefined aspect, potentially presenting novel insights.
- *Recognised* aspects are participant-mentioned aspects that pair with the predefined aspects, reinforcing the initial findings.

For example, if a participant mentions 'price' and recognises it as the predefined 'affordable rent', the aspect is considered a recognised aspect. On the other hand, a recalled aspect that was not anticipated in Chapter 2 would be classified as a newly recalled aspect. This structure enables cross-referencing the anticipated and emergent themes within workspace preferences, ensuring the compressibility of expected and new participant perceptions.

The aspects mentioned by participants are considered pure responses, which means that the literal words of participants were written down. To make the comparison between interviewee responses possible, each aspect needed to be coded into comparable terms. To do so, the recalled aspects were coded into similar aspect descriptions. Because Dutch and non-Dutch interviewees participated, all aspects were translated into English afterwards. For coding, the recognised recalled aspects are coded into their recognised predetermined aspect. The newly recalled aspects are manually reviewed and assigned to existing terms. In this case, recognised aspects are translated into the predefined aspect description they were associated with. Otherwise, newly recalled aspects were given a unique description by the researcher.

4.3.2 Frequency and Ranking Analysis

The gathered data was subject to two main types of analyses: frequency analysis and ranking analysis. Frequency analysis employed the number of times an aspect is mentioned in various situations. This signalled the times the sample mentioned a specific aspect. The total number of mentions can give a perspective of the representation of aspects within the sample. In parallel, the ranking analysis provided further context to the research question. The method assigned points to each rank in the top ten. The 10th place was given one point, the ninth place two points, the 8th three points, etcetera, and the 1st received ten points. An aspect received the associate point with its rank. The points of aspects were compiled throughout the total sample to create a ranked list.

However, a notable assumption underpinning the ranking system was the uniformity of step weights between each rank. This meant that the difference in importance between consecutive ranks was considered equal throughout the list. For instance, the perceived difference in importance between the first and second-ranked aspects was treated as equivalent to that between the ninth and tenth-ranked aspects. This assumption may have implications for interpreting the ranked list, especially in understanding the nuances between closely ranked aspects.

4.3.3 Generalisability across the sample

As Chapter 2 showed, cultural creative workers belong to various industries. Therefore, it was important to check for generalisability across the different industries. The ranking results were subjected to a statistical test to verify if the outcomes were generalisable. The One-way ANOVA test is used to investigate and analyse the differences between the mean of groups of the same population (Allen et al., 2014). Preferably, the differences among the five creative industries would have been tested. However, the choice was made to analyse the three creative domains due to the small samples in each industry, at least two per industry. The aggregation of the smaller samples in the industries into domains created groups larger than five, which allowed statistical tests to be executed. The statistical tests helped to determine whether all the clusters responded uniformly or if there were any differences among the sample. The groups used for this analysis were creative domains identified by the UN: heritage, arts and functional creations (UNCTAD, 2010) and mentioned in section 4.2.1.

To investigate and analyse the differences between the means of the creative domains, some assumptions related to One-way ANOVA needed to be met to proceed with the test. Specifically, the assumptions for the test are independence of participants, normality of the sample, and homogeneity of variance (Allen et al., 2014). Several tests were utilised to test whether these assumptions hold. The independence of participants is related to the research design and cannot be tested. The Shapiro-Wilk test is utilised alongside visual data inspection to test the normality of the sample. Homogeneity can be tested with the Levene's test. Levene's test hypothesis states that group variances are equal in the sample. The alternative hypothesis is that group variances are not equal in the sample. If the assumptions for ANOVA do not hold, an alternative analysis method, the Kruskal-Wallis test, is proposed.

The Kruskal-Wallis test is a non-parametric statistical method that compares the medians of two or more independent groups (Ostertagová et al., 2014). As an extension of the Mann-Whitney U test in case of more than two groups, it offers an alternative to the one-way ANOVA when the assumption of normally distributed data is not met. The test operates by ranking all the data from all groups together and then assessing if the ranks for the different groups differ significantly. The null hypothesis for the Kruskal-Wallis test asserts that the population medians of all groups are equal. A significant result suggests that at least one group's median differs. Given its non-parametric nature, the Kruskal-Wallis test makes fewer assumptions about the data. It can be especially beneficial when dealing with ordinal or interval data that deviates from a normal distribution. If the test yields a significant difference, post-hoc analyses, such as Dunn's test, can be employed to pinpoint which groups differ from each other. The following assumptions are required when using the Kruskal-Wallis test (Ostertagová et al., 2014). The continuous distributions for the test variable are the same (except their medians) for the different populations. The cases represent random samples from the populations, and the scores on the test variable are independent of each other. The Kruskal-Wallis test hypothesises that there is no significant difference between the groups.

4.3.4 Probability and Lift Ratio

After investigating the uniformity of the group preferences, an analysis method was utilised to explore the likelihood of aspect mentions within the creative domains of heritage, arts, and

functional creations. These domains are the aggregated form of the creative industries. Treating the frequency answers from the sample as a data source makes it possible to calculate the ratio of aspect preferences within the creative domains. For this analysis, lift ratio calculations are used, as outlined by Nisbet, Miner, and Yale (2018). This approach measures the probability of one aspect being mentioned in conjunction with a group and the overall likelihood of that aspect being mentioned independently. Thus, it evaluates the probability of groups mentioning aspects and makes individual aspect comparison possible.

The formula used to calculate the lift ratio between aspects A and domains D is shown in Formula 1. Where $P(D_i \cap A_j)$ stands for the probability of an aspect j being mentioned by domain i, $P(D_i)$ for the probability of a participant being part of domain i, and $P(A_j)$ for the probability of an aspect j being mentioned in a top ten, these latter two are called support values.

$$Lift \; ratio \; (D_i, A_j) = \frac{Probability \; (D_i \cap A_j)}{P(D_i) \times P(A_j)} \quad (1)$$

Several probabilities (P) must be computed first to calculate the lift ratio.

All support values need to be calculated, meaning the probabilities of domain D and aspect A being mentioned within the sample:

$$P(A_j) = \frac{Frequency \; A_j}{Total \; sample} \quad (2)$$

$$P(D_i) = \frac{Frequency \; D_i}{Total \; sample} \quad (3)$$

Then, the probability for D_i and A_j appearing together needs to be computed.

$$P(D_i \cap A_j) = \frac{Frequency \; D_i \; \& \; A_j}{Frequency \; A_j} \quad (4)$$

To illustrate, heritage participants mentioned the affordability aspect eight times, compared to 17 times in the sample. The probability for affordability in heritage would be $P(D_{heritage} \cap A_{affordable})$ = 8 / 17 = 47%. These probabilities are then used as input for the lift ratio calculation.

Suppose an aspect in the heritage group has a lift ratio of 1,31. In that case, this indicates a 31% higher likelihood of the aspect being mentioned by someone in the heritage group than the chance of it being mentioned. A lift ratio larger than 1 signifies a positive correlation between the group and aspects, shedding light on their interconnectedness.

The lift ratio thus provides an alternative to traditional correlation analyses. Unlike methods that require assumptions of normality or independence, the lift ratio offers a more direct assessment of the strength of association between aspects. This makes it particularly valuable for this data set, where the data's nature precludes conventional statistical tests. Consequently, this technique enhances understanding of the relationships within and between the domains, adding to the generalisability or distinction thereof.

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4.4 Conclusion

This chapter explained the steps taken to answer the research question. The choice for one-time one-on-one interviews was elaborated on in the introduction. After that, the diversity sampling strategy was introduced, and the interview process was explained. Participants initially recalled key aspects they prioritise when evaluating creative workspaces. Following this, they were presented with a literature-derived list of aspects. They selected their top ten most crucial criteria from the recognised aspects of their recollection and the provided list. The process to unify and prepare the acquired data has been described, and the primary analysis techniques, along with supplementary statistical tests, have been explained to facilitate the extraction of meaningful information.

Chapter 5, Results

This chapter will answer research sub-question 3: In what order do cultural creative workers rank the aspects of workspace aspects? It presents the results from analyses of the data collected in the twenty interviews, focusing on the ranking exercises. It covers sample statistics and examines responses through frequency analysis and theme analysis. The diversity in the group is analysed for uniformity purposes using the Kruskal-Wallis test and lift ratio.

5.1 Sample description

In Table 3, the job profiles of the 20 participants are broken down into their respective creative industries. They have been grouped based on the UNCTAD (2010) definition of creative industries. Moreover, industries have been grouped into creative domains, which are wide-ranging categories dependent on the level of cultural or commercial characteristics of creative industries. This categorisation helps compare and understand cross-sectoral interactions (UNCTAD, 2010, p.8). The sample has three domains: 'heritage', 'arts', and 'functional creations'. 'heritage' is the largest domain with eight participants and includes 'traditional cultural expression'. 'Arts' has six participants, four belonging to 'visual arts' and two to 'performing arts'. 'Functional creations' include six participants, four belonging to the 'design' industry and two to 'creative services'. The group of designers is the largest, represented by six individuals.

Table 3: Creative domain and industry representation in the sample

UNCTAD Domain	UNCTAD Industry	Job profile		Number of participants	Years of business experience	Commute time
Heritage	*Traditional cultural expression*					
		Ceramics artist		1	46	15
		Artist		1	12	0
		Designer		6		
			1st		1	15
			2nd		1	15
			3rd		10	7
			4th		2	10
			5th		3	10
			6th		1	12
Arts	*Visual arts*					
		Photographer		2		
			1st		6	0
			2nd		12	18
		Animator and storyteller		1	3	15
		Photographer and graphic designer		1	2,5	3
	Performing arts					
		Musician		1	21	5
		Professional knife sharpener and Music producer		1	15[1]	5

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[1] The person has worked as a knife sharpener for 4 years and as a music producer for 15 years. Their experience as a music producer was used for analysis because it is the largest and producing music is part of cultural and creative work sectors.

Functional creations	Design					
		Interior designer	1		7	60
		Furniture designer	1		26	5
		Furniture artisan	2			
				1st	3	25
				2nd	2	10
	Creative services					
		Tattoo artist	1		7	3
		Chief technology officer, product owner	1		9	15
		Total	**20**			

The sample comprises 20 individuals, out of which 17 reside in Eindhoven city, while the rest live outside the city. Among those living outside the city, two reside in the nearby villages of Nuenen and Bergeijk, while one participant lives in Tilburg, which is a city half an hour away from Eindhoven. All the participants work in the metropolitan region of Eindhoven. The mean years of experience in their respective business is ten, while the median is seven years. The maximum is 46 years, and three persons had one year of experience, which is the lowest. Fifty per cent of the sample has between three and twelve years of experience. One-quarter of the sample is a starting cultural creative worker with 1 to 3 years of experience.

The maximum commute time is one hour when considering the distribution of commute times. The minimum time is zero because two participants work from home[2]. The average time spent commuting is 12 minutes, while 75% of the sample lives within a 15-minute range from their workspace. Considering commute, the sample of the 'design' industry has a larger average compared to the rest, primarily due to the hour commute of one of the participants. Other industries live, on average, ten minutes away from their work.

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[2] The two participants were approached when they used the workspace of a friend who rented a space in a creative work hub. They did not rent a space themselves.

Table 4 aggregates job experience and commute time per creative domain and industry. In this case, 'heritage' and 'traditional cultural expression' share the same statistics. The 'visual arts' industry has the smallest experience, with six years on average. 'Performing arts' is the group with the largest experience. Besides 'performing arts', the averages differ close to two years from the median of the total sample. Considering commute, the sample of the 'design' industry has a larger average compared to the rest, primarily due to the hour commute of one of the participants. Other industries live, on average, ten minutes away from their work.

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Table 4: Aggregation job profile and experience per creative domain and industry

UNCTAD Domain	UNCTAD Industry	Average	
		Experience	Commute
Heritage		10,6	9,9
	Traditional cultural expression	10,6	9,9
Arts		9,9	7,7
	Visual arts	5,9	9
	Performing arts	18	5
Functional creations		9	19,7
	Design	9,5	25
	Creative services	8	9

Experience in years and commute in minutes

5.2 Interview results

Twenty structured interviews were taken with each participant from the sample. Each participant provided several recalled preferred workspace aspects. Furthermore, each participant provided a ranking of their ten most preferred aspects. The interviews resulted in 139 aspects recalled by memory from the participants. Additionally, the data consisted of 200 ranked aspects.

5.2.1 Interview caveats

During the interviews, several interviewees mentioned difficulty grasping the differences between the aspects of adaptability and personalisation. They failed to see the difference between decorating a space with their identity or physically altering it through self-made ways. This misinterpretation did not appear during the query about the importance of aspects after the literature study with the four "test" cultural creative workers. After the researcher explained the difference, it was understood that this confusion was likely because the meaning behind adaptability and personalisation is similar in the eyes of the interviewees. This is likely because they see the ability to adapt something as a means to personalise it. For example, when a workspace is delivered to a tenant, it is delivered in an empty, clean state. Ready for decoration and furnishing to their liking. This freedom allows tenants to hang things on the walls and 'adapt' the space to their imagination, resulting in the misinterpretation between adaptability and the ability to personalise.

The aspects of 'large windows' and 'natural light' were seen as the same in many interviews, although when the difference was explained, the preference always went to natural light.

Additional final comments from participants are included in Appendix F for reference. While these comments are valuable, they did not yield new aspects or insights that significantly altered the analysis.

5.2.2 Recalled aspect aggregation

In the interviews, participants recalled a total of 139 aspects. This included new aspects that were not on the original list and recognised aspects. The complete table of all aspects and their coding is provided in Appendix G for transparency reasons. The aggregation of the recalled aspects into the original list resulted in 37 different aspects, of which 20 were not identified in the literature study. The remaining 17 aspects were recognised as having a

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similar meaning to the predetermined aspects from the literature. The 20 new recalled aspects are shown in Table 5. In Table 5, the new aspects were manually designated to established literature themes following those established in Chapter 2. These themes were bustle, costs, décor, flexible space, innovation, lighting, location, and room dynamics. The aspects were portrayed as groups of these themes. An additional explanation of the meaning of the new aggregated aspects is also given in the table. Most of the new aspect names should be self-explanatory. However, each is briefly described below for clarity. The researcher has made some decisions regarding coding, for example, merging individual mentions of facilities, like Wi-Fi, internet access and water installations, into an overarching facilities aspect. Some recalled aspects were not physical, like a 'second home feeling'. However, these have implications for the physical appearance of a creative hub and thus were included in the aggregated list.

In the initial theme division, the aspects of 'good contact with the landlord' and 'few regulations' were not included in any existing theme; therefore, an additional theme called 'Other' was created to incorporate these aspects. Notably, there is a large concentration of room dynamic aspects. Multiple new aspects were considered part of the Room Dynamics theme. In this sense, Room Dynamics is a broad theme incorporating various physical aspects of room qualities. Aspects such as 'clean space', 'heavy equipment machinery', 'extra services', 'storage', 'private mailbox', and 'logistics' share the trait of providing practical additional amenities and benefits to a space without the social aspect that some of the Bustle aspects have, like 'sharing resources'. 'Facilities' is included in the Room Dynamics theme because electric connections, water access points, and Wi-Fi should be part of the workspace or be present in it. The same holds for 'heating and ventilation'. 'Safety' is also included in the Room Dynamics theme. Although it is more of an intangible aspect, it has physical implications, such as the presence of cameras and locks, which provided the reasoning for its inclusion in Room Dynamics. Aspects that provided interesting or inspirational features were attributed to the Bustle theme. 'Pleasant atmosphere' and 'second home feeling' were grouped with Décor, as these aspects related to the feeling behind the physical appearance of a space, as well as 'white walls'. 'Accessibility' is grouped in the Location theme. Although it can be considered an individual category in some literature (Weijs-Perrée et al., 2018), the reasoning is that the location of something is related to its accessibility, and creating a theme for a single aspect is undesirable.

Although 'facilities', 'accessibility', 'safety', and 'heating and ventilation' aspects are familiar concepts within real estate evaluation and were not picked up on in the literature study, some mentioned aspects brought up were uniquely identified by cultural creative workers, distinguishing them from these more generally recognised factors. These included aspects such as the 'presence of heavy equipment machinery' and 'few regulations'. Both are important to the creation process, with the former being related to the machines required for creation and the latter being related to the creation process. Because regulations limit the creative freedom a cultural creative worker has with space. To elaborate on this, a participant mentioned an example of the rules of a workspace dictating the tidiness of the common space. The participant denounced this rule, as leaving something for some time can be part of the process.

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Table 5: New aggregated recalled aspects

Aggregated recalled aspects	Associated theme	Clarification
Change of scenery	Bustle	The space should offer a change of scenery from home. Spaces that offer a different internal and external environment can inspire fresh ideas.
Repurposed building	Bustle	The space is part of a repurposed building. The space having a different function than it was designed for, usually industrial, creates interesting perspectives.
Temporariness of the area	Bustle	The feeling that the space will not last. At some point in the future, it will either be replaced or demolished. This creates interesting perspectives.
Pleasant atmosphere	Décor	The ambience of a space should be inviting and agreeable.
Second home feeling	Décor	The space should evoke the comfort of home.
White walls	Décor	The preference for white-walled spaces.
Accessibility	Location	The ease of reaching the space is vital, considering various transport modes, parking spaces, and logistical facilities.
Location positioned in nature	Location	The space should be in a natural or rural environment.
Availability	Room Dynamics	Whether the space is available for immediate use
Clean space	Room Dynamics	The space should be clean and kept clean.
Extra services	Room Dynamics	Extra services are services outside regular facilities like power and internet access. Examples include additional service personnel, free parking, drinks, organised events, and meeting rooms.
Facilities	Room Dynamics	Facilities refer to traditional services provided in rental real estate, like electricity, Wi-Fi, kitchen, and water access. Instances where these examples were mentioned specifically were grouped in this aspect instead of making it a unique theme. This will be explored further in the results.
Heating and ventilation	Room Dynamics	The ability to heat or ventilate the space, including the supply of fresh air.
Heavy equipment machinery	Room Dynamics	The conditions to facilitate heavy machinery or the presence of shareable machinery.
Logistics	Room Dynamics	Spaces should provide logistic services or allocate space for accessible loading and unloading of supplies.
Private mailbox	Room Dynamics	The presence of private mailboxes.
Safety	Room Dynamics	The feeling of being secure and the physical context that the premises are secured.
Storage	Room Dynamics	Having the option to store things outside the workspace.
Few regulations	Other	Some regulations limit the creation process or prevent certain creation methods (e.g. making noise). Limited interference through rules from owners is preferred.
Good contact with the landlord	Other	Having a landlord open to suggestions for improvement or adaptations of the space is preferred. This includes the reliability of upholding agreements.

5.3 Results

Table 6 shows the distribution of the sample's first, second and third-ranked aspects. The results show a significant variation in the distribution of opinions in the highest ranks. Although affordability was mentioned as the most important aspect eight times, there was more diversity in opinion regarding subsequent rankings. The table 'number of mentions in the top 3' clearly demonstrates that two aspects (affordable and spacious) are mentioned significantly more than the others, accounting for about one-third of the total (21/60). The top 4 aspects account for 50% of the sample with 31 mentions. In contrast, twelve aspects were mentioned only once, and seven were mentioned twice or thrice. Overall, the three most important ranks included 23 different aspects.

Table 6: Distribution of the first, second and third ranks of preferred aspects

Most important		Second most important		Third most important		Number of mentions in top 3	
Affordable	8	Affordable	3	Facilities	3	Affordable	13
Spacious	3	Facilities	3	Adaptability	2	Spacious	8
Presence of like-minded creatives	2	Spacious	3	Affordable	2	Facilities	6
Heavy equipment machinery	2	Natural light	2	Sharing resources as a community	2	Presence of like-minded creatives	4
Private mailbox	1	Assistant workforce	1	Spacious	2	Heavy equipment machinery	3
Sharing resources as a community	1	High ceilings	1	High ceilings	2	Sharing resources as a community	3
Ability to share information, knowledge	1	Heavy equipment machinery	1	Flexible contracts	1	Flexible contracts	3
Flexible contracts	1	Large windows	1	Permeable	1	High ceilings	3
Separation between home and workplace	1	Ability to share information, knowledge	1	Clean space	1	Adaptability	3
		Adaptability	1	Few regulations	1	Ability to share information, knowledge	2
		Presence of like-minded creatives	1	In an urban area	1	Natural light	2
		Flexible contracts	1	Presence of like-minded creatives	1	Private mailbox	1
		Accessibility	1	Safety	1	Separation between home and workplace	1
				Good contact with the landlord	1	Assistant workforce	1
				Second home feeling	1	Large windows	1
						Accessibility	1
						Permeable	1
						Clean space	1
						Few regulations	1
						In an urban area	1
						Safety	1
						Good contact with the landlord	1
						Second home feeling	1

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After investigating the frequency of the top three ranks, diving deeper into the frequency, ranking score, and average rank of all aspects proved insightful. Table 7 provides the complete list of aspects. The table showcases the Total Ranked Score of each aspect. This is the summation of points awarded to aspects based on their position in every top ten in the sample. The Average Rank is the total ranked score divided by the frequency, providing an average score on a 1 to 10 scale per aspect to present the general position of the aspect on a preference top ten. Mentioned frequency is how often an aspect has been mentioned in the sample. The Number of Times Recognised is how many times participants connected the meaning of one of their recalled aspects with a predetermined aspect. The final column showcases the theme associated with the aspect. Fourteen aspects did not get picked in any top ten. These consisted of seven predefined aspects and seven new recalled aspects.

Table 7: Overview of frequency and rank analysis per aspect

Workspace Aspect	Total Ranked Score (0-200)	Average Rank (1-10)	Mentioned Frequency (0-20)	Number of Times Recognised	Theme
Affordable	132	7,76	17	10	Cost
Spacious	90	7,5	12	7	Room dynamics
Presence of like-minded creatives	86	5,73	15	12	Bustle
Natural light	77	5,5	14	11	Lighting
Adaptability	74	5,69	13	3	Flexible space
Flexible contracts	63	5,25	12	0	Cost
Facilities	49	6,125	8	-	Room dynamics
Ability to share information, knowledge	44	4,4	10	3	Bustle
High ceilings	40	5,71	7	4	Room dynamics
Sharing resources as a community	38	6,33	6	1	Bustle
Heavy equipment machinery	36	7,2	5	-	Room dynamics
Accessibility	34	5,67	6	-	Location
Ability to personalise	30	3,75	8	0	Flexible space
Separation between home and workplace	27	4,5	6	1	Room dynamics
Exposure to new ideas	26	3,71	7	1	Bustle
In an urban area	24	4,8	5	0	Location
Privacy	24	4,8	5	2	Room dynamics
Gardens and greenspace	18	3,6	5	1	Décor
Art and cultural activities	17	3,4	5	1	Bustle
Large windows	17	4,25	4	0	Lighting
Assistant workforce	16	8	2	0	Bustle
Safety	16	5,33	3	0	Location
Permeable	14	3,5	4	-	Room dynamics
Not being alone	14	4,67	3	1	Bustle
Heating and ventilation	14	7	2	-	Room dynamics
Few regulations	10	5	2	-	Other
Private mailbox	10	10	1	-	Room dynamics
Extra services	9	4,5	2	-	Room dynamics
Dedicated spaces for ideas	8	4	2	0	Innovation
Clean space	8	8	1	-	Room dynamics
Good contact with the landlord	8	8	1	-	Other
Second home feeling	8	8	1	-	Décor
Availability	7	7	1	-	Room dynamics
Logistics	7	3,5	2	-	Room dynamics
Exposure to audiences and critics	4	2	2	1	Location
Specialised material sellers nearby	1	1	1	0	Location
Long-term contract	0	0	0	0	Cost
Simple-shaped objects	0	0	0	0	Décor
Open layout	0	0	0	0	Innovation

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Nearby sellers/vendors	0	0	0	1	Location
Government policy on cultural workspaces	0	0	0	0	Location
Sharing a closed-off workspace	0	0	0	0	Room dynamics
Adjustable furniture in the workspace	0	0	0	0	Room dynamics
Change of scenery	0	0	0	-	Bustle
Location in nature	0	0	0	-	Location
Pleasant atmosphere	0	0	0	-	Décor
Repurposed building	0	0	0	-	Bustle
Storage	0	0	0	-	Room dynamics
Temporariness of the area	0	0	0	-	Bustle
White walls	0	0	0	-	Décor

The analysis focuses on identifying key aspects ranked highly. First, the ten highest-ranked aspects were investigated. In these, 'affordable rent' emerged as the top preference, mentioned most often (132 points, 17x in the top 10). This indicates its significant importance to the participants. This can have multiple reasons: starting creatives having difficulty selling their work to procure a steady stream of income (Cunningham, 2013), wanting creative liberties to create cultural works not solely with commercial interests (Bocconcelli et al., 2020) or minimising business costs to increase turn over for business security. The average rank of 7,76 supports the upper valuation. 'Spacious' workspaces, though mentioned less (90 points, 12 mentions), were also considered highly important. This is supported by its average rank of 7,5, the second highest in the ten highest-ranked aspects. However, cultural creative workers have a trade-off to consider. For every m2, more cost is associated. Spaciousness entering the second place suggests that a smaller space is appreciated more than a large space for less cost. However, large spaces with low costs are preferred, unsurprisingly.

In contrast, the 'presence of like-minded creatives' was mentioned more often (15x), although deemed less important than spaciousness (86 points). The average rank of 5,73 suggests that people prefer larger spaces over community aspects, though both are highly valued. This reinforces the notions of Caves (2003) and Markussen (2006) that cultural creative workers value networks and other creatives. Assuming creatives attract creatives like Florida claimed, they value each other's presence to collaborate or community sense, where support can be received and given. Although 'natural light' (77, 14x) and 'adaptability' (74, 13x) have similar ranks, with a 3-point difference, the ones that did pick adaptability placed it slightly higher in their preference. Next, 'flexible contracts' (63, 12x) is the sixth highest aspect. Compared to its counterpart, 'long-term contract', it is clear that the sample favours flexibility, even greater than many other aspects. In the seventh rank sits 'facilities' (49, 8x).

Interestingly, 'facilities' is the highest-ranked newly mentioned aspect, and its score is among the ten most valued aspects. This is important because this aspect was not present in the predetermined list. Not all participants considered it, only those who recalled the aspect. However, according to the interviewees, some facilities like access to water, serviced Wi-Fi, and three-phase power are not provided in every workspace on the market. Having space to meet other cultural creative workers is seen as greatly important, too, because the 'ability to share information' (44, 10x) is ranked eighth. Although this aspect received the lowest average rating in the upper ten, an average of 4,4 still conveys importance and showcases the

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value cultural creative workers put on networking. 'High ceilings' (40, 7x) are heavily valued too. Finally, the tenth highest ranked aspect is 'sharing resources as a community' (38, 6x), emphasising the value of aiding each other and expressing this through institutions or directly by sharing materials, tools and other cost-cutting practices.

The initial line-up of the most important workspace preferences paints a picture of a spacious and reasonably priced workspace abundant with natural light. The presence of a community of like-minded individuals and access to business facilities and tools would make it a well-equipped space to meet the needs of cultural creative workers.

Notable mentions are 'heavy equipment machinery' (36, 5x), 'assistant workforce nearby' (16, 2x), and 'heating and ventilation' (14, 2x), with average scores of seven or higher. These three are all newly mentioned aspects, and their high averages signal their importance in the top ten preferences of the sample. Especially, 'heavy equipment machinery', with five mentions out of 20, shows the significance of providing spaces where tools are allowed or facilitated.

On the other hand, insights can be gained from aspects the participants did not favour or gave low priority to. Fourteen aspects were completely absent, including seven predefined ones. This is interesting because these seven aspects were mentioned by cultural creative workers as important in the recall phase and were not included in their top ten. These seven aspects were 'change of scenery', 'location in nature', 'pleasant atmosphere', 'repurposed building', 'storage', 'temporariness of the area' and 'white walls'. Their themes did not show clear revelations, portraying the same diversity throughout the list. Regarding predetermined aspects, 'Long-term contracts' and 'Simple objects in the background' were not preferred. 'Government policies' were largely unfamiliar to interviewees, and 'Adjustable furniture' was deemed unnecessary, with a common sentiment being "If I wanted that, I would bring it myself". 'Open layouts' are not seen as an advantage either, but as a nuisance as one interviewee remembers the discomfort of sharing space with others and prefers his present single-owned space better. Similarly, 'Sharing a closed-off space' was not preferred, despite some participants using such spaces. The literature review drew inspiration for workspace aspects from other shared workspaces, such as co-working and innovation hubs. Interestingly, the borrowed aspects like open layouts and shared spaces did not resonate with cultural creative workers. Surprisingly, location-specific factors like exposure, sales opportunities, or material availability were also deemed least important. This could indicate that cultural creative workers do not prioritise such aspects when choosing a workspace, relying instead on a logistical network for supply and delivery, which diminishes the importance of physical location. Surprisingly, 'Logistics' scored low (7 points, two mentions), opposing this trend. Instead, the explanation could rely on logistical access being reliably available or other aspects being more prudent, neglecting the importance of facilities that score high. This raises further questions.

Lastly, the column Theme showcases overarching concepts in workspaces. Notably, there is a diverse distribution of themes across the complete list. For example, the six highest-ranked aspects all have different themes. Moreover, themes seem to be distributed diversely throughout the sample. However, the thematic analysis section provides a detailed analysis of the distribution.

5.3.1 Recognised analysis

In the interview process, participants were asked to align their recalled aspects with a set of predefined aspects. This approach was designed to enhance the potential for aggregating user input and differentiate between existing literature knowledge and new user input. Doing so facilitated a comparison of literature and user top-of-mind knowledge. Table 7 showcases all aspects and includes a column for recognised instances, indicating the frequency with which each predefined aspect was recognised with participants' recollections. Figure 5 presents this data visually and is structured according to the ranked scores, like Table 7. Examining the recognised aspects in this manner provides insight into cultural creative workers' self-perceived preferences. This analysis examined how predefined categories align with individual experiences and priorities to reveal participants' preferences.
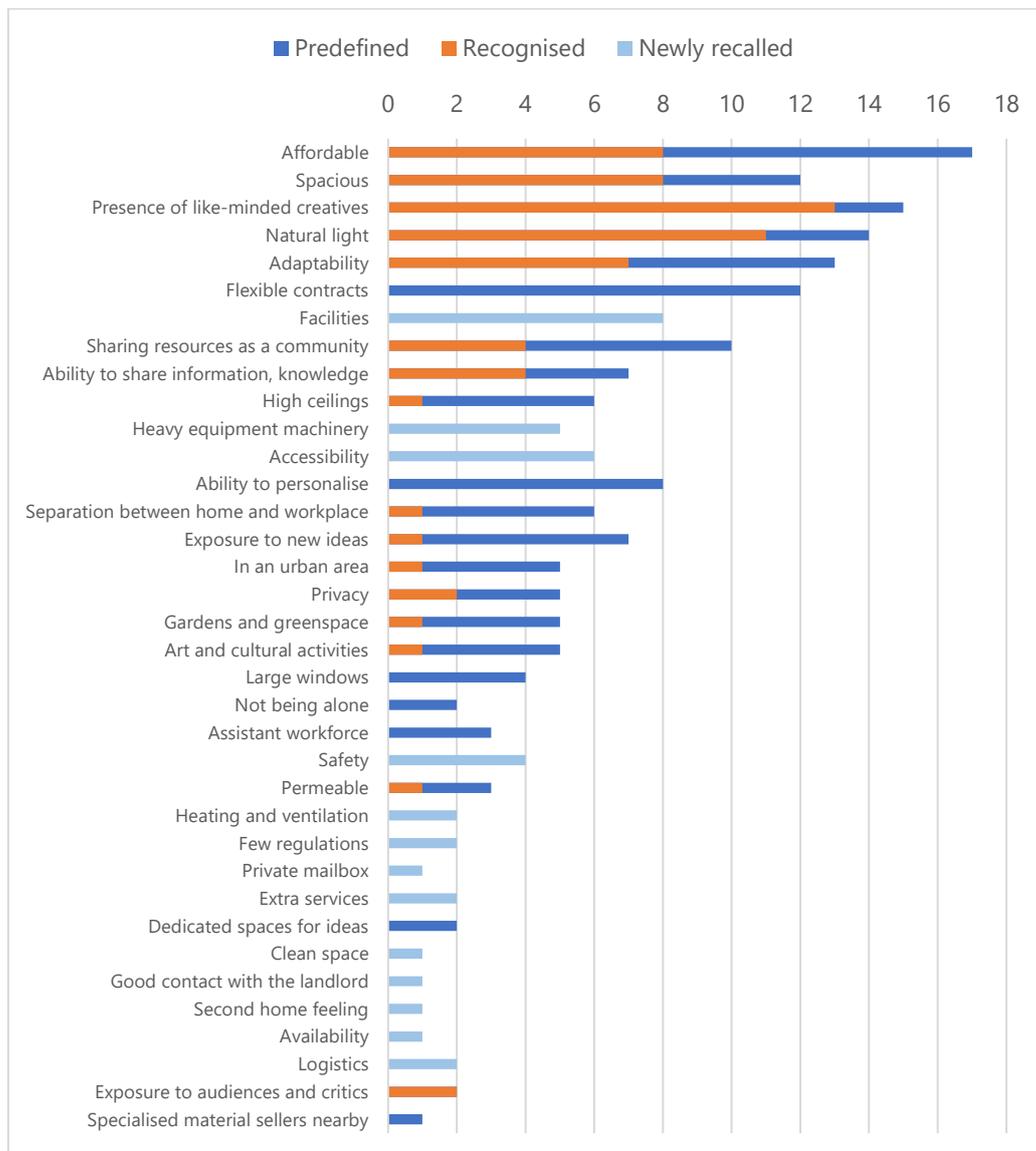
Figure 5: Mentioned recognised and new recalled aspect comparison

The large presence of recognised aspects at the top of the list suggests that the literature accurately reflects the importance of those aspects. Unsurprisingly, the most important aspects received the majority of recognition, signalling that they are indeed at the top of

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cultural creative workers' minds. Some interesting things happened in the top five. First, affordability was not recognised in half of its mentions, meaning it was picked because participants saw the card and did not think about it themselves. Adaptability shows a similar phenomenon. Notably, 'presence of like-minded creatives' showed a remarkable 86% recognition, underscoring that cultural creative workers think a lot about social aspects when asked about workspaces. This presents the significant role other cultural creative workers play in the selection process of workspaces. Flexible contracts were not recognised at all. Furthermore, there were no mentions of misinterpretations. Therefore, assuming the participants did not think of this aspect spontaneously is reasonable. On the other hand, the 'ability to personalise' was not recognised, arguably due to its perceived similarity with adaptability in the eyes of the participants. Consequently, since participants could only recognise one predefined aspect, their recognition favoured adaptability. Furthermore, besides the 'ability to share information and knowledge', it has been observed that aspects mentioned fewer than eight times see their recognition rate drop to 25% or lower, indicating that participants' spontaneous thoughts tend to consider important aspects more promptly.

5.3.2 Thematic distribution

In previous sections, themes were associated with each aspect. These themes provide a broader view of cultural creative workers' interests. To further interpret the results, the scores associated with the aspects have been accumulated per theme to calculate the average theme score in Table 8. The standard deviation per theme is provided as well.

Table 8: Scores per workspace theme

Theme	Number of aspects	Average score	SD
Cost	2	97,5	48,8
Flexible space	2	52	31,1
Lighting	2	47	42,4
Bustle	7	34,1	23,4
Room Dynamics	13	26,2	23,6
Location	5	15,8	13,8
Décor	2	13	7,1
Innovation	1	8	-
Other	2	7,5	0,7

Cost has the highest average score, attributed to the large appreciation of 'affordability'. However, its standard deviation is quite broad. On the other hand, the coefficient of variation, the standard deviation divided by the average, in the case of Cost, is smaller than the coefficient of variations in Lighting and Room Dynamics. Those represent the themes with the largest variations in the sample, suggesting they have a wide range of scores. At the same time, the Other theme had consistent scores near the average. Innovation had one data point; therefore, the standard deviation is absent. Interestingly, the Bustle theme is more important than the theme Room Dynamic, suggesting that social and inspiring aspects have slightly favourable conditions compared to actual room qualities. This aligns with Florida's (2002) claim that creative individuals thrive in energetic and buzzing environments.

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Furthermore, even though the presence of like-minded creatives scored relatively high on the rankings, the bustle theme is brought down by other components in its theme. However, the most conclusive result in this table is the significant variance in scores across different higher-scoring themes, indicating the great diversity in responses throughout the themes and the sample.

In the interest of sensitivity, the sizable aspect group focused on Room Dynamics was divided into two groups. Additional dummy themes, titled 'Service' and 'Physical', were introduced. The first theme integrates Room Dynamics aspects relevant to serviceable elements in workspaces, such as 'facilities', 'heavy equipment machinery', 'extra services', 'few regulations', 'clean space', and 'logistics'. This distinction was made because the aspect 'facilities' was among the highest-scoring newly recalled aspects. This differentiation provided insight into the differences between 'physical room' qualities and 'service' qualities. However, this sub-division did not significantly alter the distribution of themes overall. The new themes took up the same space where Room Dynamics was previously situated. The scores and standard deviations (SD) were as follows: 'Physical' scored 28,5 (SD = 27,01), and 'Service' scored 21,8 (SD = 19,46). Both scored higher than 'Location' 15,8 (SD = 13,76) but placed lower than Bustle 35,14 (SD = 23,39). Thus, the serviceable aspects compared to more physical aspects are comparable, with a slight preference for physical.

5.3.3 Kruskal-Wallis-test

Participants in the study were categorised into various industries, following the classification by UNCTAD (2010). The three key assumptions for ANOVA are independence of observations, normality of the sample, and homogeneity of variances. The sample was randomly selected from the population, and independent interviews were conducted. This approach ensured the independence of the small sample, thus meeting the first assumption of ANOVA. The normality assumption demands that the data within each group should be approximately normally distributed. This assumption is crucial for the validity of the ANOVA results, especially in small sample sizes. After investigating histogram plots of the data, it was found that neither the frequency nor the ranked scores follow a normal distribution. The Shapiro-Wilk test was also utilised using the IBM SPSS Statistics 27 software program, see Table 9. The Shapiro-Wilk test showed a W-statistic of 0,802 with a significance less than 0,001, indicating a rejection of the null hypothesis that the sample is normally distributed. Thus invalidating the normality assumption, for the data is not normally distributed, as seen in Appendix H.

Table 9: Shapiro-Wilk test of normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Rank	,178	81	,000	.802	81	,000

a. Lilliefors Significance Correction

Figure 6 showcases the distribution of ranks per creative domain to inspect and further understand it visually. The ranks were normalised to represent the distribution more clearly, as the sample sizes are not identical (heritage=8, arts=6, functional creation=7). The figure shows that 'heritage' has a more pronounced preference for important aspects. The legend is sorted according to the importance of Table 7. While 'arts' shows less pronounced

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preferences, it also favours the top and has a small spike in 'the ability to personalise' and 'separation from home'. 'functional creations' show a greater variance across the aspects while still preferring the top aspects. However, their scores show less preference than the other two domains. A larger representation of the figure is included in Appendix I, in combination with a frequency distribution.

The Kruskal-Wallis test requires certain assumptions to be met before its application. One critical assumption is that the continuous distributions of the test variables should be the same across different populations, although their medians may differ. This assumption is satisfied because all three groups were evaluated using identical scoring and frequency scales. Another assumption is that the cases should represent random samples from the populations. This condition, which was also relevant to the ANOVA assumptions, is also met. Lastly, the test assumes that the values of the test variables are independent of each other. This independence is ensured, as all responses were provided by individuals independently, following the research methodology.

Therefore, the Kruskal-Wallis test assessed the differences in aspect frequency and aspect score performance across three creative domains: heritage, 'arts', and 'functional creations'. Appendix I provides a visual depiction of the distribution of these frequencies and rankings for each group. Each group had a different distribution of aspects because some groups mentioned aspects that others did not. Their respective aspects sample sizes are 'heritage' 25 aspects, 'arts' 22 aspects, and 'functional creations' 29 aspects.

Adjusting for the ties, the tests revealed insignificant results to abandon the null hypothesis for both frequencies and ranked scores. The values found are aspect frequency (H 2,638; p-value 0,267) and ranked scores (H 0,931; p-value 0,63). Thus, according to the Kruskal-Wallis test, there is no significant difference between the three groups despite the visual representation in Figure 6.
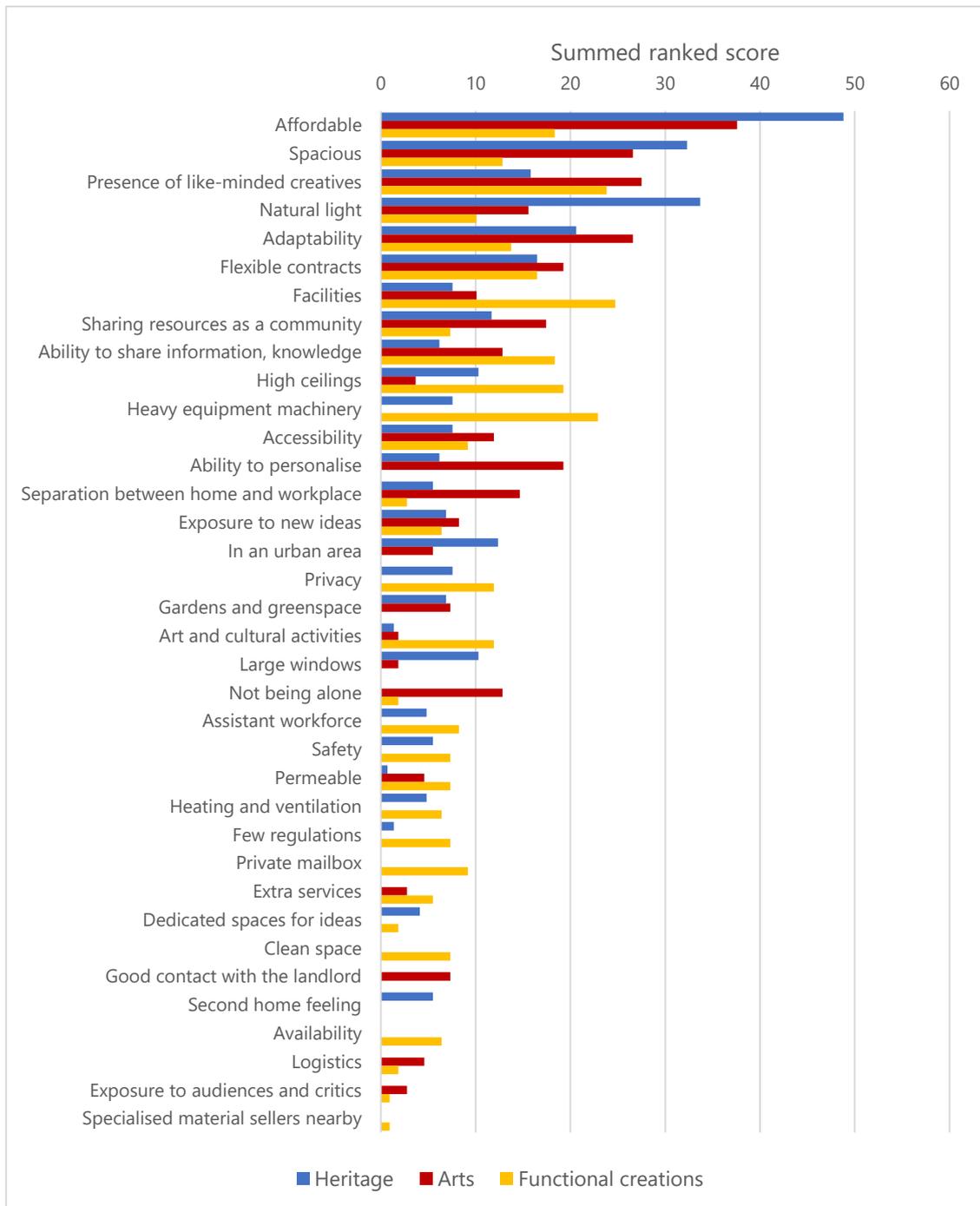
Figure 6: Weighted average ranks per creative domain

5.3.4 Lift ratio

Even though the Kruskal-Wallis test found no significant evidence to suggest differences between the groups, further examining the individual relations between aspects and domains offers further insights. The lift ratio was calculated based on the ranked scores assigned to the aspects by the participants' top ten to explore the relationship between aspects and creative domains. This ratio helped understand the likelihood of an aspect being mentioned in relation to each domain and how this likelihood compared to the aspect's independent occurrence. The aspects A(i) and domains D(j) are presented in Tables 10, 11 and 12. First, a frequency matrix is created for the ranked scores of the aspects (j) in relation to the domains

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(i). Only the mentioned aspects have been incorporated. The aspects are shown in descending rank according to the ranked results. The frequency matrix in Table 10 shows the total per aspect and domain. This same selection was used to calculate the probability of $D_i \cap A_j$ in Table 11. The same calculations were done for the frequency of the aspects, as was done in the analysis and Kruskal-Wallis test. The results of the frequency of aspects are provided in Appendix J in combination with the tables of the scores of the aspects.

Table 10: Frequency matrix of aspects (A) and domains (D)

Frequency mentioned aspects per domain.	Domains (D(i))			
Top 10 mentioned aspects (A(j))	Heritage	Arts	Functional creations	Total frequency (A)
Affordable	71	41	20	132
Spacious	47	29	14	90
Presence of like-minded creatives	23	30	26	79
Natural light	49	17	11	77
Adaptability	30	29	15	74
Flexible contracts	24	21	18	63
Facilities	11	11	27	49
Sharing resources as a community	17	19	8	44
Ability to share information, knowledge	9	14	20	43
High ceilings	15	4	21	40
Heavy equipment machinery	11	0	25	36
Accessibility	11	13	10	34
Ability to personalise	9	21	0	30
Separation between home and workplace	8	16	3	27
Exposure to new ideas	10	9	7	26
Privacy	11	0	13	24
In an urban area	18	6	0	24
Gardens and greenspace	10	8	0	18
Large windows	15	2	0	17
Art and cultural activities	2	2	13	17
Safety	8	0	8	16
Assistant workforce	7	0	9	16
Not being alone	0	14	2	16
Heating and ventilation	7	0	7	14
Permeable	1	5	8	14
Private mailbox	0	0	10	10
Few regulations	2	0	8	10
Extra services	0	3	6	9
Second home feeling	8	0	0	8
Good contact with the landlord	0	8	0	8
Clean space	0	0	8	8
Dedicated spaces for ideas	6	0	2	8
Logistics	0	5	2	7
Availability	0	0	7	7
Exposure to audiences and critics	0	3	1	4
Specialised material sellers nearby	0	0	1	1
Total scores per domain (D)	440	330	330	1100

With the scores of $D_i \cap A_j$ a support matrix for the probability of $D_i \cap A_j$ was calculated according to formula 4 by dividing the frequency of $D_i \cap A_j$ by the total frequency A_j. For example, the probability of the domain 'heritage' and the aspect affordable = P($D_{heritage} \cap A_{affordable}$) = 8 / 17 = 47%. In addition, the probabilities of D_i and A_j were calculated with formulas 2 and 3. Using the previous example, the probability for aspect affordability = $\frac{total\ frequency\ A}{total\ sample}$ = 17 / 200 = 9% and the probability for 'heritage' is 80 / 200 = 40%.

Table 11: Probability matrix for domain D(i) given aspect A(j)

Probability (D(i) | A(j))	Domains (D(i))				
Mentioned aspects (A(j))	Heritage	Arts	Functional creations		P (A(j))
Affordable	54%	31%	15%		12%
Spacious	52%	32%	16%		8%
Presence of like-minded creatives	29%	38%	33%		7%
Natural light	64%	22%	14%		7%
Adaptability	41%	39%	20%		7%
Flexible contracts	38%	33%	29%		6%
Facilities	22%	22%	55%		4%
Sharing resources as a community	39%	43%	18%		4%
Ability to share information, knowledge	21%	33%	47%		4%
High ceilings	38%	10%	53%		4%
Heavy equipment machinery	31%	0%	69%		3%
Accessibility	32%	38%	29%		3%
Ability to personalise	30%	70%	0%		3%
Separation between home and workplace	30%	59%	11%		2%
Exposure to new ideas	38%	35%	27%		2%
Privacy	46%	0%	54%		2%
In an urban area	75%	25%	0%		2%
Gardens and greenspace	56%	44%	0%		2%
Large windows	88%	12%	0%		2%
Art and cultural activities	12%	12%	76%		2%
Safety	50%	0%	50%		1%
Assistant workforce	44%	0%	56%		1%
Not being alone	0%	88%	13%		1%
Heating and ventilation	50%	0%	50%		1%
Permeable	7%	36%	57%		1%
Private mailbox	0%	0%	100%		1%
Few regulations	20%	0%	80%		1%
Extra services	0%	33%	67%		1%
Second home feeling	100%	0%	0%		1%
Good contact with the landlord	0%	100%	0%		1%
Clean space	0%	0%	100%		1%
Dedicated spaces for ideas	75%	0%	25%		1%
Logistics	0%	71%	29%		1%
Availability	0%	0%	100%		1%
Exposure to audiences and critics	0%	75%	25%		0%
Specialised material sellers nearby	0%	0%	100%		0%
P (D(i))	40%	30%	30%	100%	100%

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Lastly, the lift ratio for the frequency and ranked $D_i => A_j$ was calculated using formula 1 and the previous probabilities: the $P(D_i \cap A_j)$, $P(D_i)$ and $P(A_j)$. In the example, this meant that $P(D_i \cap A_j) = 47\%$ was divided by $P(D_i) = 40\%$, which gives 0,47 / 0,4 = 1,18. This meant a slight correlation between the affordability aspect mentioned by individuals from the 'heritage' domain. The level of correlation is indicated by an 18% increased chance of the aspect being mentioned compared to affordability being mentioned independently.

Table 12: Lift ratio of domain D(i) given aspect A(j)

Lift Ratio (D(i)	A(j))	Domains (D(i))		
Mentioned aspects (A(j))	Heritage	Arts	Functional creations
Affordable	1,3	1	0,5
Spacious	1,3	1,1	0,5
Presence of like-minded creatives	0,7	1,3	1,1
Natural light	**1,6**	0,7	0,5
Adaptability	1	1,3	0,7
Flexible contracts	1	1,1	1
Facilities	0,6	0,7	**1,8**
Sharing resources as a community	1	1,4	0,6
Ability to share information, knowledge	0,5	1,1	**1,6**
High ceilings	0,9	**0,3**	**1,8**
Heavy equipment machinery	0,8	0	**2,3**
Accessibility	0,8	1,3	1
Ability to personalise	0,8	**2,3**	0
Separation between home and workplace	0,7	**2**	0,4
Exposure to new ideas	1	1,2	0,9
Privacy	1,1	0	**1,8**
In an urban area	**1,9**	0,8	0
Gardens and greenspace	1,4	**1,5**	0
Large windows	**2,2**	0,4	0
Art and cultural activities	0,3	0,4	**2,5**
Safety	1,3	0	**1,7**
Assistant workforce	1,1	0	**1,9**
Not being alone	0	**2,9**	0,4
Heating and ventilation	1,3	0	**1,7**
Permeable	0,2	1,2	**1,9**
Private mailbox	0	0	**3,3**
Few regulations	0,5	0	**2,7**
Extra services	0	1,1	**2,2**
Second home feeling	**2,5**	0	0
Good contact with the landlord	0	**3,3**	0
Clean space	0	0	**3,3**
Dedicated spaces for ideas	**1,9**	0	0,8
Logistics	0	**2,4**	1
Availability	0	0	**3,3**
Exposure to audiences and critics	0	**2,5**	0,8
Specialised material sellers nearby	0	0	**3,3**

Table 12 presents the lift ratios of aspect ranking by creative domains compared to independent mentions of the aspects. Connections stronger or equal to 1,5 have been highlighted for ease of visualisation. At first glance, the data did not reveal significantly strong connections in the higher segments between aspects and domains, as indicated by fewer highlighted ratios in the upper table and the larger correlations at the bottom of the table. These large effects in the bottom segment are due to the singular mentions of certain aspects, which skews their probabilities. This is reflected in Table 11, where aspects only mentioned by participants from a single domain were assigned probabilities of 100% in certain domains. Although their ratios present a strong link, the scores given to these aspects are some of the lowest. On the other hand, the largest effects in the upper half of the table are the aspect of 'heavy equipment machinery' and the domain 'functional creations' with a correlation of 2,3, followed by 'arts' and 'ability to personalise' with a 2,3 ratio. Moreover, lesser large effects are shown in natural light | heritage (1,6 ratio) and facilities | functional creations (1,8). The lowest effect in the upper half is seen in 'arts' and 'high ceilings' (0,3), signalling a significantly lower preference within this cluster sample.

The lift ratios with larger effects (≥ 1,5), excluding links that were only rated by a single domain, were found across the three domains:

Heritage Domain:

- Natural light: 1,6
- Urban area: 1,9
- Large windows: 2,2
- Dedicated spaces for idea generation: 1,9

Arts Domain:

- Ability to personalise: 2,3
- Separation between home and workplace: 2,0
- Gardens and greenspace: 1,5
- Not being alone: 2,9
- Logistics: 2,4
- Exposure to audiences and critics: 2,5

Functional Creations Domain:

- Facilities: 1,8
- Ability to share information and knowledge: 1,6
- High ceilings: 1,8
- Heavy machinery: 2,3
- Privacy: 1,8
- Art and cultural activities nearby: 2,5
- Safety: 1,7
- Assistant workforce available: 1,9
- Heating and ventilation: 1,7
- Permeable: 1,9
- Few regulations: 2,7
- Extra services: 2,2.

The number of strong links for 'functional creations' becomes evident immediately. The group expresses strong links for more than the combined total of the other two groups. In this sense, the lift ratios resemble the distribution of Figure 6: Weighted average ranks per creative domain, where the 'functional creations' group showcased more distributed scores compared to other groups that valued the higher-ranked aspects more. This could indicate that to cater to the needs of the 'functional creations' domain, more factors should be accounted for. This endorses the previous findings of the analysis that the preferences of cultural creative workers are diverse. However, the lift ratio shows that this diversity is primarily due to the preferences of the 'functional creations' group.

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Another insight was the low ratio between the 'ability to share information and knowledge' and 'heritage'. The 0,5 ratio indicates that this combination is unlikely, and cultural creative workers in the 'heritage' domain do not see the benefits of sharing information as much as the other two domains. Furthermore, 'art and cultural activities' seem unrelated to 'heritage' and 'arts', while 'functional creations' have a double-stronger correlation. Suggesting the amenities were simply valued more by 'functional creations' individuals. Surprisingly, 'sharing resources as a community' was unappealing for 'functional creations' (0,6). Because 'sharing knowledge' was seen as important (1,6), one would assume sharing resources would be too. However, the data suggested otherwise.

Although the Kruskal-Wallis test did not indicate significant differences between the groups, further analysis of individual links between domains and aspects yielded insightful findings, revealing several interesting connections. However, these results do not provide a strong foundation for challenging the findings of the original ranked analysis. The overall preferences remain valid. Despite the lift ratios raising more questions than providing answers, the conclusions drawn suggest that the most preferred aspects maintain their relevance across each domain. Nonetheless, the degree to which resources and information are shared remains a topic of debate for some domains.

5.4 Conclusion

In conclusion, this analysis answered the sub-question "In what order do cultural creative workers rank aspects of creative workspaces?" They rank affordability, spaciousness, the presence of like-minded individuals, natural light, and facilities as the five most important aspects. Using frequency analysis, ranked analysis, recognised analysis, thematic analysis, and lift ratios, insights into 36 preferences were ordered. 'Affordable rent' emerged as a top priority, followed by the need for spacious environments. While natural light, flexible contracts, and freedom to adapt a space are highly valued, the study highlights a preference for larger spaces over community elements like the presence of like-minded creatives. Through recalling cultural creative workers' preferences, new aspects came to light. For example, 'facilities' like Wi-Fi, kitchens, water access, and powerful electric connections emerged as the most important newly mentioned aspect, becoming a dominant feature in the minds of cultural creative workers. Furthermore, the possibility of bringing or renting heavy equipment machinery was seen as very important to many cultural creative workers who mentioned it. This is especially true for workers part of the 'functional creations' creative domain because of the strong lift ratio (2,3). The analysis also highlighted less favoured or overlooked aspects, such as 'long-term contracts' and 'sharing a closed-off space'. Additionally, participants reconsidered their own recalled selection when confronted with literature concepts. Seven recalled aspects were not included in any preferences, highlighting a striking difference between cultural creative worker preferences and priorities. Cultural creative workers prefer simplicity, autonomy, and flexibility in workspaces. Furthermore, the analyses revealed a great diversity in preferences throughout the sample's rankings, although the Kruskal-Wallis test showed no significant differences in aspect preferences across creative domains (H 0,931; p-value 0,63).

On the other hand, lift ratios indicated strong connections between certain aspects and the creative domain of 'functional creations' compared to other cultural creative workers. Stronger links were found with the aspects of 'art and cultural activities nearby' (lift ratio of 2,5), 'heavy equipment machinery' (lift ratio of 2,3), 'facilities' (1,8) and 'high ceilings' (1,8). Although the Kruskal-Wallis test proved no significant differences, the lift ratio calculations paint a different picture. Therefore, the generalizability of the results is uncertain, meaning that it is unclear how broadly these findings can be applied to the population as a whole.

This analysis provides a comprehensive understanding of the ordering of the cultural creative workers' value of their workspaces, emphasising the importance of affordability and space and acknowledging the multi-faced distinctions in their preferences and the identities included in the target group. To conclude, cultural creatives prefer lots of facilities and similar creative people around. However, their financial situation seems to be the most influential indicator in their selection process, as affordable workspace is, by all means, most appreciated.

Chapter 6, Conclusion and Discussion

This final chapter will conclude this research based on the information provided in previous chapters. The research question, "What are the prioritised, preferred physical workspace aspects of cultural creative workers in Dutch urban centres?", will be answered, which will be done based on the provided analysis and results given in the previous chapters. A discussion of the results is included also. Secondly, these limitation of this research and their implications are described. This research will recommend practical implications for policymakers and real estate professionals to answer sub-question four, "What kind of advice can be given to urban planners and real estate developers using the workspace preferences?". This thesis concludes with recommendations for future research.

6.1 Discussion

Prior research points to the necessity of affordable and ample workspaces for the growth of the cultural creative demographic (Pratt, 2009; Liu et al., 2013). Simultaneously, the significance of social and inspirational attraction forces indicated by a 'buzz' that draws creatives together has been acknowledged (Florida, 2002; Woldoff et al., 2011; Harrington, 2020). These insights imply that simply providing space is not sufficient. Corporate real estate research, in general, highlights the multifaceted nature of workspaces, which includes factors impacting productivity, health, and happiness. This study explores new and known workspace aspects by questioning users about what they deem essential for their creative workspaces.

The findings indicated that the affordability of a workspace is most critical to cultural creative workers out of 50 important aspects. This amplifies the findings of Pratt (2009) and Evans et al. (2006), saying affordable space is key to sustaining cultural creative networks. Furthermore, given the precarious nature of some cultural creative workers' work, as highlighted by Cunningham (2013), having an affordable workspace is their primary concern, considering that they are also inclined to minimise costs to run their businesses efficiently. Other highly valued aspects include spacious workspaces, like-minded creatives in the area, natural light penetration, the ability to adapt workspaces spatially, flexible contracts, business facilities, resource sharing, knowledge sharing, information sharing, and high ceilings.

On the other hand, Liu et al. (2013) reported a trade-off in cultural creative preferences. Cultural creative workers must weigh the trade-off between renting properties that are cheap, spacious, and located in areas close to existing art-related activities, low noise, and freedom of expression (Liu et al., 2013). This study found that even though cultural creative workers find these additional aspects important, ample and especially affordable spaces are preferred. This suggests that the weight in the trade-off, introduced by Liu et al. (2013), tilts towards the operational side.

Furthermore, the preferences of the sample showcase a wide range of variety in quantitative diversity. Originally, 50 aspects were identified. From those 50 aspects, 36 were picked by participants as having a level of preference. The analysis revealed a notable increase in the diversity of aspects within the top three selections. Specifically, nine different aspects were featured as most important by the sample of twenty participants. Following this, the second-

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highest rank included 13 different aspects, and the third rank showed even greater diversity with 15 different aspects. This means that nearly half of the 36 important aspects were mentioned as greatly important to individuals in the sample. However, there was one aspect that received significantly coherent acknowledgement: affordability. This aspect received a coherent ranking as most important compared to other aspects. This contrasts with the trend of diversity among the other aspects. Considering the diversity of the aspects, the themes associated with the workspace aspects did not appear to have a clear division in the preferences. The themes were notably dispersed throughout the ranked list in Table 7. Therefore, agents seeking to improve user satisfaction should focus on a package of individual aspects instead of specific themes.

Lesser valued aspects from the literature were long-term contracts, open layouts of workspace, nearby vendors and selling points, sharing a closed space with others, governmental policies, and adjustable furniture. This reveals an abundant preference for flexible contracts instead of fixed yearly terms. Even though Evans et al. (2006) advocated long-term leases to ensure stability, cultural creative workers preferred flexibility. Additionally, sharing spaces with others, closed-off or in open layouts, is generally unimportant compared to other aspects. Although described as cost-cutting and collaboration-improving by Liot (2009), shared workspaces do not appear to be in the interest of cultural creative workers. Several reasons can be attributed to this. The sense of accomplishment from having an individual workspace (Gill, 2002) or the need to protect work and the creative process from prying eyes (Harington, 2020). According to one participant: "Your stuff is not safe in those [shared] spaces, and equipment went missing sooner or later". To conclude, while shared spaces can reduce costs and encourage social collaboration, cultural creative workers prefer to engage in these activities outside of their personal workspace rather than inside. This suggests the need for designated areas for social and networking activities, although this was not explicitly asked in the original query.

Furthermore, Figure 6 indicates that the literature on cultural creative workers aligns well with their prioritised aspects in workspaces. The large recognition rates of high-ranked aspects indicate their presence at the top of cultural creative workers' minds. Key aspects like 'presence of like-minded creatives' and 'natural light' received high recognition, emphasising their value. However, some aspects, such as affordability and adaptability, were recognised less frequently, suggesting they were less at the forefront of participants' thoughts. The complete lack of recognition for flexible contracts implies this aspect is revealed to have great value to cultural creative workers while not being part of their conscious thought process. Moreover, aspects mentioned less frequently saw a significant drop in recognition rate, reinforcing that cultural creative workers prioritise well-known and important aspects in their decision-making process for workspace selection.

The study investigated the preferences of individuals from different creative industry backgrounds. The research found no significant differences in the creative domains of heritage (n=8), arts (n=6), and functional creations (n=6) based on the mean comparison analysis of the Kruskal-Wallis test (H 0,931; p-value 0,63). However, since the sample sizes were small, the statistical test results may not be reliable. On the other hand, the lift ratio

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theory of data mining provided grounds for a hypothesis that there is a differentiation between the group's preferences.

To conclude, after analysing the preferences of cultural creative workers on creative workspace aspects, it was found that there was significant diversity in the preferences of cultural creative workers for workspace aspects. Therefore, it is challenging to identify a unanimous preference in terms of grouped aspects. Even though this analysis provides a fundamental understanding, the variability within the cultural creative cluster suggests that the generalisations should be cautiously approached.

6.2 Limitations

While providing valuable insights, this research is subject to certain limitations that must be acknowledged. The research focused largely on pinpointing interesting aspects of the creative workspace environment and less on the deeper meaning or benefits behind these aspects. As stated in the research question, the ordering of preference is investigated. Thus, the focus was put on finding order within relevant aspects, and the deeper impact of the ordering was neglected or left to single lines of reasoning after participants commented about their experiences with particular workspace aspects.

The methodology also had its limitations, utilising an interview approach while extracting quantitative data and not utilising the qualities that this type of qualitative data-gathering method offers, like delving deeper into answers or further discussing the participant selection. Although the methodology was finetuned towards the sampling method, the data gathered could have been enriched with additional details.

Due to the large number of aspects found during the literature study and the inclusion of individually mentioned aspects, the participants could be overwhelmed with options. Research about choice sets did warn of this phenomenon. However, it was neglected in the interest of presenting a broad conclusion about potential preferences. This did increase the lack of robustness of the findings.

Another limitation lies in the triangulation of responses. Because the interviews were taken once, contacting the participant again to validate their answers would have resulted in more reliable data. Although the interviews were taken anonymously, this meant collecting additional personal information besides names and signatures. Therefore, the accuracy of responses was assumed at face value. The methodology primarily focuses on clarifying aspects that might lead to misinterpretation, potentially overlooking other crucial details that require clarification and triangulating all responses. As a result, this limits the overall robustness of the data. Additionally, the data collection was conducted at a single point in time. While this provides a snapshot of the current situation, it cannot capture the dynamic nature and evolving behavioural trends within the subject matter.

The exercise to test the importance of the preliminary literature list with users only reviewed the aspects on the list, where it would have been more thorough to have asked the participants whether they missed any aspects.

Finally, the methodology allowed for a variability in aspect sets among participants. This is because the aspect sets were created based on the personally recalled aspects of the participants, which may not have been the same for everyone. Its function was to gain new insight into unknown aspects. However, as a result, the representativeness of the newly mentioned aspects in this study is unbalanced and does not truly represent a holistic picture.

6.3 Implications for Practice

To answer sub-question four, "What constitutes a preferred workspace of cultural creative workers, and how can this assist urban planners and real estate developers?" the results of this study are particularly relevant for real estate agents and asset managers seeking to align properties with the preferences of this group. Real estate professionals can use the preference ranking to evaluate properties and determine their suitability for the target market by understanding these preferences. The preference for adaptable and spacious workspaces highlighted in this study suggests a potential strategy for real estate professionals. Properties that offer such flexibility might appeal more to the culturally creative market, providing spaces that can be moulded to fit unique needs.

However, constructing new creative workspaces poses challenges, especially as new buildings become increasingly expensive. This trend will not meet the affordable needs of the culturally creative cluster. An alternative to this is the adaptive reuse of existing buildings, focusing on less desirable urban areas. This cost-effective approach allows direct engagement with the target group, transforming neglected spaces into creative hubs with the aid of the target group in turn for autonomy. Such a strategy offers more than workspace solutions; it can lead to developing inclusive communities, contributing to the city's socio-cultural landscape.

In summary, the findings suggest a shift in developing creative workspaces, emphasising supporting affordability and adaptability, community involvement, and the revitalisation of unused spaces. This approach can create environments that resonate with the culturally creative demographic and positively impact urban development.

6.5 Implications for Research

The results of this study can provide a foundation for further research on the decision-making process of culturally creative individuals regarding their workspace. The study supports the idea that cultural creative workers need workspaces that are affordable and spacious, which aligns with the recommendations made by Peck (2005), Evans (2009b), and Liu et al. (2013). The study also highlights the diversity of preferences among these workers.

The research indicates that multiple factors need to be considered when developing research methodologies for creative workspaces in the future. It demonstrates that cultural creative workers place the greatest importance on affordability, spaciousness, the presence of like-minded creatives, natural light, and adaptability of the space. The study provides a broad list of potentially relevant aspects based on literature and user recognition, which can assist future researchers in composing such a list. Furthermore, this research has made the first steps towards categorising and ordering relevant workspace aspects for future studies to go into location decisions in more detail.

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As presented in the literature, an attempt was made to generalise the cultural and creative workers group. Multiple clusters were identified, and their preferences were analysed to prove generalizability. Although the analysis could not provide robust results, it does support the idea of cluster preferences holding prominence. The findings also hint at the differentiation in preferences between functional creations and the other two aggregated groups, heritage and arts. Such differentiation between the groups could prove influential for space usage of these various job profiles.

The study evaluated the literature on cultural and creative workers to identify and group them. Multiple viewpoints on this target group were found in both contemporary and past literature. Ultimately, the UN Conference on Trade and Development model was chosen because it considered multiple angles of creative work and the level of commercialisation of creative products. Therefore, the study suggests that evaluating this group based on their job profile is better to identify and categorise cultural and creative workers rather than grouping them as cultural or creative entrepreneurs.

6.5 Recommendations for Future Research

The results of this study aimed to add to a growing body of research on workspace preferences by focusing on culturally creative workers. However, to the researchers' knowledge, this is a first try at quantifying different workspace aspects based on user experience. To expand knowledge of user preferences and decision-making processes of cultural creative workers, stated choice experiments pose a promising tool. By presenting hypothetical scenarios with limited options and choices, combined with the results from this study, future researchers can uncover the values and preferences that drive decisions, allowing for a greater exploration of the factors that influence choice behaviour. As such, stated choice experiments are valuable for gaining deeper insights into complex decision-making processes and can significantly enhance future research. Furthermore, willingness to pay should give great insight into the decision-making process of cultural creative workers, as this study found affordability to be most important. Suggesting varying levels of rental agreements in experiments can give real estate managers better insight into features to implement and assess business cases for creative workspaces.

In addition, future research should consider designing smaller choice sets. Smaller sets can reduce the cognitive load on participants, potentially affecting the accuracy and reliability of responses while allowing for a more focused analysis of specific attributes of interest, enhancing the precision of the insights gained, for instance, creating a better understanding of specific business facilities, as this study grouped different factors of business facilities.

Future research should re-incorporate all relevant aspects identified in the referenced study with the target group, thereby addressing the issue of inconsistent choice sets. In particular, the newly mentioned aspects. In this research, not every participant was presented with the same choice set, leading to potential imbalances within aspects. This imbalance arose because personally recalled aspects were included only in the choice sets of participants who mentioned them. This creates an imbalance in the representativeness of aspect representation in this study.

The study's sample size (n=20) provided initial insights into the diversity of preferences among cultural creative workers. However, future research should aim for a larger sample size to ensure a more representative and statistically significant understanding of this group's preferences. A larger sample will provide a broader perspective and enhance the generalizability of the findings. In this case, a quantitative methodology is advised, contrasting with the one-on-one approach used in the referenced study, which, while insightful, is time-consuming. A quantitative approach would allow for more efficient data collection from a larger group, thereby addressing the need for broader representation and resource optimisation.

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Appendices

A. Preliminary review, user comments

Participant 1 recalls:

- Well-serviced machinery is a must. It is too expensive to buy themselves, and they will not be able to work without it.
- Travel time between home and work must be acceptable. The location must be within driving range from home. He mentions 25 minutes by car.
- A sense of community for social contact, to ask peers questions and share information on work methods or other work-related information, to have a moment to relax and drink coffee or have a leisurely chat with fellow craftspeople.

When discussing the attributes:

- When asked about inspiration, the participant mentions that inspiration comes to them during unconscious activities, like walking through greenery or doing dishes. Tasks or moments in which the brain disengages from active thinking and spontaneous thoughts can arise.
- On long-term leases, the participant mentions that assurance of stay can be valuable, although not definitively important.
- The adaptability of the workspace and the set-up inside workspaces is especially important to the participant due to different spatial needs per new project.
- When discussing access to specialised materials, the participant mentions that having to ferry materials from suppliers and markets to the workspace should not exceed a maximum range of 20 minutes by car or truck.
- When discussing delivery, the maximum time acceptable to deliver projects to clients or galleries, the participant is more lenient and accepts longer driving time.
- Spaciousness of the room is not necessary when sufficient storage space is available. When separate storage space is available, smaller rooms are adequate.

Participant 2 recalls:

- They did not consider different workspace providers and were already familiar with the location; they wanted a space there, specifically.
- Sharing large equipment is very important. Otherwise, they cannot acquire the machinery necessary for their work due to the large funds needed to acquire and maintain the machines.
- Being part of a social environment of like-minded creators and assisting each other is particularly important.

When discussing the attributes:

- Sharing resources socially should not be without trust and carelessness.
- Flexible contracts are unnecessarily short.
- An open layout is important to generate contact with others.

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- When discussing urban density, the participant mentions the importance of being able to walk to their workspace from home. The participant is accustomed to walking 25 minutes from home to work. When cycling, it takes 10 minutes.
- Access to specialised materials is not of importance. However, making trips within 20 minutes to material suppliers is important.
- Exposure to audiences and critics is not important. However, the participants do prefer to receive guests and showcase their work.

Afterwards, the participant mentions additional attributes:

- Parking space, or logistical access, is important because the participant must be able to transport materials to and from their workspace most of the time and have access to an entrance for loading and unloading materials.
- Safety is also important because securely storing work, materials, and supplies is a must-have. Besides safety measures, like locks or camera surveillance, the participant mentions social safety. When numerous individuals frequent an area, there is a sense of surveillance that keeps a vigilant eye.

Participant 3 recalls:

- Access to heavy machinery needed for woodwork is particularly important.

When discussing the attributes:

- Cultural- and art-related activities are nice to have but not a must.
- Seeing the workspace as a means to exchange knowledge. Part of the source of information.
- Affordability is important because it increases the possibilities for entry-level cultural creatives to join and start working.
- In the décor, the participant mentions a simple aesthetic to create calmness because a workshop with lots of people and machinery is noisy and distracting.
- Simple-shaped objects and bright colours are nice to have, but they are no must.
- An open layout is distracting because the participant prefers to isolate themselves and would otherwise be constantly distracted.
- Idea generation spaces are not necessary, as ideas come unconsciously and spontaneously.
- Natural light and large windows are nice to have, and they are no must.
- High ceilings provide spaciousness.
- Access to specialised materials is important. Trips should not take more than 30 minutes to reach suppliers.
- The participant emphasises the balance between social interaction through sharing space and isolation for performing focused, undisturbed work.

Participant 4 recalls:

- Access to specialised machinery, such as a kiln or oven for ceramic works.
- The participant mentions a preference for natural light and having access to windows in their workspace.

- Furthermore, it is important to be able and be allowed to perform "dirty" experiments in the workplace. Experiments, where materials are melted, glued, or create a mess in any form, are part of the creative process needed for designing and sculpting.
- The workspace should be within travelling distance. Twenty minutes by bike is mentioned as the maximum.
- The workspace should allow privacy to protect work in progress from outside judgment and views. Being able to hide or obstruct insight into a workspace is mentioned as important.

When discussing the attributes:

- Cultural and art-related activities are nice but not a must.
- When discussing exposure to new ideas, the participant notes that the atmosphere generated by other people in the location is beneficial for generating new ideas. Other creators' passion can help with inspiration.
- Muted colours are preferred in contrast to bright colours.
- Adaptability is not of particular concern to this participant because projects do not require specific storage. Shelves and desk space are sufficient.
- Personalisation, although very pleasing, is seen as nice to have.
- Access to human capital, for instance, assistants or helpers, is nice to have and not a must; the same holds for exposure to audiences and critics.
- Lastly, adjustable furniture is nice to have, not a must-have.

B. Results preliminary user review of literature aspects list

THEME	ASPECT	1	2	3	4	%
BUSTLE	Presence of other creatives		✓	✓	✓	100
	Art and culture-related activities and amenities	×	×	×	✓	25
	Permeable workspace	×	✓	✓	×	50
	Exposure to new ideas	✓	✓	✓	×	75
	Combat isolation	✓	×	×	✓	50
	Source of information	✓	✓	✓	✓	100
	Sharing resources as part of the community	✓	✓	✓	✓	100
COST	Affordable / Cheap	✓	×	✓	✓	75
	Long-term lease	✓	✓	×	×	50
	Flexible contracts, short term	×	×	✓	✓	50
	Lower cost by sharing resources	✓	✓	✓	✓	100
DÉCOR	Simple-shaped objects	×	×	×	✓	25
	Bright colours	×	×	×	×	0
	Gardens and greenspace	×	×	×	✓	25
FLEXIBLE SPACE	Adaptable	✓	✓	✓	×	75
	Personalisation	✓	✓	✓	✓	100
	Open layout	✓	✓	×	✓	75
INNOVATION	Technology-driven	×	×	×	×	0
	Dedicated idea-generation spaces	×	×	×	✓	25
LIGHTING	Natural light	✓	×	✓	✓	75
	Large windows	✓	×	✓	✓	75
LOCATION	Urban densities	×	×	✓	✓	50
	Access specialised material	×	×	✓	✓	50
	Access to human capital	×	✓	×	✓	50
	Exposure to audiences and critics	×	×	✓	✓	50
	Access to venues, galleries and sale venues	✓	×	✓	×	50
	Local policy	×	×	✓	×	25
ROOM	Spacious	×	✓	✓	✓	75
	Space solely for work	×	×	✓	×	25
	Privacy	×	×	✓	✓	50
	Work and private space separated	✓	×	×	✓	50
	Shared spaces	✓	×	✓	✓	75
	High ceilings	✓	✓	✓	✓	100
	Adjustable furniture	✓	×	✓	✓	75

C. Workplace aspects interview cards

English			
Presence of other creatives nearby	Nearby art and culture activities or amenities	Permeable: People can see your work or walk in when working	Exposure to new ideas in the workspace
To not be alone	Information sharing and receiving	Sharing resources as part of a community	Affordable rent
Long-term contract, predefined rental periods	Flexible contract, end at any time	Simple-shaped objects as a décor	Bright colours as décor
Gardens and greenspace	Adaptability, Possibility to rearrange the workspace	Possibility to personalise your workspace	Open layout to work in, No individual closed spaces (Locked storage provided)
Technological interfaces, Smart screens or tablets integrated into the space	Dedicated spaces for idea brainstorming	Natural light	Large windows
High ceilings	In an urban, highly populated area	Specialised material vendors nearby	Assistant labour pool within reach
Exposure to audiences and critics	Nearby access to vendors, galleries, venues and shops	Local policy on cultural workspaces	Lots of space
Privacy	Work and private spaces separated	Sharing a closed-off workspace	Adjustable furniture in the workspace

Nederlands			
Aanwezigheid van gelijkgestemden	Kunst- en cultuuractiviteiten in de buurt	Doordringbaar: Mensen kunnen je werk zien of binnenlopen tijdens je werk	Blootgesteld worden aan nieuwe ideeën in de werkplaats
Niet alleen zijn	Informatie kunnen delen en opvangen	Middelen delen binnen een community	Goedkope huur
Lange termijncontracten, Vastgestelde huurtermijn	Flexibele contracten, Elk moment opzegbaar	Eenvoudig gevormde objecten als decor	Felle kleuren als decor
Tuinen en groen	Aanpasbaarheid, Mogelijkheid om de ruimte opnieuw in te delen	Mogelijkheid om de ruimte te personaliseren	Open lay-out om in te werken, Geen individuele afgesloten ruimtes (Afgesloten opslag aanwezig)
Technologische interfaces, Smart screen of tablets geïntegreerd in de ruimte	Toegewijde ruimtes om ideeën te brainstormen	Natuurlijke lichtinval	Grote ramen
Hoge plafonds	In een stedelijk, dicht bevolkt gebied	Gespecialiseerde materiaalverkopers in de buurt	Assistenten arbeidskrachten snel binnen bereik
Blootstelling aan publiek en critici	Dichtbij zijnde verkopers, galerijen, podia en winkels	Lokaal beleid over ateliers	Veel ruimte
Privacy	Werkplek en privé gescheiden	Afgesloten ruimte met iemand delen	Afstelbare meubels in de werkruimte

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

D. Interview questions

Personal questions
In which city do you live?

_____

What is your Job profile?

_____

How long have you performed your job or how long are you in your business?

_____

What is your commute time from home to work?

_____

Exercise
Comprise a list of maximum 10 aspects from memory, that are most important to you when selecting or searching for a workspace or work studio.
Whether or not 10 items were mentioned, a pile of workspace aspects is provided by the researcher. Identify the ones that you feel have similar meaning with your own aspects.
Finally, pick 10 aspects from your own mentioned aspects and the list provided which are most important to you when selecting a workspace. Please sort them in order of importance, with one being most important.

Do you have any other remarks on your experience with workspace selection?

_____

_____

_____

_____

E. Descriptive sample information

#	City	Job profile	Years in business	Commute time in minutes	Industry	Domain
1	Eindhoven	Musician	21	5	Performing arts	Arts
2	Tilburg	Team lead design & concept	7	6	Design	Functional creations
3	Eindhoven	Tattoo artist	7	3	Creative services	Functional creations
4	Eindhoven	Artisan	2	1	Design	Functional creations
5	Bergeijk	Artisan	3	25	Design	Functional creations
6	Nuenen	Chief technology officer, product owner	9	15	Creative services	Functional creations
7	Eindhoven	Designer	1	15	Traditional cultural expression	Heritage
8	Eindhoven	Sculpture artist / Ceramics	46	15	Traditional cultural expression	Heritage
9	Eindhoven	Furniture designer	26	5	Design	Functional creations
10	Eindhoven	Designer	1	7	Traditional cultural expression	Heritage
11	Eindhoven	Designer	2	1	Traditional cultural expression	Heritage
12	Eindhoven	Artist	12	0	Traditional cultural expression	Heritage
13	Eindhoven	Photographer	6	0	Visual arts	Arts
14	Eindhoven	Maker designer	1	1	Traditional cultural expression	Heritage
15	Eindhoven	Photographer	12	18	Visual arts	Arts
16	Eindhoven	Animator and storyteller	3	15	Visual arts	Arts
17	Eindhoven	Photographer and graphic designer	2,5	3	Visual arts	Arts
18	Eindhoven	Designer	3	1	Traditional cultural expression	Heritage
19	Eindhoven	Professional knife sharpener and Music producer	15	5	Performing arts	Arts
20	Eindhoven	Designer	1	12	Traditional cultural expression	Heritage

F. Additional interview remarks respondents

Participant number: Remark

4: Others around help to keep you motivated

5: High ceilings are necessary in the machine rooms or rooms with machines; however, they are not needed in their own space. Natural light is not important

7: Sometimes, it is out of control whether the rent rises

8: If a space is not open during the night, to some, that is a disadvantage

10: I like the method

14: Price affects the behaviour of the tenants. Cheap places attract cheap people. When things are valuable, people tend to care more for them; this is also true for workspaces. The floor type and having a large door to bring in stuff are important.

16: Logistics are important too

19: Landlords being able to think with you if you have ideas or problems is valuable.

G. Coding of recalled aspects into analysis themes

Recalled Variable Number	Raw variable from the interview	Unification into English	Recognised (yes =1 no =0)	Coding into consistent aspects
1	Prijs - betaalbaarheid	Price - affordability	1	Affordable
2	Extra faciliteiten / service	Extra facilities/services	0	Extra services
3	Sociale omgeving / community	Social environment/community	1	Presence of like-minded creatives
4	Zelfde vakgroep aanwezig	Same field present	1	Presence of like-minded creatives
5	Groot genoeg i.r.t. akoestiek	Large enough in terms of acoustics	0	Spacious
6	Faciliteiten	Facilities	0	Facilities
7	Vakgenoten in de buurt of directe omgeving / community	Colleagues nearby or in the immediate vicinity/community	1	Presence of like-minded creatives
8	Machinerie	Machinery	0	Heavy equipment machinery
9	Ervaringen delen gebruikservaring & kennis	Sharing experiences, usage, and knowledge	1	Ability to share information, knowledge
10	Specifieke ontvangst ruimten	Specific reception areas	0	Facilities
11	Reis mogelijkheid	Travel opportunity	0	Accessibility
12	Locatie (ddw, andere designers, schaal)	Location (DDW, other designers, scale)	1	Art and cultural activities
13	Locatie sociale omgeving	Location in a social environment	0	Presence of like-minded creatives
14	Bereikbaarheid	Accessibility	0	Accessibility
15	Zichtbaarheid van het bedrijf	Visibility of the company	1	Exposure to audiences and critics
16	Uitstraling studio en omgeving	Studio and surroundings ambiance	1	Permeable
17	Privacy	Privacy	1	Privacy
18	Veiligheid (gevoel; zakelijk)	Safety (feeling; business)	0	Safety
19	Zware machines	Heavy machinery	0	Heavy equipment machinery
20	Genoeg ruimte om te werken	Enough space to work	1	Spacious
21	Open sfeer, van sociale omgeving of collega's	Open atmosphere, because of social environment or colleagues	1	Ability to share information, knowledge
22	Prijs	Price	1	Affordable
23	Zware machines	Heavy machinery	0	Heavy equipment machinery
24	Expertise van andere conculega's	Expertise of other competitors	1	Ability to share information, knowledge
25	Eigen ruimte	Own space	1	Adaptability
26	Beschikbaarheid	Availability	0	Availability
27	Community, sociale omgeving	Community, social environment	1	Presence of like-minded creatives
28	Licht, verlichting	Light, lighting	1	Natural light
29	Prijs	Price	1	Affordable
30	Prijs	Price	1	Affordable
31	Vloerbelasting	Floor load capacity	0	Heavy equipment machinery
32	Schone ruimte	Clean space	0	Clean space
33	Krachtstroom	Three-phase power and other electric connections	0	Facilities
34	Parkeerplek voor de deur	Parking space in front of the door	0	Accessibility
35	Stroom en aansluitingen	Electricity and connections	0	Facilities
36	Extra faciliteiten / service	Extra service	0	Extra services
37	Bereikbaarheid (eigen vervoer & leveranciers)	Accessibility (own transport & suppliers)	0	Accessibility
38	Heavy equipment machinery	Heavy equipment machinery	0	Heavy equipment machinery
39	Space amount	Amount of space	1	Spacious
40	Travel distance/commute	Travel distance/commute	0	Accessibility
41	Quiet, no disturbances	Quiet, no disturbances	1	Privacy
42	Indoor climate (lighting & air)	Indoor climate (lighting & air)	1	Natural light
43	Business services	Business services	0	Facilities
44	Community atmosphere	Community atmosphere	0	Presence of like-minded creatives
45	Staff	Staff	0	Good contact with the landlord
46	Heating	Heating	0	Heating and ventilation
47	Natuurlijk licht	Natural light	1	Natural light
48	Eigen plek	Own place	0	Privacy
49	Eigen toegang	Private access	0	Safety
50	Lucht afvoer	Air ventilation	0	Heating and ventilation
51	Verwarming	Heating	0	Heating and ventilation
52	Eigen brievenbus	Private mailbox	0	Private mailbox
53	Verwarming	Heating	0	Heating and ventilation
54	Natuurlijk licht	Natural light	1	Natural light
55	Faciliteiten (krachtstroom, water, elektriciteit)	Facilities (power, water, electricity)	0	Facilities
56	Sociale contacten	Social contacts	1	Presence of like-minded creatives
57	Herrie kunnen maken	Able to make noise	0	Few regulations
58	Expositie ruimte	Exhibition space	1	Nearby sellers/vendors
59	Laden & lossen logistiek	Loading & unloading logistics	0	Logistics
60	Veilig	Safe	0	Safety
61	Natural light	Natural light	1	Natural light

62	Water installation	Water installation	0	Facilities
63	To open windows	Ability to open windows	0	Heating and ventilation
64	Wifi	Wifi	0	Facilities
65	Rest area	Rest area	1	Gardens and greenspace
66	Work close to other creatives	Work close to other creatives	1	Presence of like-minded creatives
67	Common area with tools	Common area with tools	0	Sharing resources as a community
68	Veiligheid	Safety	0	Safety
69	Prettige werksfeer	Pleasant working atmosphere	0	Pleasant atmosphere
70	Constante frisse lucht	Constant fresh air	0	Heating and ventilation
71	Licht & ramen	Light & windows	1	Natural light
72	Veel ruimte	Plenty of space	1	Spacious
73	vrijheid mbt ruimte	Freedom concerning space	0	Adaptability
74	Creativelingen bij elkaar	Creative people together	1	Presence of like-minded creatives
75	Goede gedeelde faciliteiten	Good shared facilities	0	Sharing resources as a community
76	Betaalbaar	Affordable	1	Affordable
77	Centrale ligging	Central location	0	In an urban area
78	Ligging in natuur	Location in nature	0	Location in nature
79	Grote werkmachines	Large working machines	0	Heavy equipment machinery
80	Spacey	Spacious	1	Spacious
81	Facilities	Facilities	0	Facilities
82	Cheap rent	Cheap rent	1	Affordable
83	Vrijheid tbv ruimte	Freedom for space	0	Adaptability
84	Samenwerken met anderen	Collaborate with others	1	Presence of like-minded creatives
85	Aanpassingen mogen maken aan ruimte	Allowed to make adjustments to space	0	Adaptability
86	Ten alle tijden expressie kunnen uitoefenen	Able to express at all times	1	Exposure to new ideas
87	Licht, Verlichting	Light, lighting	1	Natural light
88	Voorzieningen	Facilities	0	Facilities
89	Scheiding tussen thuis en werkplek	Separation between home and workplace	1	Separation between home and workplace
90	2e thuis zijn	Second home feeling	0	Second home feeling
91	Ecosysteem in de omgeving	Ecosystem in the surroundings	0	Presence of like-minded creatives
92	Tijdelijkheid van de locatie	Temporariness of the area	0	Temporariness of the area
93	Afsluitbare ruimte / donkere ruimte	Closable space / dark room	0	Adaptability
94	Hoge plafonds	High ceilings	1	High ceilings
95	Sociale omgeving	Social environment	1	Presence of like-minded creatives
96	Sociale samenwerking	Social collaboration	1	Sharing resources as a community
97	Af kadering in ruimte	Boundaries in space	1	Adaptability
98	Gratis parkeren	Free parking	0	Extra services
99	Rust	Peace	0	Privacy
100	Kennis delen met anderen	Share knowledge with others	1	Ability to share information, knowledge
101	Organiseren uit eigen initiatief	To organise on your own initiative	0	Art and cultural activities
102	Niet te duur	Not too expensive	1	Affordable
103	Dichtbij (bereikbaarheid)	Close by (accessibility)	0	Accessibility
104	Opslag	Storage	0	Storage
105	Meerdere mensen (sparren met collega's)	Multiple people (brainstorming with colleagues)	1	Presence of like-minded creatives
106	Veiligheid	Safety	0	Safety
107	Veel licht (zonlicht)	Lots of light (sunlight)	1	Natural light
108	Minimaal 25m2	Minimum 25m2	0	Spacious
109	Witte muur	White walls	0	White walls
110	Grootte van ruimte	Size of space	1	Spacious
111	Kosten ruimte	Cost of space	1	Affordable
112	Sociale interactie andere huurders	Social interaction with other tenants	1	Presence of like-minded creatives
113	Faciliteiten (keuken, toiletten, etc.)	Facilities (kitchen, toilets, etc.)	0	Facilities
114	Daglicht	Daylight	1	Natural light
115	Afstand	Distance	0	Accessibility
116	Parkeerplaatsen / laden & lossen + veiligheid	Parking spaces / loading & unloading + safety	0	Logistics
117	Vrijheid; inrichten, indelen werkplek, ruimte delen, gasten uitnodigen	Freedom; arrange, layout workspace, share space, invite guests	1	Adaptability
118	Goed contact huurder	Good contact with the landlord	0	Good contact with the landlord
119	Mogelijkheid tot netwerken	Networking opportunity	0	Ability to share information, knowledge
120	Sociale creatieve omgeving	Social, creative environment	1	Presence of like-minded creatives
121	Huurprijs	Rental price	1	Affordable
122	Locatie - bereikbaarheid	Location - accessibility	0	Accessibility
123	Grootte ruimte	Large space	1	Spacious
124	Goed licht	Good light	1	Natural light
125	Locatie - veiligheid	Location - safety	0	Safety
126	Fijne verhuurders (betrouwbaar)	Nice landlords (reliable)	0	Good contact with the landlord
127	Opslag mogelijkheid	Storage possibility	0	Storage

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

128	Zichtbaarheid bedrijf	Visibility of the company	0	Exposure to audiences and critics
129	Samenwerking	Collaboration	0	Presence of like-minded creatives
130	Betaalbaarheid	Affordability	1	Affordable
131	Bereikbaarheid (voor klanten)	Accessibility (for customers)	0	Accessibility
132	Goede verstandhouding met verhuurders	Good relationship with landlords	0	Good contact with the landlord
133	Good lighting / natural light	Good lighting / natural light	1	Natural light
134	Cozyness; temperature, at home, second home	Cosiness; temperature, at home, second home	0	Second home feeling
135	Repurposed building	Repurposed building	0	Repurposed building
136	Sticking together, Family feeling, Helping each other	Sticking together, Family feeling, Helping each other	1	Sharing resources as a community
137	Spacious	Spacious	1	Spacious
138	Freedom from the landlord	Freedom from the landlord	0	Few regulations
139	Change scenery	Change of scenery	0	Change of scenery

N.O.J. van Hest

TU/e

H. Histograms

The distribution of the frequency of the scores per different creative domain

Heritage

Frequency of score vs. Score of an aspect

Scores (x-axis): 1, 2, 6, 7, 8, 9, 10, 11, 15, 17, 18, 23, 24, 30, 47, 49, 71
Frequencies: 1, 2, 1, 2, 3, 2, 2, 4, 2, 1, 1, 1, 1, 1, 1, 1, 1

Arts

Frequency of score vs. Score of an aspect

Scores (x-axis): 2, 3, 4, 5, 6, 8, 9, 11, 13, 14, 15, 16, 17, 21, 29, 35, 41
Frequencies: 2, 2, 1, 2, 1, 2, 1, 1, 2, 1, 1, 1, 1, 2, 2, 1, 1

Functional creations

Frequency of score vs. Score of an aspect

Scores (x-axis): 1, 2, 3, 6, 7, 8, 9, 10, 11, 13, 14, 15, 18, 20, 21, 25, 27, 28
Frequencies: 2, 2, 1, 1, 3, 5, 1, 2, 1, 2, 1, 1, 1, 2, 1, 1, 1, 1

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

The distribution of the frequency per different creative domain

Heritage

Arts

Functional creations
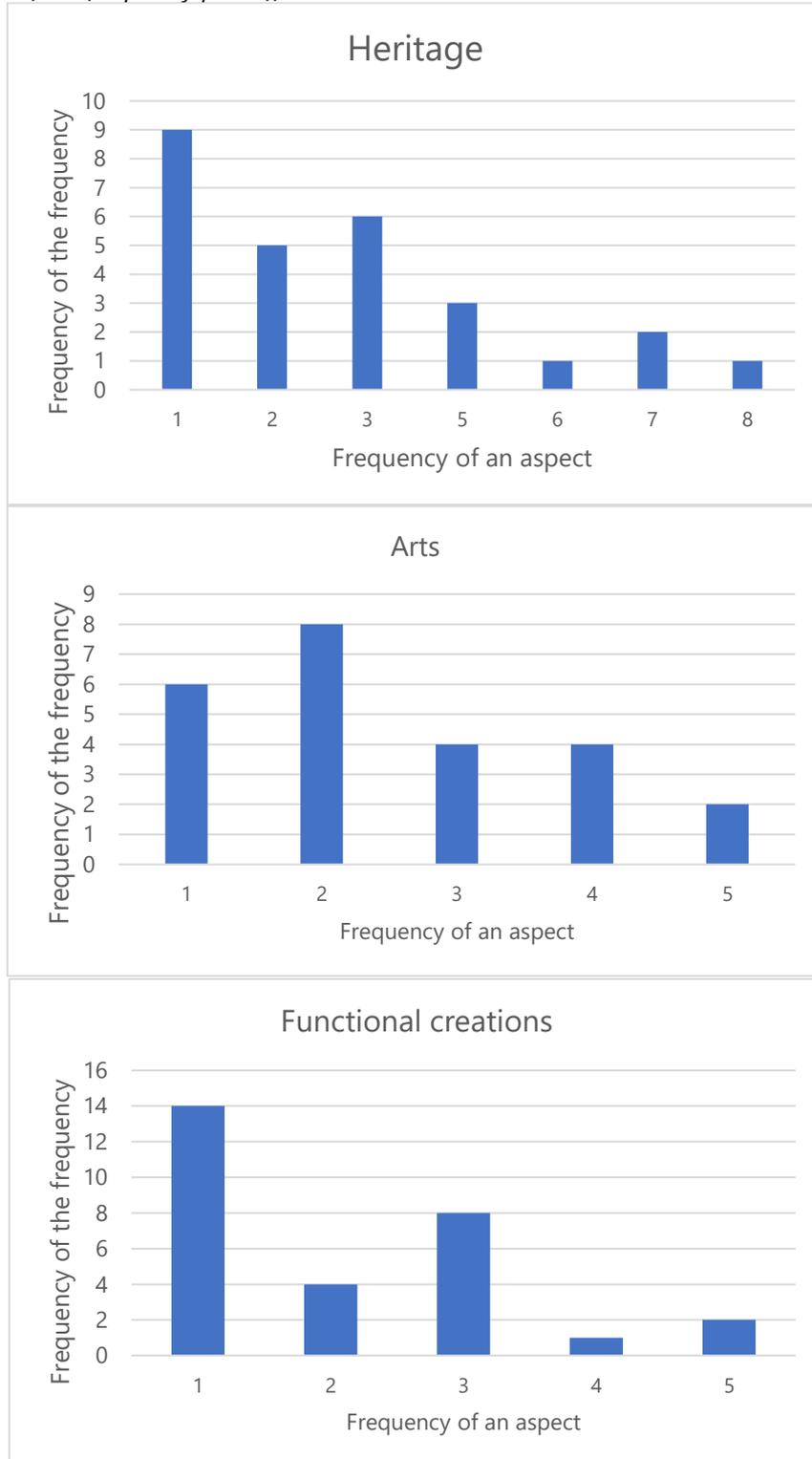
I. Weighted average domain tables

Weigheted average per creative domain

Normalised summed ranked score

Heritage   **Arts**   **Functional creations**

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres
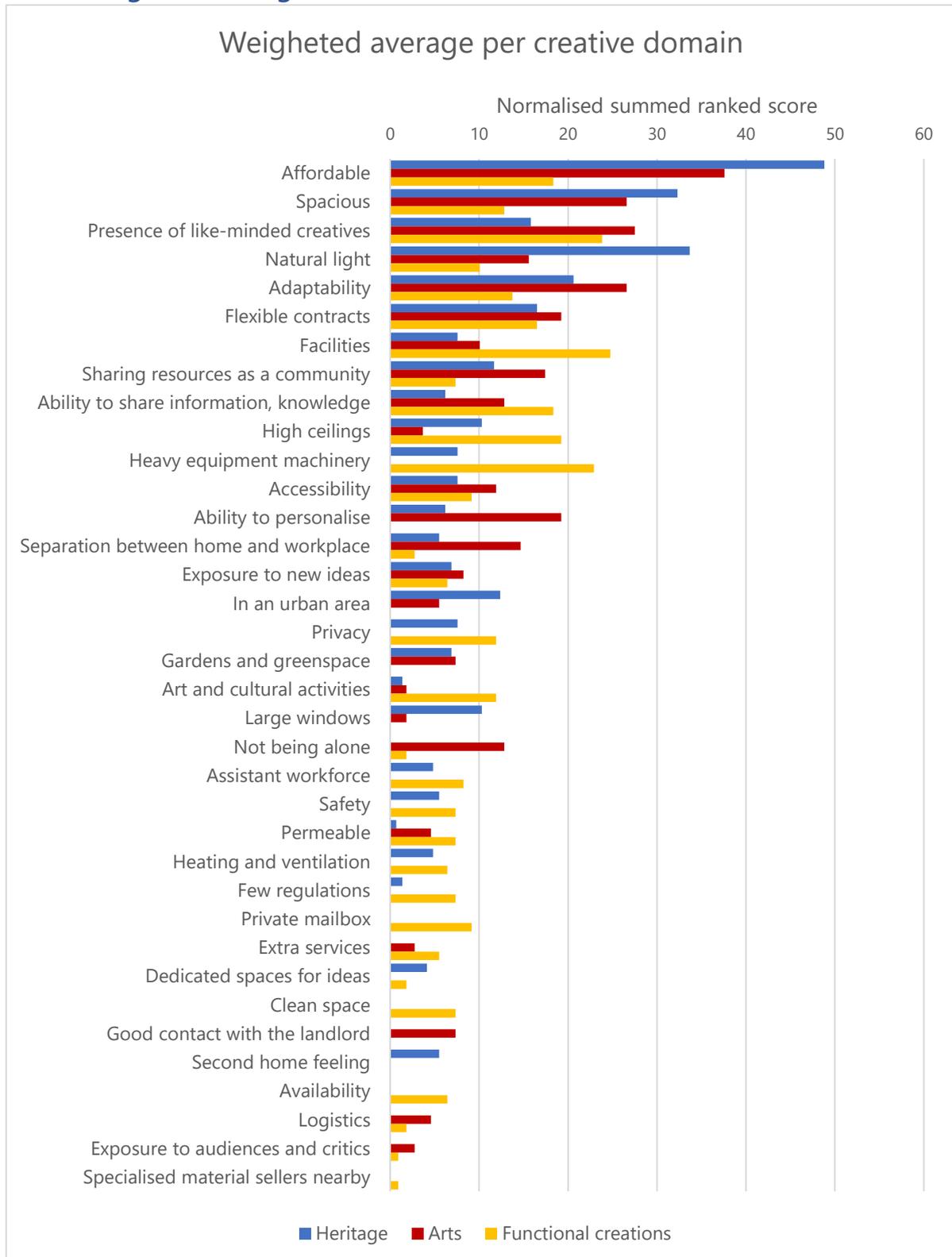
Weigheted average frequency

Normalised frequency

	Heritage	Arts	Functional creations

Categories (top to bottom):
- Affordable
- Spacious
- Presence of like-minded creatives
- Natural light
- Adaptability
- Flexible contracts
- Facilities
- Sharing resources as a community
- Ability to share information, knowledge
- High ceilings
- Heavy equipment machinery
- Accessibility
- Ability to personalise
- Separation between home and workplace
- Exposure to new ideas
- In an urban area
- Privacy
- Gardens and greenspace
- Art and cultural activities
- Large windows
- Not being alone
- Assistant workforce
- Safety
- Permeable
- Heating and ventilation
- Few regulations
- Private mailbox
- Extra services
- Dedicated spaces for ideas
- Clean space
- Good contact with the landlord
- Second home feeling
- Availability
- Logistics
- Exposure to audiences and critics
- Specialised material sellers nearby

J. Lift ratio tables aspect frequency and ranking

Frequency mentioned aspects per domain	Domains (D)			
Top 10 mentioned aspects (A)	Heritage	Arts	Functional creations	Total frequency (A)
Affordable	8	5	4	17
Spacious	7	3	2	12
Presence of like-minded creatives	5	5	4	14
Natural light	7	4	3	14
Adaptability	6	4	3	13
Flexible contracts	5	4	3	12
Facilities	3	2	3	8
Sharing resources as a community	3	3	1	7
Ability to share information, knowledge	1	3	5	9
High ceilings	2	2	3	7
Heavy equipment machinery	2	0	3	5
Accessibility	2	2	2	6
Ability to personalise	5	3	0	8
Separation between home and workplace	2	3	1	6
Exposure to new ideas	3	2	2	7
Privacy	2	0	3	5
In an urban area	3	2	0	5
Gardens and greenspace	3	2	0	5
Large windows	3	1	0	4
Art and cultural activities	1	1	3	5
Safety	1	0	2	3
Assistant workforce	1	0	1	2
Not being alone	0	3	1	4
Heating and ventilation	1	0	1	2
Permeable	1	2	1	4
Private mailbox	0	0	1	1
Few regulations	1	0	1	2
Extra services	0	1	1	2
Second home feeling	1	0	0	1
Good contact with the landlord	0	1	0	1
Clean space	0	0	1	1
Dedicated spaces for ideas	1	0	1	2
Logistics	0	1	1	2
Availability	0	0	1	1
Exposure to audiences and critics	0	1	1	2
Specialised material sellers nearby	0	0	1	1
Total per domain (D)	80	60	60	200

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

Probability of aspect frequency for domains (i) given aspects (j)

Probability (D | A) Mentioned aspects	Domains (D) Heritage	Arts	ional creations		P (A)
Affordable	47%	29%	24%		9%
Spacious	58%	25%	17%		6%
Presence of like-minded creatives	36%	36%	29%		7%
Natural light	50%	29%	21%		7%
Adaptability	46%	31%	23%		7%
Flexible contracts	42%	33%	25%		6%
Facilities	38%	25%	38%		4%
Sharing resources as a community	43%	43%	14%		4%
Ability to share information, knowledge	11%	33%	56%		5%
High ceilings	29%	29%	43%		4%
Heavy equipment machinery	40%	0%	60%		3%
Accessibility	33%	33%	33%		3%
Ability to personalise	63%	38%	0%		4%
Separation between home and workplace	33%	50%	17%		3%
Exposure to new ideas	43%	29%	29%		4%
Privacy	40%	0%	60%		3%
In an urban area	60%	40%	0%		3%
Gardens and greenspace	60%	40%	0%		3%
Large windows	75%	25%	0%		2%
Art and cultural activities	20%	20%	60%		3%
Safety	33%	0%	67%		2%
Assistant workforce	50%	0%	50%		1%
Not being alone	0%	75%	25%		2%
Heating and ventilation	50%	0%	50%		1%
Permeable	25%	50%	25%		2%
Private mailbox	0%	0%	100%		1%
Few regulations	50%	0%	50%		1%
Extra services	0%	50%	50%		1%
Second home feeling	100%	0%	0%		1%
Good contact with the landlord	0%	100%	0%		1%
Clean space	0%	0%	100%		1%
Dedicated spaces for ideas	50%	0%	50%		1%
Logistics	0%	50%	50%		1%
Availability	0%	0%	100%		1%
Exposure to audiences and critics	0%	50%	50%		1%
Specialised material sellers nearby	0%	0%	100%		1%
P (D)	40%	30%	30%	100 %	100 %

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Lift ratio of aspect frequency for domains (i) given aspects (j)

Lift Ratio (D|A)	Domains		
Mentioned aspects	Heritage	Arts	Functional creations
Affordable	1,2	1	0,8
Spacious	1,5	0,8	0,6
Presence of like-minded creatives	0,9	1,2	1
Natural light	1,3	1	0,7
Adaptability	1,2	1	0,8
Flexible contracts	1	1,1	0,8
Facilities	0,9	0,8	1,3
Sharing resources as a community	1,1	1,4	0,5
Ability to share information, knowledge	0,3	1,1	1,9
High ceilings	0,7	1	1,4
Heavy equipment machinery	1	0	2
Accessibility	0,8	1,1	1,1
Ability to personalise	1,6	1,3	0
Separation between home and workplace	0,8	1,7	0,6
Exposure to new ideas	1,1	1	1
Privacy	1	0	2
In an urban area	1,5	1,3	0
Gardens and greenspace	1,5	1,3	0
Large windows	1,9	0,8	0
Art and cultural activities	0,5	0,7	2
Safety	0,8	0	2,2
Assistant workforce	1,3	0	1,7
Not being alone	0	2,5	0,8
Heating and ventilation	1,3	0	1,7
Permeable	0,6	1,7	0,8
Private mailbox	0	0	3,3
Few regulations	1,3	0	1,7
Extra services	0	1,7	1,7
Second home feeling	2,5	0	0
Good contact with the landlord	0	3,3	0
Clean space	0	0	3,3
Dedicated spaces for ideas	1,3	0	1,7
Logistics	0	1,7	1,7
Availability	0	0	3,3
Exposure to audiences and critics	0	1,7	1,7
Specialised material sellers nearby	0	0	3,3

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

Frequency matrix of the ranked score for domain (i) given aspect (j)

Frequency ranking aspects per domain	Domains (D)			
Top 10 mentioned aspects (A)	Heritage	Arts	Functional creations	**Total frequency (A)**
Affordable	71	41	20	132
Spacious	47	29	14	90
Presence of like-minded creatives	23	30	26	79
Natural light	49	17	11	77
Adaptability	30	29	15	74
Flexible contracts	24	21	18	63
Facilities	11	11	27	49
Sharing resources as a community	17	19	8	44
Ability to share information, knowledge	9	14	20	43
High ceilings	15	4	21	40
Heavy equipment machinery	11	0	25	36
Accessibility	11	13	10	34
Ability to personalise	9	21	0	30
Separation between home and workplace	8	16	3	27
Exposure to new ideas	10	9	7	26
Privacy	11	0	13	24
In an urban area	18	6	0	24
Gardens and greenspace	10	8	0	18
Large windows	15	2	0	17
Art and cultural activities	2	2	13	17
Safety	8	0	8	16
Assistant workforce	7	0	9	16
Not being alone	0	14	2	16
Heating and ventilation	7	0	7	14
Permeable	1	5	8	14
Private mailbox	0	0	10	10
Few regulations	2	0	8	10
Extra services	0	3	6	9
Second home feeling	8	0	0	8
Good contact with the landlord	0	8	0	8
Clean space	0	0	8	8
Dedicated spaces for ideas	6	0	2	8
Logistics	0	5	2	7
Availability	0	0	7	7
Exposure to audiences and critics	0	3	1	4
Specialised material sellers nearby	0	0	1	1
Total per domain (D)	440	330	330	1100

Prioritisation of Creative Workspace Aspects by Cultural and Creative Workers in Dutch Urban Centres

Probability of aspect ranked scores for domains (i) given aspects (j)

Probability (D | A)	Domains (D)				
Mentioned aspects	Heritage	Arts	Functional creations		P (A)
Affordable	54%	31%	15%		12%
Spacious	52%	32%	16%		8%
Presence of like-minded creatives	29%	38%	33%		7%
Natural light	64%	22%	14%		7%
Adaptability	41%	39%	20%		7%
Flexible contracts	38%	33%	29%		6%
Facilities	22%	22%	55%		4%
Sharing resources as a community	39%	43%	18%		4%
Ability to share information, knowledge	21%	33%	47%		4%
High ceilings	38%	10%	53%		4%
Heavy equipment machinery	31%	0%	69%		3%
Accessibility	32%	38%	29%		3%
Ability to personalise	30%	70%	0%		3%
Separation between home and workplace	30%	59%	11%		2%
Exposure to new ideas	38%	35%	27%		2%
Privacy	46%	0%	54%		2%
In an urban area	75%	25%	0%		2%
Gardens and greenspace	56%	44%	0%		2%
Large windows	88%	12%	0%		2%
Art and cultural activities	12%	12%	76%		2%
Safety	50%	0%	50%		1%
Assistant workforce	44%	0%	56%		1%
Not being alone	0%	88%	13%		1%
Heating and ventilation	50%	0%	50%		1%
Permeable	7%	36%	57%		1%
Private mailbox	0%	0%	100%		1%
Few regulations	20%	0%	80%		1%
Extra services	0%	33%	67%		1%
Second home feeling	100%	0%	0%		1%
Good contact with the landlord	0%	100%	0%		1%
Clean space	0%	0%	100%		1%
Dedicated spaces for ideas	75%	0%	25%		1%
Logistics	0%	71%	29%		1%
Availability	0%	0%	100%		1%
Exposure to audiences and critics	0%	75%	25%		0%
Specialised material sellers nearby	0%	0%	100%		0%
P (D)	40%	30%	30%	100%	100%

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Lift ratio of aspect ranked scores for domains (i) given aspects (j)

Lift Ratio (D|A)	Domains		
Mentioned aspects	Heritage	Arts	Functional creations
Affordable	1,3	1	0,5
Spacious	1,3	1,1	0,5
Presence of like-minded creatives	0,7	1,3	1,1
Natural light	1,6	0,7	0,5
Adaptability	1	1,3	0,7
Flexible contracts	1	1,1	1
Facilities	0,6	0,7	1,8
Sharing resources as a community	1	1,4	0,6
Ability to share information, knowledge	0,5	1,1	1,6
High ceilings	0,9	0,3	1,8
Heavy equipment machinery	0,8	0	2,3
Accessibility	0,8	1,3	1
Ability to personalise	0,8	2,3	0
Separation between home and workplace	0,7	2	0,4
Exposure to new ideas	1	1,2	0,9
Privacy	1,1	0	1,8
In an urban area	1,9	0,8	0
Gardens and greenspace	1,4	1,5	0
Large windows	2,2	0,4	0
Art and cultural activities	0,3	0,4	2,5
Safety	1,3	0	1,7
Assistant workforce	1,1	0	1,9
Not being alone	0	2,9	0,4
Heating and ventilation	1,3	0	1,7
Permeable	0,2	1,2	1,9
Private mailbox	0	0	3,3
Few regulations	0,5	0	2,7
Extra services	0	1,1	2,2
Second home feeling	2,5	0	0
Good contact with the landlord	0	3,3	0
Clean space	0	0	3,3
Dedicated spaces for ideas	1,9	0	0,8
Logistics	0	2,4	1
Availability	0	0	3,3
Exposure to audiences and critics	0	2,5	0,8
Specialised material sellers nearby	0	0	3,3

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