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Analyzing the Satisfaction of Coworking Space Users in Terms of Control

Paylaşımlı Ofislerde Kontrol Konusunda Kullanıcıların Memnuniyet Analizi

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Abstract
Due to technological developments that have changed the way people work, office interiors are also evolving and there has been an accelerating transition from conventional offices to shared workplaces since the rise of flexible working. These coworking spaces are intended to offset the negative effects of home-office and remote working, such as isolation and lack of collaboration. However, coworking places are more likely to improve performance and well-being when their users are given control. Accordingly, drawing on the concept of control developed by Evans and McCoy *(1998)*, this study analyzed the satisfaction of coworking space users in terms of key control-related design factors, namely flexibility, indoor environmental control including thermal quality, air quality, visual quality, acoustic quality and furniture and layout, privacy, and territoriality. Data were collected via a survey conducted of the users of Originn Coworking Offices, İzmir, and via interviews with its founders. The findings indicate that users feel more satisfied resulted with an increased job satisfaction and productivity if they have control over their space. These findings can guide professionals in designing and constructing shared offices to meet the expectations of users, and in designing and developing existing coworking spaces.

Keywords: Coworking Space, User Satisfaction, Control, Coworking Space Design.

Genişletilmiş Özet
Gelişmekte olan teknoloji ile yaşanan dönüşümler, yaşam tarzı değişiklikleri ve çalışma alışkanlıklarının evrilmesi ile ofis iç mekânları da değişiklik göstermiştir. İnsan odaklı olarak ortaya çıkan bu gelişmelerde esnek çalışma alanları önem kazanmış, home-ofis ve uzaktan çalışma kavramlarının çalışanlar üzerindeki olumsuz etkileri gözlemlenmiş ve paylaşımlı ofisler (coworking offices) 1995 yılından itibaren ortaya çıkmıştır. "Yalnız çalışmak, beraber" konsepti ile ortaya çıkan ve esas olarak bir alandan çok çalışma yöntemini tanımlayan paylaşımlı ofisler, bir topluluk bilinci yaratmakta olup farklı disiplinler arasında da iş birliğini desteklemektedir. Yenilikçi iç mekânlar olarak da ele alınabilen paylaşımlı ofisler, geleneksel ofislerin sosyal izolasyon, düşük motivasyon ve düşük üretkenlik gibi olumsuz yönlerine de bir eleştiri olarak doğmuştur. Paylaşımlı ofislerin dört ana değeri işbirliği, topluluk, açıklık ve sürdürülebilirlik olarak ortaya konmaktadır.

Paylaşımlı ofis kavramı yönetim, kentsel tasarım, ekonomik planlama ve sosyoloji dahil olmak üzere birçok farklı disiplin tarafından ele alınmış olup iç mekân tasarımı sayıca henüz az ve gelişmektedir. İç mekân disiplininde yapılan çalışmalarda, mekânda kontrol sahibi olmanın kullanıcı performans ve memnuniyeti açısından olumlu etkileri olduğu görülmektedir. Bu çalışma, paylaşımlı ofislerde kullanıcıların kontrol konusundaki memnuniyetini analiz etmeyi amaçlamaktadır.

Yöntem olarak ise Evans ve McCoy'un 1998 yılında geliştirmiş olduğu "kontrol" modeli kullanılmıştır. Davranışsal, kararsal ve bilişsel olarak üçe ayrılabilen ya da nesnel ve öznel olarak ikiye ayrılabilen kontrol, farklı disiplinler tarafından ele alınmıştır. İç mekân tasarımı odağında düşünüldüğünde ise kontrol esneklik, iç mekân kalitesi, mahremiyet ve bölgeselcilik ile tanımlanmakta ve bu parametreler iç mekân kontrol analizi için kullanılmaktadır. Esnek bir mekân tasarımı ve mobilyaların ayarlanabilir, değişebilir, eklenebilir, çıkartılabilir ve hareket edebilir olarak yorumlanabileceği esneklik kavramına ek olarak iç mekân kalitesi ise ofis düzeni, ısıl konfor, hava kalitesi, görsel konfor ve akustik konfor ile değerlendirilmektedir. Mahremiyet ise konuşma mahremiyeti, akustik mahremiyet, görsel mahremiyet, bölgesel mahremiyet ve bilgi mahremiyeti olarak ele alınmaktadır. Bölgeselcilik ise fiziksel ya da sosyal elemanlar üzerindeki sahiplik derecesi olarak tanımlanabilmektedir.

Bu çalışma kapsamında İzmir'de bulunan Originn Coworking Offices kullanıcıları ile anket çalışması yapılmış olup ayrıca yöneticilerle mülakat yapılmış, kendilerinin gözlemleri ve kendilerine yapılan kullanıcı geri bildirimleri sorgulanmıştır. Sağlanan imkanlar, kullanıcı sayısı, iç mekân kullanım çeşitliliği, topluluk büyüklüğü ve firmanın çalışmaya gönüllü olmaları, alan çalışması seçiminde önem arz etmiştir. 2016 yılında üç girişimci tarafından kurulan Originn Coworking Spaces paylaşımlı ofislerinde sabit masa, kapalı ofis, paylaşımlı ofis ve sanal ofis imkânı olmak üzere toplam dört tip üyelik bulunmaktadır. Toplamda 40 sorudan oluşan ankette yedi ayrı bölüm bulunmaktadır. İlk bölümü oluşturan altı soru, üyenin cinsiyet, yaş, meslek, eğitim durumu ve üyelik tipi gibi demografik bilgilerine yöneliktir. İkinci kısmı oluşturan 31 soru ise beşli Likert üzerinden cevaplanmakta olup ikisi genel mekân tasarımı, ikisi esneklik, 17'si iç mekân kalitesi, dördü mahremiyet ve altısı da bölgesellik üzerinedir. En sondaki üç soru ise zorunlu olmayıp kullanıcıların genel memnuniyet ve beklentilerini öğrenmek üzere açık uçlu şekilde kurgulanmıştır. Tüm üyelere e-posta ile iletilen bu anketi toplamda 28 üye doldurmuştur.

Anket sonuçları sırası ile değerlendirildiğinde ise ilk parametre olan demografik verilerde kadın-erkek üyelerin neredeyse eşit olduğu, kullanıcıların çoğunun 20-29 yaş aralığında olduğu ve 30-39 yaş aralığının da kendilerini takip ettiği görülmektedir. Eğitim seviyesi olarak ise çoğu üyenin lisans mezunu olduğu görülmektedir. En çok tercih edilen üyelik tipinin ise ofis üyeliği olduğu verisi elde edilmiştir. Üyelik süresi olarak da üyelerin çoğunun 12 ay ve üzerinde bir süredir üye oldukları bilgisine erişilmiştir.

Kullanıcıların iç mekân kontrolü değerlendirmelerinde ilk kriter olan esneklik kavramında kullanıcıların mekânı açık ara büyük çoğunluğunun mekânın değişebilir ve değişimlere uyum sağlayabilir olduğu şeklinde yorumladığı görülmektedir. İç mekân kalitesi kontrolü bağlamında değerlendirildiğinde ise kullanıcıların yarısı ısıl kontrolden memnunken, diğer yarısı ise memnun değil veya çekimserdir. Hava kalitesi kontrolü açısından bakıldığında kullanıcıların büyük çoğunluğu bu anlamda kontrol sahibi oldukları bilgisini vermiştir. Görsel kalite açısından değerlendirildiğinde kullanıcıların çoğu mekânda yeterli yapay aydınlatma olduğu ve gün ışığına yeterli erişimleri olduğu fakat mekândaki yapay aydınlatma üzerine yeterli kontrole sahip olmadıkları şeklinde dönüş sağlamışlardır. Akustik kalite bağlamında değerlendirildiğinde ise kullanıcıların çoğunun mekânın sessizliği ve gürültü kontrolünden memnun olduğu gözlemlenmiştir. Mobilya ve mekânsal düzenleme olarak da kullanıcılar kontrol anlamında memnuniyetlerini iletmişlerdir.

Mahremiyet ölçeğinde kullanıcıların büyük çoğunluğu yeterli seviyede mahremiyete sahip oldukları ve özel-sosyal alan dengesinin başarılı şekilde sağlandıkları bilgisini vermişlerdir. Bölgesellik bağlamında ise çalışanların çoğu kendi alanlarını ve elemanlarını kişiselleştirebildikleri şeklinde olumlu değerlendirme yapmışlardır.

Özetlemek gerekirse, kullanıcıların çoğu; iç mekândaki kontrol seviyesinden memnun olmakta ve bu da iş memnuniyet ve üretkenliklerine olumlu şekilde yansımaktadır. Çalışmadan elde edilen sonuçlar ise literatür ile tutarlılık göstermektedir. Bu çalışmadan elde edilen bu sonuçların, yeni paylaşımlı ofis alanlarının tasarlanmasında ve mevcutlarının geliştirilmesinde katkı sağlayacağı düşünülmektedir. Ayrıca, bu çalışma paylaşımlı ofis iç mekânı ölçeğinde çalışmak isteyen araştırmacı ve akademisyenler için de açık mekân tasarım çözümleri, kullanıcı memnuniyet stratejileri ve kullanıcı davranış ve beklentileri anlamında temel oluşturmaktadır.

Anahtar Kelimeler: *Paylaşımlı Ofis, Kullanıcı Memnuniyeti, Kontrol, Paylaşımlı Ofis Tasarım.*

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1. Introduction

There have been numerous transformations in office interiors due to advances in technology, living standards, working habits, and the nature of work itself. Since the 16th century, working habitats have evolved to meet the varying needs of the users. Recently, offices have been unable to adapt to changing styles and needs, so a new generation of offices emerged to meet these needs and be flexible. The first were home offices. These then evolved into working from more flexible areas like cafes and libraries to offset their disadvantages, particularly that they cannot provide the best workplace because their main function is not to be an office. The best current solution is coworking spaces. These have become increasingly popular, with coworking spreading worldwide and attracting over 500,000 customers *(Deskmag, 2014)*. Described as "working alone, together" *(Johns & Gratton, 2013)*, it is a new type of working that creates a sense of community in a shared space, promotes collaboration between various disciplines.

Although there are several advantages, the services and opportunities provided by coworking spaces are shared in a single space by users with different needs. This challenge can be addressed by giving users the right to have control over the space. Although many studies from different fields have examined coworking spaces, no studies have been conducted from an interior design perspective. Therefore, the present study investigates users' satisfaction in coworking spaces in terms of control. According to Evans and McCoy *(1998)*, spatial satisfaction in interior spaces in which we are spending almost 90% of our daily lives are affected from five different aspects as "stimulation, coherence, affordances, control and restorative". "Control" as being one of these parameters has been selected to set the framework of this study since it is suggested that control in the workplace improves users' psychological well-being and job satisfaction *(Greenberger, Cummings, & Dunham, 1981; Lee & Brand, 2005)*. The "control" aspect has numerous dependents listed by Evans and McCoy *(1998)* as crowding, boundaries, climatic and light controls, spatial hierarchy, territoriality, symbolism, flexibility, responsiveness, privacy, depth, interconnectedness, functional distances, focal point and sociofugal furniture arrangement; among which "flexibility, climatic and light control *(named as indoor environmental control in this study)*, privacy and territoriality" will form the main sub-topics.

In this study, the first element to be analyzed is the flexibility of shared workplace which directly refers to the flexibility of interior space or furnishing. The space should accommodate adaptability to the spatial layout, the design of reinforcing elements and the working methods. The changeability, adaptability and mobility resulting from technological adaptations can allow flexible designs. The second element is indoor environmental control *(IEQ)* comprised of thermal, air, visual and acoustic comfort. Thermal comfort depends on individuals' subjective comfort but it might be characterized by behavioral adaptation, physiological adaptation and psychological habit *(Al Horr et al., 2016)*. Air comfort is directly influenced by ventilation levels and pollution from buildings, appliances, equipment and residents *(Kang et al., 2017)*. The visual comfort is directly related to use of lighting and its quality *(Al Horr et al., 2016)* to avoid glare. Acoustic comfort is characterized by the isolation level from noise and providing appropriate acoustic environment *(Al Horr et al., 2016)*. The third element is privacy in shared workplace which means opportunities for control over one's accessibility to others and to preserve confidentiality including speech privacy, acoustic privacy, visual privacy, territorial privacy and informational privacy *(Anjum et al., 2004)*. The last element is workplace territoriality defined as a need for ownership to be demonstrated and protected. It can be related to following aspects: space, crowd,

personalization, workflow.

The study addresses the following three research questions. First, what is the level of satisfaction of coworking space users in terms of control? Second, how do coworking space users feel about the control parameters in their work environment? Third, what can be done to increase coworking space users' level of control?

2. Workplace and Coworking

Different kinds of spaces have long been used for working purposes, such as parts of houses, churches, and palaces. Conventional offices first emerged during the 1830s, as modern technology began developing, and continued to evolve. Since the introduction of personal computers, three kinds of work organization have emerged to meet the changing needs of employees and employers. These are directly related to new information and sharing technologies *(Johns & Gratton, 2013)*. The first wave was the 1980s, which accelerated during the 1990s alongside the first democratization of personal computers in people's homes *(Toffler, 1980)*. In particular, the growing use of email meant that firms needed more flexibility. Regarding office design, a new concept emerged of workstations separated by dividing panels and small workspace solutions with light partition wall panels. The second wave appeared during the 2000s with advances in mobile technology and associations with global collaborations. This enabled employees to operate wherever and whenever they wanted *(Leclercq, 2008; Mark & Su, 2010; Johns & Gratton, 2013)*. The third wave is the emergence of 'co-working spaces' *(Johns & Gratton, 2013)*, meaning working beyond private and public spaces. These give employees flexibility to choose their workplace rather than remain in a traditional office.

The emerging concept of coworking emerged has been studied within various disciplines: urban informatics *(Bilandzic, Schroeter, & Foth, 2013)*, urban studies *(Di Marino & Lapintie 2017; Groot, 2013; Mariotti, Pacchi, & Di Vita, 2017)*, management *(Butcher, 2013; Capdevila, 2015; Jakonen, Kivinen, Salovaara, & Hirkman, 2017; Leclercq-Vandelannoitte & Isaac, 2016; Sebestova, Sperka, Malecka, & Luckza, 2017)*, real estate *(Green, 2014)*, sociology *(Gandini, 2015; Spinuzzi, Bodrozic, Scaratti, & Ivaldi, 2018)*, economic planning *(Avdikos & Kalogeresis, 2017)*, design *(Parrino, 2015)*, psychology *(Gerdenitsch, Scheel, Andorfer, & Korunka, 2016)*, engineering *(Kojo & Neonen, 2016, 2017; Liimatainen, 2015)*, and organization studies *(Garrett, Spreitzer, & Bacevice, 2017; Spinuzz et al., 2018)*. However, despite numerous studies, there is still no common definition for coworking; instead, there are several definitions, mostly from coworking space users and managers *(Moriset, 2014; De Guzman & Tang, 2011; Döring, 2010; Deskmag, 2014; Spinuzzi, 2012; Capdevila, 2015)*. Nevertheless, coworking spaces can be briefly defined as places where people from different organizations work alone together.

The history of the coworking movement goes back to 1995, when a group of hackers started working together by exchanging ideas and coding, and meeting with other people with the same interests. In 1999, Bernard De Koven introduced the term 'coworking', although it referred to the way he worked rather than a place. In 2005, the first formal coworking space was established by Brad Neuberg *(Stevanovic, 2021)*. Since 2006, coworking has spread widely to become common in both the professions and the academy.

Coworking spaces can be conceptualized as innovative interiors with a critical perspective towards the conventional offices. They actually emerged as an alternative to traditional offices to reduce problems of social loneliness *(isolation)*, low self-motivation, and low productivity *(Spinuzzi, 2012)*. Accordingly, coworking is generally used in association with the word 'collaboration,' referring to self-directed and flexible work, which focuses on mutual trust and sharing essential aims and values between different individuals. More specifically, the four core values of coworking have been named as collaboration, community, openness, and

sustainability *(Kwiatkowski & Buczynski, 2011)*.

In addition to these core values, coworking spaces also have certain physical characteristics. The most significant characteristics discussed in the literature are collaboration and flexibility, which can be easily connected with five core values. Collaboration and openness can be achieved via collaborative spaces, shared workspaces, and conference rooms; event spaces and workshops are associated with community and sustainability; and location and open-plan layout are associated with accessibility.

Currently, the number of coworking spaces is increasing globally *(Di Risio, 2020)*. Turkey stands 35th internationally, with 128 coworking spaces registered in coworker.com. Regarding İzmir specifically, coworking spaces are concentrated in Bayraklı due to an increase in the number of skyscrapers in this district, a good public transportation system, and more reasonable rents. İzmir currently hosts 20 coworking spaces offering different social activity possibilities and facilities as well as having different membership options.

3. Issue of Control

The theoretical framework of this research drew on the model of control developed by Evans and McCoy *(1998)*. They define control as 'the authority or power to change one's physical environment or manage one's environment's visibility'. Several types of control have been studied by various researchers from various disciplines. These include behavioral, decisional, and cognitive *(Averill, 1973)*, desired and possessed *(Greenberger et al., 1981)*, and objective or subjective *(Lee & Brand, 2005)*. In addition, Langer *(1983)* stresses the importance of perception of control. Despite their differences, these types all refer to users and their interaction with the environment.

There are a number of interior design-related concepts directly linked to control, specifically flexibility *(spatial and organizational)*, indoor environmental quality *(IEQ) (office layout, thermal comfort, acoustic comfort, visual comfort, and air quality)*, privacy, and territoriality *(Ganster & Fusilier, 1989; Evans & McCoy, 1998; Lee & Brand, 2005)*. In shared workplaces, flexibility is provided by the furnishings or the interior space, which should offer an adaptable spatial layout, the design of reinforcing elements, working methods, and tasks done. In coworking places, flexibility can be measured by how the users adjust the furniture; and move, add, and remove workspace separators when needed. One criterion of flexibility is the ratio between movable and immovable furniture within the space *(Tunç, 2019)*.

IEQ refers to five main aspects of open-plan workplaces: office layout, thermal comfort, air quality, visual comfort, and acoustic comfort. These directly impact the users' satisfactions with the environment and their productivity. Since these parameters are subjective, it can be challenging to satisfy all users within a shared workplace. Indeed, the only way to do so is by giving them the right to control the IEQ.

Privacy is defined as the individual's capacity maintain an acceptable level of interaction with others *(Altman, 1975)* through opportunities to control one's accessibility to others and to preserve one's own confidentiality. Different types of privacies need to be considered in common spaces: speech or conversation privacy, audial or acoustic privacy, visual privacy, territorial privacy, and informational privacy *(Anjum, Aschroft, & Paul, 2004)*. Because privacy can vary according to each individual's perception, interior designs for coworking spaces need a combination of physical boundaries *(enclosed spaces or boundaries)* and behavioral mechanisms *(mixed visual, verbal, non-verbal, and environmental behavior, personal space, and territories, as well as cultural norms and styles)*.

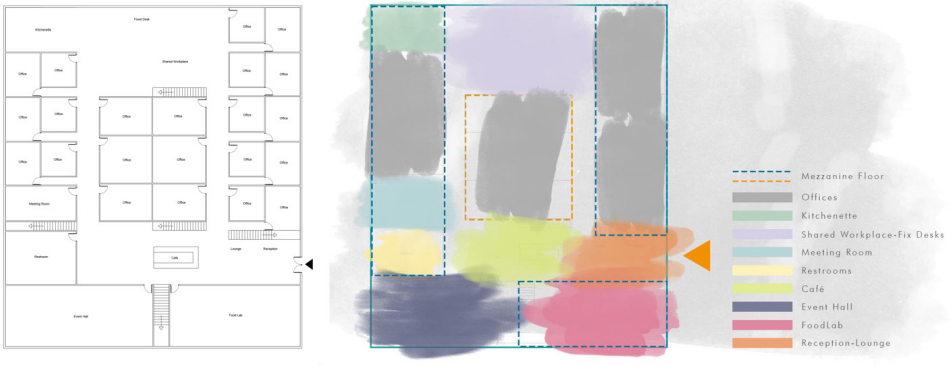
Territoriality can be defined as behavior that an employee exhibit based on their ownership of given physical or social objects *(Brown, 2009)*. To enable this, workplace designers need to consider the space, spatial density/

crowding, personalization/identity, and interdependence of task/flow *(Ashkanasy, Ayoko, & Jehn, 2014)*.

4. Case Study and Methodology

The first step in analyzing control in coworking spaces was to identify shared workspaces in the study's location, namely İzmir, Turkey. Originn Coworking Offices was considered an appropriate study site, based on the following criteria: the facilities offered, number of users, variety of interior usage options, community size, and the company's willingness to collaborate in the study.

Originn Coworking Spaces was founded by three entrepreneurs in 2016 in Bornova, İzmir *(Esra Gönen, personal communication, October 15, 2021)* located close to public transportation and universities. The company offers four types of membership, namely fixed desk, closed office, shared workspace, and virtual office service *(Esra Gönen, personal communication, October 15, 2021)*. Members can work 24 hours a day, seven days a week *(Originn, n.d.)*. According to its website, the company emphasizes community and collaboration, which are crucial aspects of coworking spaces, and fosters a collaborative working culture *(Originn, n.d.)*. Regarding the spatial layout, the ground floor is mainly reserved for common spaces whereas the mezzanine floor has more private spaces *(Figures 1 & 2)*.



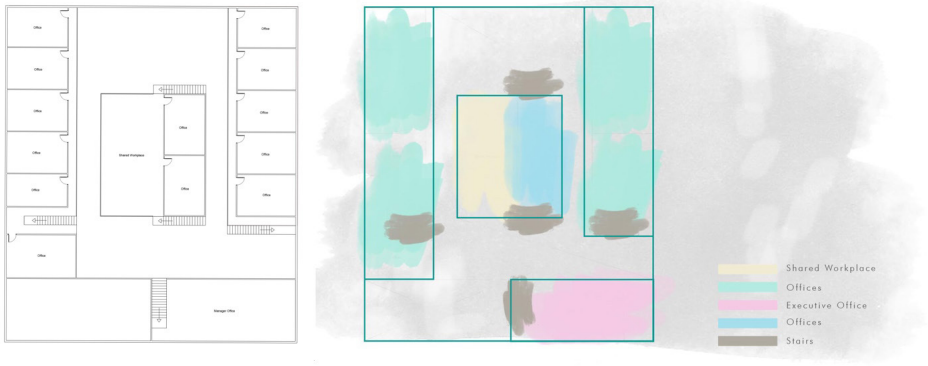


Figure 1. *Originn Coworking Offices - Ground floor plan (Prepared by the authors)*
Figure 2. *Originn Coworking Offices - Mezzanine floor plan (Prepared by the authors)*

In addition to the survey conducted with coworking space users to evaluate their satisfaction with the control parameters, the Originn's partners' experiences and observations were collected through interview to support the survey results.

Preliminary interviews were conducted during two visits. The first visit confirmed the suitability of the case area, based on observation. Esra Gören, one of Originn's partners, was interviewed online using pre-prepared questions to

elicit the following information: Gören's observations about Originn regarding issue of control; the history of Originn, its operations, number of employees, and its services and activities; the total number of users and the number of people who could participate in the survey. It was agreed that the survey could be distributed to Originn's users via e-mail. Before finalizing the survey, a draft version was prepared to gain feedback from Originn's partners.

The analytical observation, including a photo shoot, of the company's office was conducted on 27.10.2021. The aim of the observation was to understand the users' behavior within the space and their interactions with their physical surroundings and other users. Following the photo shoot and observation, a bubble diagram was created to widen the analysis and better understand the space.

The survey was developed in five stages: creating the questionnaire, getting approval from the university ethics committee, conducting the pilot study, gathering data and analyzing the collected data. The survey comprised 40 questions in seven sections. The first six questions were about the participant's demographic profile, including gender, age, occupation, and educational status, and their membership status; the next 31 questions about the workspace environment were answered on five-point Likert-type scale; the final three were optional, open-ended items regarding the participant's satisfaction and expectations if there is a chance of change in terms of issue of control in Originn. Of the 31 scale items, two concerned the overall environment and design, two concerned flexibilities, 17 concerned visual, thermal, acoustic, and air quality, and office layout IEQ, four concerned privacy, and six questions concerned territoriality. To distribute the survey, the company's manager sent a survey link to Originn users via e-mail. In total, 28 people completed the survey over all the members *(approximately 250-300)*.

After completing the survey stage, an online interview schedule was created and submitted to the university's ethics committee for approval, after which the interviews were conducted online with two participants: Nazey Erdilek, one of the company's partners and Damla Karataş Gürbüzer, as the company's community manager. The interview schedule had 40 questions divided into seven sections. In first part *(10 questions)* asked about Originn Coworking Offices and the future of the coworking movement. The second part *(six questions)* asked about Originn's design and user feedback. The third part *(two questions)* asked about flexibility. The fourth part *(17 questions)* asked about IEQ. The fifth part *(four questions)* asked about privacy. The sixth part *(five questions)* asked about territoriality. The seventh part *(three questions)* asked which elements of the workspace users were most satisfied and least satisfied with.

5. Analysis

Regarding Originn membership type, most users *(75%)* rented offices *(Figure 3)*.

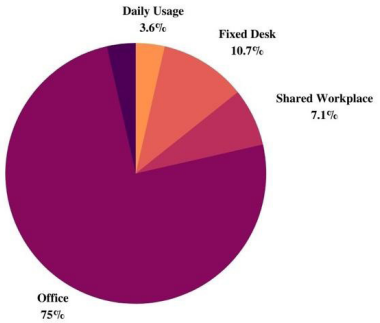


Figure 3. *Participants' distribution by Originn membership type*

Regarding the length of their Originn membership, over half stated that they had been a member for at least one year *(Figure 4)*.

There was also a relationship between membership types and length of membership. That is, the users who had been members for a year or longer were using an office service, whereas those who had been members for the second longest period were fixed type coworking space users.

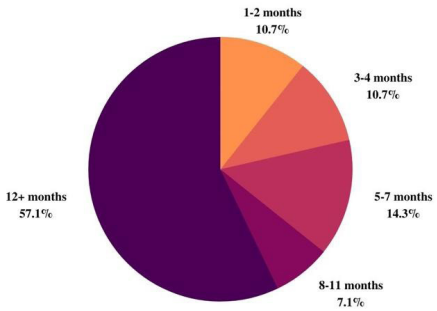


Figure 4. *Participants' distribution by length of Originn membership*

The following section reports Originn users' evaluations of the space in terms of flexibility, IEQ, privacy, territoriality, and moveability. Regarding flexibility, i.e., the ability of the space to respond to changing conditions and provide the users with a suitable atmosphere, there were two items *(Table 1)*: 85% of participants either agreed or strongly agreed that the working interior is adaptable *(F1)* while over 89% agreed or strongly agreed that they can reorganize their work environment according to changing circumstances *(F2)*.

Table 1. *Evaluations of the flexibility of the spatial environment*

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
F1. 'I have work conditions that can modify based on my requirements and circumstances in this space'	35.7%	50%	7.1%	7.1%	-
F2. 'I have ability to modify the work environment in response to changing circumstances'	35.7%	53.6%	7.1%	3.6%	-

Overall, these results indicate that most participants agree that Originn Coworking Space provides a flexible environment that is responsive to changing conditions. According to Evans and McCoy *(1998)*, flexibility can be provided through openness, and moveable partitions and furniture. This in turn can increase productivity and job satisfaction *(Origo & Pagani, 2008)*. In support of this, we observed flexible furniture usage in the space *(Figure 5)* as well as the office layout and multifunctional usage of furniture.

As it stated in the literature *(Smith & Pitt, 2011)*, IEQ has positive effects over the productivity and the satisfaction of workers. Regarding IEQ, the participants rated the coworking space in terms of thermal comfort, air quality, visual comfort, acoustic comfort, and office layout. Table 2 presents the individual items and results.

Figure 5. *Flexible usage of shared workplace in Originn (Originn, 2022)*

Subtopic/ Subtitle	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Thermal Quality	**IEQ1.** 'I am satisfied with the coworking space's thermal quality'	25%	28.6%	25%	17.9%	3.6%
	IEQ2. 'I can change the level heat to my needs'	21.4%	21.4%	39.3%	14.3%	3.6%
Air Quality	**IEQ3.** 'I am satisfied with the air quality'	32.1%	32.1%	28.6%	7.1%	-
	IEQ4. 'I have access to open air'	46.4%	39.3%	7.1%	7.1%	-
Visual Comfort	**IEQ5.** 'There is enough artificial lighting around'	17.9%	53.6%	17.9%	7.1%	-
	IEQ6. 'I have access to daylight'	35.7%	32.1%	10.7%	17.9%	3.6%
	IEQ7. 'I have control over the level of light in the environment'	17.9%	25%	25%	25%	7.1%
Acoustic Quality	**IEQ8.** 'I am satisfied with the acoustic quality of this space'	21.4%	35.7%	21.4%	17.9%	3.6%
	IEQ9. 'I have access to quiet working environment'	17.9%	35.7%	35.7%	7.1%	-
	IEQ10. 'The crowd makes noise during events'	21.4%	17.9%	14.3%	35.7%	10.7%
	IEQ11. 'The noise in coworking space, negatively affects my productivity'	7.1%	21.4%	10.7%	46.4%	14.3%
Furniture and Layout	**IEQ12.** 'I am satisfied with the furniture arrangement and general layout of the space'	28.6%	60.7%	3.6%	7.1%	-
	IEQ13. 'Public and private spaces are balanced'	32.1%	53.6%	10.7%	3.6%	-
	IEQ14. 'Furniture needed in the coworking space are available'	21.4%	60.7%	10.7%	-	3.6%
	IEQ15. 'Furniture used is suitable for multipurpose usage'	28.6%	42.9%	21.4%	-	3.6%
	IEQ16. 'I have enough social interaction thanks to the office layout'	35.7%	53.6%	10.7%	-	-
	IEQ17. 'Office layout promotes social interaction'	35.7%	50%	14.3%	-	-

Table 2. *Evaluation of user control over indoor environment quality*

Regarding thermal comfort *(2 items)*, over half of the respondents stated that they were satisfied with thermal quality *(IEQ1)* whereas almost half stated were neutral or dissatisfied. Similarly, nearly half were satisfied with their ability to control heat levels *(IEQ2)*, whereas about half were neutral or dissatisfied. Several studies have demonstrated that thermal comfort plays an important role in determining workspace users' efficiency and satisfaction *(Li et al., 2010; Al Horr et al., 2016; Kang, Ou, & Mak, 2017)*. Although it is hard to maintain a standard thermal quality in a public interior with different users *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*, Originn has a standard heating level,

although the company will immediately consider any request from its users. The subjectivity of the thermal comfort is also proved in the literature with being dependent to geographical location and environment, age, gender, race and time of the year *(Quang et al., 2014; Al Horr et al., 2016)*. Also, Nikolopoulou and Steemers *(2003)* put forward that the thermal comfort of individuals are characterized by three factors as behavioral adaptation, physiological adaptation and psychological habit or expectation *(Al Horr et al., 2016)*. Overall, the results suggest that most participants are satisfied with the workspace's thermal quality. This may be because most Originn users *(75%)* have office type memberships, which gives them control over their separate closed office space through a separate heat controller *(Figure 6)*.

Figure 6. *Air conditioner in a closed office space (Originn, 2022)*

Regarding interior air quality *(2 items)*, over 60% of the participants stated that they were satisfied with the air quality *(IEQ3)* while over 85% agreed that they had access to fresh air *(IEQ4)*. This may be because Originn's workspace has more than one entrance and offers access to a garden. This is in line with *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*, who report a significant positive impact on user satisfaction with a workspace's air quality if it has several entrances, a balanced distribution of openings, a large space volume, and provides mechanical ventilation, which is also proved by Xue, Mak and Ai *(2016)* by stating that air quality is mostly affected by the feelings of fresh air as well as the room orientation, followed by air velocity and temperature.

Regarding visual comfort *(3 items)*, over 70% of the participants were satisfied with the level of lighting *(IEQ5)*. While most participants agreed that they had access to daylight, over 20% reported that they did not *(IEQ6)*. Finally, fewer than half agreed that they could control the artificial lighting level *(IEQ7)*. As noted *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*, it can be hard to satisfy users' differing lighting level needs in a shared workplace. Originn's workspace interior offers many opportunities for natural lighting, such as a skylight and transparent partitioning materials to maximize natural light availability *(Figure 7)*. In addition, Originn's management tries to supply enough artificial lighting and respond accordingly if the users need more. This finding and comments from the personal communication is directly consistent with the current literature *(Veitch, 2001; Al Horr et al., 2016)* stating that visual comfort has a direct impact upon work performance, productivity, comfort as well as satisfaction. As also mentioned by Aries et al. *(2010)*, access of natural lighting as well as artificial lighting is needed for ensuring well-being of people in interiors where natural lighting is missing or not enough.

Regarding acoustic comfort *(4 items)*, over half of the participants were satisfied with the workspace's acoustic comfort *(IEQ8)*. Similar proportions of participants agreed *(52%)* or disagreed *(48%)* that they had access to a quiet working environment *(IEQ9)*. This may because those with office memberships have a quiet space to work in

whereas those using shared offices or fixed desks do not. Although most respondents disagreed that crowds create noise during workspace events *(IRQ10)*, over one-third *(38%)* reported that they suffered from this problem Controlling crowd noise may be difficult for Originn because it has more than one function, with events happening at different times during the day. As suggested *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*, a shared workspace organization like Originn needs to notify its members before such events so they can make appropriate arrangements. Finally, over 60% of participants stated that their productivity was not negatively affected by noise *(IEQ11)*. This contradicts the literature, which shows that poor acoustic quality in open-plan workplaces directly reduces the users' productivity, efficiency, and well-being *(Kim, Candido, Thomas, & de Dear, 2016; Kang et al., 2017)*. Noise and sound privacy are known to be major determinants of interior acoustic quality. Our unexpected findings could be because, in line with Erdilek and Karataş Gürbüzer *(2022)*, Originn's users find their own sound insulation solutions, most commonly by using headphones. Originn also tries to maintain a quiet and acoustically comfortable workspace by not accepting users like telemarketers or call center specialists, while some members noted they the company has added doors or curtains to reduce noise.

Regarding furniture and office layout *(6 items)*, which also affects workplace performance and behavior *(Al Horr et al., 2016)*, over 85% of participants were satisfied with the furniture arrangement and spatial layout *(IEQ12)*. More than 88% of the respondents are satisfied in these aspects. Because that having a private area in a common workplace is important, the second question *(IEQ13)* is about the balance between the public and private spaces. While most users agreed that there is a balance between public and private spaces at Originn, 10.7% were neutral and 3.6% disagreed *(IEQ13)*. Spatial hierarchy as the key element affecting privacy *(Evans & McCoy, 1998)*, there should be a balance between quiet and private spaces, and public areas promoting social interaction. In Originn, this is achieved through providing private areas as well as common areas. As being one of the most important elements of office interiors, furniture needed in coworking space creates the third question *(IEQ14)*. According to the results, most users *(82%)* were satisfied with the furniture provision in their workspace *(IEQ14)*. The multifunctional quality of the furniture is also important. So that, as the fourth question *(IEQ15)*; the

Figure 7. *Glass partitions in Originn's Offices (Originn, 2022)*

users' view on multifunctional quality of furniture was asked. A large proportion of participants *(72%)* were also satisfied with the furniture's multifunctionality *(IEQ15)*. The findings of furniture related questions are totally consistent with the current literature *(Kang et al., 2017)* proving that the comfort, adaptability and multifunctionality of furniture have an important effect on the satisfaction and efficiency of users. Almost all participants agreed that the workspace layout enabled interaction *(IEQ16)*. As reported *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*, Originn was working with a local manufacturer to replace its existing furniture with more multifunctional items to prioritize user comfort. One of the most important reasons of using coworking areas is social interaction and new networking possibilities. Hence, such workplaces should offer such opportunities to their users *(Figure 8)*. Regarding that, the next question *(IEQ16)* is about the idea of the users whether they are satisfied with the interaction provided by layout. More than 89% of the participants agreed.

Finally, most participants *(85.7%)* agreed that Originn's office layout promotes social interaction *(IEQ17)*. This is consistent with the literature comparing open-plan workplaces with private offices in terms of encouraging the users to interact *(Kang et al., 2017)*. Originn's workspace provides several spaces to socialize and interact, such as the kitchenette, food lab, winter stove, smoking area, garden, and coffee bar *(Figure 9) (Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*. Other spaces are also designed to promote social interaction.

Privacy is another important parameter for engendering a sense of control in workplace interiors *(Gove & Altman, 1978; Evans & McCoy, 1998)*, and thereby increasing the users' performance and satisfaction *(Sundstrom, 1993; Inamizu, 2013)*. Although it is hard to provide privacy in shared workplaces, personal control of privacy is achievable *(Table 3 shows the participants' evaluations of control of privacy in Originn's workspace)*.

Figure 8. *Social interaction of a group of Originn users (Originn, 2022)*

Table 3. *Evaluation of personal control of privacy*

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
P1. 'Distracting factor has no negative impact'	17.9%	32.1%	32.1%	14.3%	3.6%
P2. 'Office design reduces distraction'	17.9%	50%	28.6%	3.6%	-
P3. 'I have enough level of privacy'	10.7%	53.6%	28.6%	7.1%	-
P4. 'Privacy and social interaction are balanced'	25%	57.1%	14.3%	3.6%	-

Figure 9. *Social interaction around a stove (Originn, 2022)*

About half of the participants agreed that they were unaffected by distractions whereas about 17% agreed *(P1)*. About one-third were neutral. Almost 68% of participants agreed that Originn's office design reduced distractions *(P2)* while a smaller majority *(64.3%)* agreed that they had enough privacy *(P3)*. Privacy is subjective due to individuals' differing demands and perceptions, which makes it challenging for workspaces to meet the privacy needs of every user *(Anjum et al., 2004)*. Nevertheless, interior designers can still provide privacy. Thus, in Originn, users who require more privacy, can choose particular places to work, take necessary precautions, or rearrange their work set up *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*. Finally, a large majority *(82%)* of participants agreed that there is a balance between privacy and social interaction in Originn's workspace *(P4)*, which is likely to increase their satisfaction. This result is consistent with earlier results regarding the balance of public and private spaces in terms of furniture and layout.

Finally, Table 4 presents the results for the 5 items about territoriality. Here, it is analyzed in terms of control as a signifier of a sense of ownership. People exhibit territorial behavior everywhere, including in their work environment. For example, they may put a sticker with their name on their desk, use the same mug every day, or hang their jacket on their chair *(Brown, 2009)*.

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
T1. 'I can make any changes I desire to my workplace/desk'	21.4%	39.3%	25%	10.7%	-
T2. 'I have the feeling of ownership over the object or environment'	21.4%	46.4%	28.6%	3.6%	-
T3. 'I mark to indicate that the desk/space I work at is belonging to me'	10.3%	34.5%	31%	20.7%	-
T4. 'I need my own space in coworking space'	10.7%	46.4%	32.1%	10.7%	-
T5. 'I feel more comfortable when I have my own workplace or desk in coworking space'	42.9%	35.7%	17.9%	3.6%	-

Table 4. *Results of "Satisfaction in terms of territoriality" evaluation*

Over 60% of participants agreed that they can make changes to their own workspace *(T1)*. Unless requested and approved by Originn, however, users who have office or fixed desk memberships cannot make permanent changes *(Nazey Erdilek & Damla Karataş Gürbüzer, personal communication, October 15, 2021)*, although they can make temporary changes so long as they do not disturb or impede others. Over two-thirds *(67%)* of participants agreed they had ownership over their workplace environment *(T2)*. This is important because ownership over objects or the environment is a basic human need. Accordingly, because employees

spend long hours dealing with stress and complex tasks, they need to feel comfortable in their work environment *(Movement Improves Employee Wellbeing, 2023; Anjum et al., 2004)*. Nearly half *(45%)* of participants stated that they indicate that the desk/space they used belongs to them, whereas one-third were neutral, and the rest disagreed *(T3)*. According to Ashkanasy et al. *(2014)*, marking or defensive reactions definitions of territory occur where users lack personal space. These results were supported by analysis of membership type. That is, daily users were more likely to agree that they do not exhibit territorial behavior by indicating possession of a space, specifically 62% of office users and 50% of shared space users, compared to fixed-desk users *(33.3%)*. If a user defines their personal space, it improves their performance. In this respect, Originn users have their own personal space. More than 57% of the respondents agreed that they need their own space *(T4)*, which may explain why a majority of participants have office-type memberships. Finally, a large majority of the participants feel more comfortable when they have their own place or desk *(T5)*. Overall, the results regarding territoriality support Originn's provision of office and fixed desk memberships. According to user feedback, Originn also provides fixed-desk spaces for members needing their own space within the shared workplace *(Figure 10)*.

Figure 10. *Fixed desks in Originn (Originn, 2022)*

Overall, the results showed that the participants were mostly satisfied in terms of control over their work environment. The results also provide support for the positive effects of control identified in the literature. In Originn, the participants were most satisfied with flexibility whereas they were less satisfied with thermal comfort, acoustic comfort, and control over artificial lighting. These are indeed common problems in open-plan offices.

6. Conclusion

This study analyzed user satisfaction in terms of control in a coworking space. Control provided the theoretical framework for the study because it can be challenging to provide control in spaces with different types of users. In particular, coworking spaces like the one examined here meet economic and social needs while creating a social and interactive community. Therefore, Originn Coworking Offices, a coworking space provider in İzmir, Turkey, was examined in detail from the perspective of user control. The interior design characteristics and user evaluations were analyzed through observation, a survey, and interviews.

Regarding the users' demographic profile, the majority of participants were aged 25-40 years, and have a highly educated with bachelor's or master's degrees. This suggests that such coworking spaces are ideal for well-educated younger users given their working techniques and work-related needs, including social contact, networking, and being a part of community.

Regarding the workplace control parameters, the participants were most satisfied with the flexibility of Originn's workspace. This may be due to its large size, spatial layout, and the type and arrangement of the furniture. Their satisfaction with flexibility may also be due to the workspace's open-plan layout in which users can work anywhere, while the space can be changed as needed.

The greatest challenge for ensuring user satisfaction was IEQ factors because these vary according to individual needs and preferences. Hence, it was difficult to provide thermal and acoustic comfort given the huge size and volume of Originn's workspace. Conversely, most users were satisfied with visual comfort, perhaps due to the space's effective artificial lighting, glass partitioning, and openings to allow daylight access. Air quality was generally considered satisfactory due to openings and open spaces in front of the building that provide fresh air in addition to mechanical ventilation. Ensuring user privacy was a challenge, given the workspace's open layout and the lack of dividers. Nevertheless, users did not report much concern, probably because most of the survey respondents were working in closed offices. In general, the balance between privacy and social interaction should be considered to achieve privacy. Originn do so through giving users' different spaces to work in so that they can manage them according to their wants and perspectives. Finally, Originn users do not engage in territorial behavior, although they indicated that they need their own spaces while working in the shared workplace. The solution to this is to take a fixed-desk membership.

These results can also be evaluated in terms of each research question. The first concerned coworking space users' level of satisfaction in terms of control. The results show that users of the workplace examined in this study were mostly satisfied with conditions related to control of their workplace environment. The second research questions concerned users' feelings about their work environment in terms of control factors. While most users felt they control, some users stated that they needed more. The third research question concerned ways to increase the users' control over the workplace environment. The results indicate that this can be achieved by adopting various proposals in the users' feedback, and from the interviews and observations. First, the use of moveable separators and multi-purpose furniture can increase user satisfaction in terms of flexibility whereas it may be hard to satisfy all users' IEQ needs due to their differing individual preferences. Nevertheless, maintaining high control standards can increase IEQ satisfaction generally. Second, user satisfaction can be increased by giving users more control over air conditioning and artificial lighting, improving acoustic quality through the use of acoustic materials and design elements, and providing telephone booths and mini meeting spaces. Third, users can experience a greater sense of belonging and while minimizing territorial behavior to protect their personal space if varied uses of space are provided to users.

Overall, these findings demonstrate that the users of coworking spaces are more satisfied if they have control over their spaces. This in turn can increase job satisfaction, which may lead to improved performance and productivity. Future studies can visit a greater range of coworking spaces to conduct comparative observations and analyze feedback about user satisfaction levels. The findings of this study can also guide coworking space designers and entrepreneurs while creating new coworking spaces and improving current ones. This research is also a preliminary study that can support further research on coworking space preferences and strategies in İzmir specifically and Turkey more generally. Finally, it can provide a foundation for further academic research in interior design of coworking spaces, design solutions for open workplace and coworking spaces, user satisfaction strategies for coworking spaces, and analysis of user expectations and behavior.

Information

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