

Research Article

Measuring the quality of place in aerotropolis: A descriptive study on the creative class theory quality of place amenities in operational aerotropolises in the United States

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ARTICLE INFO	ABSTRACT
* Corresponding author kate.quigley@unisa.edu.au Received July 28, 2021 Revised September 9, 2021 Accepted December 2, 2021	The area surrounding a major airport has been widely conceptualised as an aerotropolis in recent decades. Many aerotropolises position themselves as a premier business and residential location, oriented to knowledge-intensive firms and knowledge workers (Creative Class). Nevertheless, aerotropolises' shortcoming in urban quality sometimes hinders them from attracting the targeted high-status 'customers'. This descriptive study empirically measures the urban quality in the aerotropolises of Dallas-Fort Worth International Airport (DFW), LA/Ontario International Airport (ONT) and O'Hare International Airport (ORD) by counting the
Kate Quigley 0 0000-0001-5113-9318 Nigel Lai Hong Tse 0 0000-0003-1778-422X Arthas Fei Ngong Lam 0 0000-0003-1768-7665 Cherie Tsz Kiu Tang 0 0000-0002-1996-2352 Mirjam Wiedemann 0 0000-0001-9394-5836	International Airport (ONT) and O Hate International Airport (OND) by counting the frequencies of amenity dimensions defined and described in creative class theory literature. ArcGIS Business Analyst is used for data collection. Based on the sum of z-scores of amenity categories, findings suggest that the quality of place indexes of ONT, DFW and ORD aerotropolises are 4.961, 1.8 and -3.76 respectively. Findings also suggest the top four most prominent amenity dimensions, i.e., restaurants, cafes, beauty parlours and sports facilities, are consistent throughout the sample aerotropolises. This study adds to the Airport City body of knowledge by defining and providing data about urban quality in aerotropolises. The data could be used for future studies to analyse the causality between amenity provision and location decision of knowledge-intensice firms and the Creative Class on an urban precinct level. <i>Keywords:</i> Aerotropolis; Airport City; Amenity; Creative Class; Knowledge-intensive Firms

1. Introduction

An aerotropolis is defined as '(a) new urban form where cities are built around airports speedily connecting timesensitive suppliers, manufacturers, distributors, and business people to distant customers, clients, and marketplaces' [1, homepage]. The core of an aerotropolis is the Airport City located next to the passenger terminal that provides non-aeronautical commercial facilities and services. The outer ring of an aerotropolis is composed of corridors and clusters of airport-linked businesses and associated residential developments [1-3]. An aerotropolis has a radius of 20 miles or 20-30 minutes drive distance from the airport fences [1-3]. Within decades, the aerotropolis model has gained popularity across the globe [4].

Some studies suggest that accessibility to airports with strong air connectivity is not only vital to 'just-in-time' logistics activities, but also a key selling point to attract knowledgeintensive advanced business firms. It is because their executives and professionals need to travel by air frequently for work [2]. The knowledge-intensive firms include 'auditing, architecture and engineering, consulting, corporate law, international finance, and marketing' [3, p.3]. Besides, these executives and professionals widely use creativity in their work. Therefore, they are classified as Creative Class by Florida [5]. Some studies suggest that since firms want to minimize time cost, airport accessibility becomes the most crucial factor for firms when considering where to hold business meetings, set up offices and even corporate headquarters [2-3]. Subsequently, the aerotropolis is believed to be a premier business location that is a magnet for knowledge-intensive business activity in its metropolitan area [2-3]. Furthermore, Creative Class and their families would reside in an aerotropolis due to airport accessibility [2-3].

However, empirical evidence shows that many aerotropolises do not have clusters of knowledge-intensive firms [6-7]. Besides, many advanced business firms locating in aerotrpolises might not be attracted to their current location because of airport accessibility [8]. Moreover, some aerotropolises are not residential locations for the affluent Creative Class, but they are urban periphery with many lower-income people [2].

Hence, it is argued that airport accessibility alone is insufficient to attract knowledge-intensive firms and Creative Class. The economic sustainability and development success of an aerotropolis also depends on many other location factors [7-8]. This study concerns the urban quality in an aerotropolis. This study empirically measures the urban quality in aerotropolises from the lens of creative class theory quality of place framework [5]. The creative class theory advocates the importance of street-level Bohemian amenities and outdoor amenities towards attracting knowledgeintensive firms and Creative Class [5]. This study aims to provide the background and data for future studies to explore the causality between amenity provision and location decision in aerotropolis context.

2. Importance of Aerotropolis Urban Quality Towards Intra-Metropolitan Location Decision

Urban quality in an aerotropolis is a critical location factor. It can attract Creative Class and knowledge-intensive firms from other metropolitan subregions to an aerotropolis in four interrelated ways. Firstly, good urban quality in an aerotropolis can attract knowledge-intensive firms by providing the status symbol and amenities needed for corporate functions and business meetings [8-11]. Secondly, good urban quality can attract Creative Class to live in an aerotropolis by satisfying their lifestyle [2, 9, 12]. Thirdly, knowledge-incentive firms are motivated to provide a workplace with good urban quality to please their Creative Class employees [8, 12-14]. Fourth, firms can be attracted by the sufficient labour supply of Creative Class in the aerotropolis, while good urban quality is a precondition for skilled labour concentration [8-9]. In addition, if an aerotropolis could attract Creative Class and knowledgeintensive firms by its liveliness and urbanized place-based qualities, it could avoid becoming a ghost town even if air transport is restricted due to external shocks like COVID-19 [11, 15-16].

3. Knowledge Gap in Aerotropolis Urban Quality

Although the above Airport City literature [2, 8-16] stressed the importance of good urban quality to location decisions, few studies empirically measured the urban quality in existing aerotropolises. Moreover, studies in Airport City literature looked at urban quality from different lenses, such as aesthetics [11-12, 17], land use [12, 18], urban density [12, 15, 17-18] and amenity provision [2, 8-9, 12, 18-19] leading to inconsistent research outcomes and implications.

Some studies focused on the importance of amenity provision towards urban quality [2, 8-9, 12, 18, 19]; their authors listed examples of amenities such as public spaces, good schools, shopping facilities, restaurants, café, outdoor facilities, golf clubs, cultural venues and gym. They suggested these amenities could improve urban quality, thus could contribute to aerotropolis development success. Nevertheless, these studies did not robustly justify why they choose the aforementioned amenity elements over other similar amenity elements. According to Wiedemann [8, p.292], 'social infrastructure plays an important role for economic development in the Airport Metropolis' Region but that much more research is necessary to disentangle the importance of different elements more in depth.'

In conclusion, the problem remains that there is no agreement and very little justification about specific amenities for urban quality in aerotropolises. Therefore, this study reviews creative class theory literature to compile a list of quality of place amenities that affect Creative Class's and knowledgeintensive firms' intra-metropolitan location decisions. These amenities are the dimensions in this study's descriptive data analysis.

4. Creative Class and Quality of Place

The cornerstone of creative class theory is the creative economy: creativity enables humans to create meaningful new forms such as new business models, scientific and artistic endeavors that enhance competitiveness at a microeconomic level and drive economic growth at a macroeconomic level [5]. A particular social class of workers, defined as the Creative Class, utilizes more creativity at work than workers in other classes. Creative Class includes the Super-Creative Core, such as scientists, programmers and filmmakers, who create useful new forms and designs. Creative Class also includes Creative Professionals, such as lawyers, physicians and managers, who draw on complex knowledge and utilize critical thinking to solve problems [5]. Creative Class are highly sought-after, and creative employment offerings follow where the Creative Class goes [5]. On a macroeconomic level, empirical studies in North America [20-23] and Europe [24-29] reflected knowledge-intensive firms clustered in places with a high ratio of Creative Class in the population. The 'job-followspeople' claim was further confirmed by interviewing firms directly in America [5], Europe [8, 30-31], Middle East [8, 31] and Asia [32].

Since Creative Class are essential assets, the practical component of creative class theory advocates the importance of place-based qualities in attracting Creative Class and subsequently attracting knowledge-intensive firms. Creative Class are footloose. Nevertheless, they do not relocate for traditional location factors: tax incentive, employment, good schools, family-friendliness, and safety [5]. Instead, Creative Class are attracted by the place's tolerance and amenities [5]. Based on numerous interviews, focus groups and surveys conducted in the United States across two decades, Florida [5] discovers eight characteristics that attract or retain Creative Class to places. Together they are coined as 'quality of place' or 'Territorial Assets': (1) thick labour market that is conductive to a horizontal career path; (2) lifestyle with the followings in proximity: nightlife, cafés, late-night dining, trails and parks, small music and art venues that allows interactions; (3) social interaction with a close-knit group of friends, facilitated by many 'third places' (informal socializing venue other than home and workplace, such as cafés, bars, beauty parlours) that allow friends to catch up; (4) mating market with many single people, and amenities and activities that brings singles together; (5) diversity of thought and open-mindedness (tolerance), which is reflected by having people with different races, ethnics, sexual orientations, ages and alternative appearances; (6) authenticity with distinct audio identity, a mix of new and historical buildings, neighborhood heritage, yuppies, fashion models and street people; (7) scenes (image of a place reflected by its amenity combination) affects Creative Class agglomeration, and self-expression (Bohemian) scene is the most impactful; (8) identity, i.e., the reputation of the place, that Creative Class can use as a source to express their status [5].

In principle, a place with the quality of place is lively. It should have many street-level Bohemian amenities and outdoor amenities for non-spectator sports. These amenities facilitate a diverse population to conduct active, exciting, creative activities at any time of the day [5]. The contribution to liveliness by a mix of new and old building and street-level amenities with mixed functions were also emphasized in Jacobs's [33] landmark study in urban planning. Besides, the importance of indoor and outdoor eating and drinking venues in shaping a vibrant urban atmosphere was also emphasized by Montgomery [34], who coined this phenomenon as a 'café culture'. In addition, Florida [5] explicitly emphasized that traditional and non-interactive amenities are irrelevant to Creative Class and quality of place. Thus 'sports stadiums, freeways, urban malls, and tourism-and-entertainment districts that resemble theme parks' [5, p.146] should be avoided in development.

In summary, creative class theory builds on the traditional human capital model and agrees that talented people, the Creative Class, drives economic growth. But at the same time, creative class theory closes the causal loop of the human capital model by using the quality of place framework to explain why and where talented people locate [35]. Wiedemann's [8] study has proven the quality of place as a valid theoretical framework to foster aerotropolises'

sustainability and economic development success. Wiedemann [8] interviewed decision-makers of knowledgeintensive firms in Germany and found they repeatedly criticized the Airport City as an 'artificial' place that missed 'Kiez' (integrated neighborhood) the atmosphere. Concerning the categories of quality of place amenities, 63.3% of firms in the UAE and Germany expressed 'community service facilities' were important to their location decision. Interview findings further revealed that the main 'community service facilities' that firms emphasized were restaurants and cafes for lunch (in Germany) and business meetings (in the UAE). Also, although only 27.3% of the firms considered 'leisure facilities' as an important location factor, interpretation from qualitative data revealed most firms, including those who believed 'leisure facilities' were unimportant, highlighted the importance of a gym. It was suggested that some leisure amenities (e.g. gym) should be more important than others (e.g. theme park and entertainment complex) [8].

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5. Quality of Place Amenities That Affect Intra-Metropolitan Location Decision

Most empirical studies that measured the quality of place and analyzed its importance to knowledge-intensive firms or Creative Class clustering were conducted at the metropolitan spatial level [20, 22, 32, 35-43]. Florida's [5] quality of place framework was being criticized for its fuzziness on spatial levels [37]. Studies suggest that some quality of place characteristics and amenities might be important to Creative Class's or knowledge-intensive firms' inter-metropolitan location decision, but not as important to intra-metropolitan location decision, or vice versa [8, 37, 44-45]. Therefore, studies on location decisions conducted at a precinct spatial level were reviewed instead of directly adapting the existing quality of place amenity dimensions widely seen in metropolitan level studies. The tangible quality of place amenities that attract knowledge-intensive firms or Creative Class to a precinct are grouped into six categories and presented below.

Third places (café culture). In the United States, the number of restaurants and cafés in each block group was statistically positive and significant to the number of knowledgeintensive firms therein [46]. Besides, interviews conducted with decision-makers of knowledge-intensive firms in Berlin-Kreuzberg and Berlin-Prenzlauer Berg [47], London-Soho and Istanbul-Beyoglu [30] and Auckland-Parnell creative precincts [48] revealed that their firms were attracted to their current locations due to the presence of restaurants, bars and cafes which facilitated informal socializing. Besides, an international Delphi survey found 94% of experts believed cafes, restaurants and bars have a very high or high impact on shaping the place quality of an innovation district, and subsequently attract knowledge sectors [45]. Moreover, a survey found 78% of Creative Class indicated access to third place (cafes), and 73% indicated proximity to dining establishments were very influential to why they chose to live in downtown Omaha [49].

Third places (others). Third places also include barber shops, beauty parlours, bookshops and lounges [49]. These third places attracted Creative Class to live in downtown Omaha [49].

Entertainment amenities. In the United States, the number of discos and nightclubs in each block group was statistically positive and significant to the number of knowledge-intensive firms therein [46]. In addition, it was found that 94% of experts believed nightlife has a very high or high impact on shaping an innovation district's place quality to attract knowledge sectors [45].

Arts & cultural amenities. In the United States, the number of theatres/concert halls, museums, cinemas and public libraries in each block group was statistically positive and significant to the number of knowledge-intensive firms therein [46]. In addition, it was found that 97% of experts believed public and cultural spaces (i.e., cinemas, libraries, theatres) have a very high or high impact on shaping an innovation district's place quality and subsequently attracts knowledge sectors [45]. Besides, 68% of the Creative Class indicated proximity to art/cultural amenities were very influential to why they chose to live in downtown Omaha [49].

Sports & recreational amenities. In the United States, the number of sports facilities, parks and recreational areas in each block group was statistically positive and significant to the number of knowledge-intensive firms therein [46]. In addition, 94% of experts believed outdoor sports, cycling, jogging, and well-equipped sports grounds have a very high or high impact on shaping an innovation district's quality of place and subsequently attracting knowledge sectors [45]. Besides, it was found that 50% of Creative Class indicated proximity to parks and recreational venues were very influential to why they chose to live in downtown Omaha [49].

Built heritage. Interviews conducted with decision makers of knowledge-intensive firms in creative precincts found they view built heritage as an important location factor. They believed built heritage was a source of creativity, and locating offices in heritage buildings helped to create a niche brand image for their firms which would be useful in marketing [30, 47-48]. In addition, it was found that 88% of experts believed the presence of monuments, historic buildings, established neighborhoods have a very high or high impact on shaping an innovation district's place quality thus attracts knowledge sectors [45]. Moreover, 73% of the Creative Class indicated historical character was very influential to why they chose to live in downtown Omaha [49].

6. Research Design and Research Question

This study is quantitative and descriptive. It is a precursor for future explanatory studies to analyse the causality between aerotropolis' quality of place and location decisions. This study is grounded in the creative class theory and defines the quality of place as the concentration of street-level Bohemian amenities and outdoor amenities [5]. By adapting the methodology of creative class theory literature [22, 35, 37, 39, 44-45], this study measures the quality of place of aerotropolises through counting the number of quality of place amenities therein. The research question of this precinct-level study is 'how many creative class theory quality of place amenities do the operational aerotropolises in the United States have?'

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7. Methodology

The population of this study were operational aerotropolises in the United States. The operational aerotropolises were identified by aerotropolis concept leader Kasarda [4] based on the presence of aviation-linked business clusters, aerotropolis steering committees and initiatives, legislative support, tax incentives and media announcement related to aerotropolis development [4]. The sample was chosen to enhance the representativeness of different regional contexts [50]. The researchers chose one aerotropolis from each of the four Census Regions defined by the 2010 Census Regions and Divisions of the United States [51]. The aerotropolis of O'Hare International Airport (ORD) in Illinois represents Region Two: Midwest. The aerotropolis of Dallas/Fort Worth International Airport (DFW) in Texas represents Region Three: South. The aerotropolis of LA/Ontario International Airport (ONT) in California represents Region Four: South. There is no operational aerotropolis in Region One: Northeast. The aerotropolis of DFW is composed of Las Colinas and Southlake City [2, 52]. The aerotropolis of ORD is composed of O'Hare and Rosemont Village [2]. The aerotropolis of ONT is composed of Ontario City [53].

ArcGIS Business Analyst (https://bao.arcgis.com/esriBAO/login/index.html) was selected as the data source because of its reliability and coverage [54]. ArcGIS Business Analyst was utilized in many amenity studies [46, 55]. ArcGIS Business Analyst's interactive map visualizes the point-level location, the six-digit 2017 North American Industry Classification System (NAICS) code [56] and Data Axle's proprietary eight-digit NAICS industry codes (with more details about that business) of more than 13 million businesses in the United States.

The researchers identified the quality of place amenities in the aerotropolises by searching their relevant six-digit NAICS codes as well as Data Axle's proprietary eight-digit NAICS industry codes using the 'By site-Business and Facilities Search' function. (This study concerns about the aerotropolis (precinct surrounding a major airport) therefore amenities inside the airport terminal were manually filtered.) The researchers extracted data from ArcGIS Business

Analyst on May 15th 2021. The data was last updated on January 2021 [57]. Table 1 below lists the dimensions of quality of place amenities and their respective NAICS codes chosen by the researchers.

Category	Dimension	NAICS code				
	Restaurants	722511 Full-Service Restaurants				
		722513 Limited-Service Restaurants				
Third places	Cafes	722515 Snack and Nonalcoholic Beverage Bars				
(café culture)		72241001 Bars				
	Bars	72241003 Cocktail Lounges				
		72241008 Pubs				
	Bookshops	451211 Book Stores				
Third places		45331008 Book Dealers-Used & Rare				
(others)	Beauty parlours	812112 Beauty Salons				
	Deauty parlours	812113 Nail Salons				
	Barber shops	812111 Barber Shops				
		72241002 Cabarets				
Entertainment	Nightclubs	72241004 Comedy Clubs				
amenities	-	72241006 Night Clubs				
		72241009 Karaoke Clubs				
	Discos	72241005 Discotheques				
		711110 Theater Companies and Dinner Theaters				
	Theatres/concert halls	711120 Dance Companies				
		711130 Musical Groups and Artists				
Arts & cultural		711190 Other Performing Arts Companies				
amenities	Art-galleries	453920 Art Dealers				
	Museums	712110 Museums				
	Cinemas	512131 Motion Picture Theaters (except Drive-Ins)				
		512132 Drive-In Motion Picture Theaters				
	Libraries	519120 Libraries and Archives				
Sports &	Parks	712190 Nature Parks and Other Similar Institutions				
Sports & recreational - amenities		712130 Zoos and Botanical Gardens				
	Recreation areas	713910 Golf Courses and Country Clubs				
	Sports facilities	713940 Fitness and Recreational Sports Centers				
Built heritage	Listed historical sites	71120 Historical Sites				

Table 1. Dimensions of quality of place amenities and their NAICS codes

The data analysis method was adapted from Reese et al. [22] and Clark [35], who operationalized the descriptive measurement of quality of place. To begin, the researchers counted the frequencies of amenities. Then, the researchers summed up the frequencies within each quality of place category in each aerotropolis. Based on the sum of frequencies, the researchers calculated the normalized z-score for all six quality of place categories in each aerotropolis. Using z-scores allowed all six categories to weigh equally. Lastly, the researchers summed up the six z-scores in each aerotropolis to formulate the quality of place index of that aerotropolis.

8. Results and Discussion

As shown in table 2, the aerotropolis of ONT scores the highest in the quality of place index with 4.961. Aerotropolis of ONT has the highest z-scores and the most significant number of amenities in all amenity categories, i.e. third places (café culture), third places (others), entertainment amenities, arts & cultural amenities, sports & recreational amenities and built heritage. After that, the aerotropolis of DFW has a quality of place index of 1.8 with positive z-scores in most of the amenity categories, except for entertainment amenities with a z-score of -0.873. The

aerotropolis of ORD scores the lowest in the quality of place index with -3.76, with negative z-scores in most amenity categories exceeding negative one. Exceptions are found in entertainment amenities with a z-score of -0.218 and built heritage with a z-score of one.

The overall ranking of quality of place indexes is out of the researchers' expectations. Although a detailed analysis of the composition of companies and residents in DFW, ORD and ONT aerotropolises is out of the scope of this study, ORD aerotropolis is known for being one of the largest clusters of Class-A office space in the entire US Midwest [9]. Similarly, DFW aerotropolis is known for hosting many Fortune-500 firms, and it is one of the communities with the highest median household income [52]. In contrast, ONT aerotropolis is a magnet for cargo activities [53] but not knowledge-intensive activities. Therefore, the researchers initially expected DFW or ORD aerotropolises to have the highest quality of place index and ONT aerotropolis to have the lowest quality of place index. Therefore, more studies are needed to understand the causality between quality of place amenities in an aerotropolis and Creative Class's and knowledge-intensive firms' location decision in the aerotropolis.

Looking at the aerotropolis individually, figure 1 shows among 549 quality of place amenities in DFW aerotropolis, 60% are restaurants, 19% are beauty parlours, 6% are cafes and 4% are sports facilities. Barber shops and theatres/concert halls take 2% respectively. Bars, bookshops, art-galleries, cinemas, museums, parks and recreational areas take 1% respectively. There are no nightclubs, discos and historical sites in DFW aerotropolis.

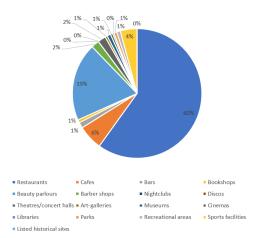


Fig. 1. Ratio of dimensions of quality of place amenities in DFW aerotropolis

Figure 2 shows among 194 quality of place amenities in ORD aerotropolis, 66% are restaurants, 15% are cafes, 4% are bars, 4% are beauty parlours and 3% are sports facilities. Recreational areas and barber shops take 2% respectively. Bookshops, nightclubs, theatres/concert halls, art-galleries, museums, cinemas and parks take 1% respectively. There are

no discos, libraries and listed historical sites in ORD aerotropolis.

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Figure 3 shows among 627 quality of place amenities in ONT aerotropolis, 59% are restaurants, 16% are beauty parlours, 9% are cafes, 4% are sports facilities, 4% are barber shops, and 2% are theatres/concert halls. Bars, art-galleries, museums and parks take 1%. Bookshops, nightclubs, cinemas, libraries and recreational areas are close to 0%. There are no discos and listed-historical sites in ONT aerotropolis.

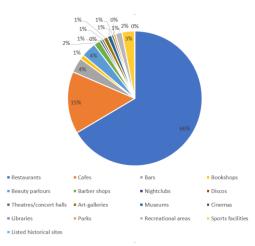


Fig. 2. Ratio of dimensions of quality of place amenities in ORD aerotropolis

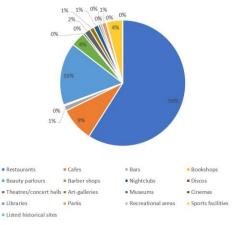


Fig. 3. Ratio of dimensions of quality of place amenities in ONT aerotropolis

It is observed that the aerotropolises of DFW, ORD and ONT have a very similar allocation of amenities. Restaurants consistently rank as the largest type of amenity in the sample aerotropolises, contributing around 60% to the quality of place amenities in DFW, ORD, and ONT aerotropolises. Cafes and beauty parlours are either the second or the thirdlargest type of amenity in the sample aerotropolises. Sports facilities consistently rank as the fourth-largest type of amenity, contributing 3% to 4% to the quality of place amenities. There are no discos and listed-historical sites in DFW, ORD and ONT aerotropolises.

		Aerotropolis of DFW			Aerotropolis of ORD			Aerotropolis of ONT
		Las Colinas	Southlake City	Overall	O'Hare	Rosemont Village	Overall	Ontario City
Third places	Restaurants	205	124	329	67	62	129	370
(café culture)	Cafes	19	15	34	13	16	29	55
	Bars	7	1	8	1	6	7	8
	Sub-total number	231	140	371	81	84	165	433
	Z-score	/	/	0.324	/	/	-1.126	0.784
Third places	Book shops	3	1	4	2	0	2	2
(others)	Beauty parlours	45	62	107	5	2	7	101
	Barber shops	5	6	11	2	1	3	23
	Sub-total number	53	69	122	9	3	12	126
	Z-score	/	/	0.546	/	/	-1.154	0.608
Entertainment	Nightlubs	0	0	0	0	1	1	3
amenities	Discos	0	0	0	0	0	0	0
	Sub-total number	0	0	0	0	1	1	3
	Z-score	/	/	-0.873	/	/	-0.218	1.091
Arts &	Theatres/concert halls	7	4	11	0	1	1	10
cultural	Art-galleries	3	0	3	1	1	2	7
amenities	Museums	3	2	5	1	1	2	8
	Cinemas	0	3	3	0	1	1	3
	Libraries	1	1	2	0	0	0	3
	Sub-total number	14	10	24	2	4	6	31
	Z-score	/	/	0.284	/	/	-1.111	0.827
Sports &	Parks	2	2	4	0	1	1	7
recreational	Recreational areas	4	1	5	2	1	3	1
amenities	Sports facilities	18	5	23	5	1	6	26
	Sub-total number	24	8	32	7	3	10	34
	Z-score	/	/	0.501	/	/	-1.151	0.651
Built heritage	Listed historical sites	0	0	0	0	0	0	0
	Z-score	/	/	1	/	/	1	1
Total number of amenities		322	227	549	99	95	194	627
Quality of place index		/	/	1.8	/	/	-3.76	4.961

Table 2. Quality of place of aerotropolises

The considerable number of restaurants, cafes, beauty parlours, and sports facilities in DFW, ORD, and ONT aerotropolises are not surprising because creative class literature repeatedly mentioned that third places and amenities for active sports are in favour of Creative Class. The absence of listed historical sites could be explained as airports and aerotropolises usually would not be built in heritage inner cities. However, the significantly low number of entertainment amenities and arts & cultural amenities across all sample aerotropolises raises concerns about whether nightlife and cultural activities are really important to Creative Class. Would it be economically viable to invest in entertainment amenities and arts & cultural amenities, with a hope to use them to attract Creative Class and knowledgeintensive firms to the aerotropolis?

9. Conclusion and Future Research

In conclusion, this study adds to Airport City literature by formulating unique quality of place indexes for operational aerotropolises in the United States. This study also identifies the trend of amenity provision in operational aerotropolises in the United States. In addition, this study has methodological significance to Airport City literature as it introduced an operational urban quality measurement method from creative class theory literature. Furthermore, this study is valuable to aerotropolis developers and local councils because the researchers reviewed creative class theory literature thoroughly to find the amenities that could improve the quality of place and attract Creative Class and knowledge-intensive firms to a precinct.

The data of this descriptive study could be used in future studies to examine what amenity elements successfully attract knowledge-intensive firms and Creative Class to live and work in an aerotropolis. To carry out a precinct-level explanatory study, the influence from the metropolitan spatial level towards location decision [8, 37, 44-45, 58] will have to be reduced. Moreover, the creative class theory is not the only valid theoretical framework relevant to aerotropolis development. Other location factors such as land use, urban density, aesthetics and traditional amenities from the broader urban quality definition [2, 8-9, 11-12, 15,17-19]; business agglomeration [59]; public transport access [58]; advances in future transportation [16] could be studied together with the quality of place amenities.

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