Technology Affordances Identification:
A Netnography Study of Digital Nomads (Part 1)

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Abstract

Digital nomads are portrayed as location-independent professionals working solely in an online environment while leading a new form of flexibility in combining work with a new vision of personal life. The commoditization of digital technology accelerates the growth of the digital nomad community. In this research, the author draws on the theoretical perspective of technology affordance to look into the years of digital nomads' lives for exploring the interplay among individuals, technology, and society. Findings uncover nine technology affordances on the individual level and show the features of technology adopted by digital nomads and the characteristics of digital nomads.

1. Introduction

In 1997, Tsugio Makimoto and David Manners predicted the future of work in their book, "Digital Nomad"[1]. It is a world with highly advances in information communication technology (ICT) that "We will be able to see people, documents and pictures wherever they happen to be, from anywhere we happen to be". They are correct. This lifestyle and its possibilities are considered to be promoted by a coterie of bloggers around 2007[2]. The endless travel adventures and the country of destination and the length of stay are not pre-determined make those perpetual travelers' lives seem fascinated, especially for the 'typical' 9-5 life of most people.

Recently, a joined report, named as "The Anywhere Office", has involved 4,000 'anywhere worker' goes viral[5]. On the surface, it gives the whole image of the anywhere workers' status. In essence, it reflects the transformation of the business, organizations, and industries. There is large technology development, business innovations, and social progress behind this phenomenon. However, digital nomads have received little attention, especially in the information system (IS) research field. Focusing on labor mobility is one trend of the digital nomads' research[12]. The other research trend is about the mobility behavior of digital nomads[12] which usually focuses on travel behavior and leisure activities. Meanwhile, in most previous studies, no specific definition of digital nomads is provided, it remains somewhat vague and describes the phenomenon in rather general terms[10]~[12]. Further, it was pointed out that although several vital topics have been revealed by prior research, the research covers both the above trends is rare[12]. Previous studies[4][7] also have tried to understand how technologies afford this new type of work and lifestyle. The research subjects usually conclude the travel behavior of digital nomads, the motivation, the types of digital nomads' work, etc.[4][7]. Hence, this research will take both the labor mobility and the mobility behavior of digital nomads as research subjects and try to identify the specific technology affordances which makes 'typical' people became digital nomad.

2. Literature review

2.1 Digital nomad

It is said that the age of the "Digital Nomad" burst out with the contributions of Steve Jobs [44]. Previous studies [4][6] have summarized the specific digital tools used by digital nomads, such as digital devices, digital applications and programs, cloud services, websites, forums, social media tools, etc. Overall, along with the mobile intelligent device, the other two essentials of the age are the high-speed network and cloud computing [44]. The mobile intelligent device also called smart devices [14] refers to portable media with built-in Wi-Fi connections. The high-speed network provides by increasing information infrastructures [10]. The cloud computing relieves the limitation of personal knowledge about various information technologies and allows users to take benefit from them [45]. These three major technologies with other technology infrastructures provide the mobility and accessibility of resources and enable the lifestyle of digital nomads. The trend of digital nomads arises from improved global access to information and information infrastructures, more flexible work arrangements, a preference for travel, as well as adventure and work flexibility among the younger generation of knowledge workers [10]. Digital nomads are portrayed as location-independent professionals working solely in an online environment [11][12] while leading a new form of flexibility in combining work with a new vision of personal life [4][12]. Many of these people have given up a permanent house and tried to work from a coffee shop in Indonesia, and in the next month, they might be working from a co-working space in Chiang Mai, Thailand [4].

Sutherland and Jarrahi [4] discussed some nomadicity research in business journals and other publications interested in emerging work arrangements. They considered digital nomads as an 'emerging sub-population of nomadic workers with a distinct motivation for world travel adventure and independent remote work' [4]. Sutherland and Jarrahi [4] also emphasized the impact of the gig economy on digital nomads. One hand, De Stefano [13] said that the gig economy has enabled digital nomads to work while traveling. On the other hand, digital nomads have to rely on the gig economy resources and the online communities to ease the uncertainty of work situations and to maintain relationships with others.

2.2 Affordance theory

The term 'affordance' was created by psychologist James J. Gibson, which is defined as what the environment provides or furnishes the animal [15][16]. According to Gibson, affordance is relational the suitability of the environment to the observer depending on their current intentions and their capabilities [16]. The research conducted by Hutchby [17] is the first research that applied the original concept of affordance moving from the environment to the technology, known as IT artifacts [18]. Technology affordance theory focuses on the complex relationship between technologies and actors—individual or organization with a particular purpose [17][19].

In the IS discipline, considerable studies [8][9][19]~[28] have taken a technology affordance perspective to not only explore the features of technology but also the behaviors afforded by technology [25]. Pozzi et al. [18] emphasize the concept of affordance in the IS domain as "affordances are action potentials arising from the capabilities and goals of the organization and the features of the IT artifact in a unique way where both are and equally needed." Recent review studies [18][29] frame research on affordances in IS discipline around four main steps（Affordance Existence, Affordance Perception, Affordance Actualization, and Affordance Effect）of the affordance process [30]. They analyzed major affordance studies in top IS journals and concluded that although IS scholars paid more attention to the affordance existence before, their interests in affordance actualization and affordance effect is increasing recently [18][29].

Previous affordance research shows that affordances might not only occur on the individual level but also on the group or organizational level, the industry or social level [8][20][31]~[34]. For instance, the potential for coordinated action by a group can be thought of as an organizational affordance [33]. Because of the affordances actualization usually is considered as the sum of actors' actions, more attention is needed in the actualization process not only at

an individual level [18) 33)]. Previous studies on affordances actualizations and effects are mostly about how and why affordances are actualized [9) 20) 30) 33)], how the actualization of basic affordances can lead to higher-level affordances [8)], how actualizations lead to effects [25) 33) 34)], when the affordance effects are likely to happen [20)], etc. Pozzi et al. [18)] argued what affordance effects occur due to the actualization process that need more attention. One outcome of an affordance actualization is to enable conditions for additional affordances [18) 35)], such as social affordance.

3. Research Design

To derive answers to the research question, the necessary data consists of digital nomads' behaviors, actions, thoughts, and feelings in a large span of their lives. For this purpose, the author chooses the Netnography as the research method. Netnography is a neologism derived from the words 'internet' and 'ethnography' [47)]. It is defined as "Ethnography conducted on the Internet; a qualitative, interpretive research methodology that adapts the traditional, in-person ethnographic research techniques of anthropology to the study of the online cultures and communities formed through computer-mediated communications." [48)]. Netnography is considered to be suitable for studying online social interaction and experience from a human perspective, which has been found useful in the fields of business and management, but particularly in marketing [49)]. Netnographic participation followed the procedure of Kozinets [41)].

（a）Planning and Preparation. The author is interested in digital nomads with relatively long-span, high quality, and active online data for in-depth analysis. After some research, this research selected the Nomad List（nomadlist.com）—the most popular community of digital nomads. The reasons for its popularity are 1）it was founded relatively early; 2）it is an incredibly innovative tool for digital nomads to gather information, to communicate online, and to chat in real-time in the chat room. In the top question of the forum— "Introduce yourself — who are you, where are you and what do you do?" the author carefully read the structuralized introductions from 633 members. Then, ten digital nomads provided personal blog, website, SNS（Social Networking Service）account, and other connections were accumulated into the research subject group. The reason for selecting these ten subjects is because that the Netnography method requires large and continuous online data for analysis and interpretation. This means the research subjects have as least one active blog with detailed information about their lives, thought, words, feelings, etc.

Table 1　Primary research objects of digital nomads

No.	Professional	Career	Preferred Nomadic Location
S1	Digital	Game designer	Asia
S2	Digital	Web designer, developer	Asia
S3	Traditional	Game lawyer	Asia
S4	Digital	Technical SEO consultant	Japan, Europe, Asia, USA
S5	Traditional	Professional speaker	Europe
S6	Traditional	business psychologist	Asia, USA, Egypt, Dubai, Saudi
S7	Digital	Social media strategist and QA Test analyst	Asia, Europe, Latin America
S8	Digital	Online language school owner	2-month one country in Europe
S9	Digital	Travel blogger and digital marketing consultant	Panama, Aruba, Asia, Mexico, Canada
S10	Digital	Technical SEO consultant	Asia

（b）Data Collection and Creation. According to Kozinets [41)], there are three types of data in Netnography research. First, the *archival data* refers to the pre-existing data. In the research, it refers to the data set of research subjects consists of posts on the forum and the chat room, personal blog and website, and posts on Facebook, Twitter, YouTube, and Instagram. Second, the *elicited data*（also called co-created data）represent the data co-created through personal interactions between the subjects and the researchers. Finally, the *field note data* refers to

the researchers' note of the firsthand observations and their reflections on these interactions. The digital nomad lifestyle is about having the freedom to work anywhere. There are the fulltime digital nomads, those that are without a permanent residence for years; then there are the part-time digital nomads that have a home base and travel for several months [11]. This research focuses on fulltime digital nomads. Table 1 shows the primary research subjects. "Professional" and "Preferred Nomadic Location" are collected for further categorizing. "Career" provides detail information of the professional. For each research subject, the author collected articles on his/her website and posts on his/her SNS page from the beginning.

（c）Analysis and interpretation. Technology-triggered social affordance focuses on technology-afforded patterns of participation over larger periods and collections of actors [40]. The affordance actualization process of Strong *et al.* [8] and Bygstad *et al.* [9] guided the data analysis. The coding of the data involved both data analysis and data interpretation [43]. To "unfold through time and contact to engage the cultural receptors of human intelligence" [41], the analysis and interpretation process is conducted manually followed the seven netnographic qualitative analysis techniques [41]. For this research, the volume of data consists of 223 blog postings and 11,334 postings on social media（i.e., the postings before October 6, 2018）. The decoding found many common elements and patterns in their lives. Those netnographic data were coded as belonging to several topics. For instance, the author noticed similar phrases on the main topics of work, living, feeling, physical health, travel, learning, sharing, etc. during going through their words for the first time. Then, the author tried to accumulate specific sentences under each topic, during which some alternation of the topics occurred（i.e., add new topic, merge multiple topics into one）. Then, the set of affordances and associated mechanisms were analyzed [9].

4. Analysis and Findings

In this section, nine technology affordances have been identified. The author named the following specific technology affordances and highlighted them in Italics, and the detail of each affordance will also be explained. From the analysis of the research objects, the author saw struggles, courage, self-challenging, and other emotions and events that make them the digital nomads they want to be. There is even self-definition as "Introverted digital nomads." The following sentences present the real situation of digital nomads, especially in the early stage.

"I never know quite what's going to happen from month to month in my current life. A friend asked me recently what my future plans were, and I said I really didn't know, which is strange for me." S6 [1]

4.1 Work hunting affordance

The first technology affordance is *Work hunting affordance*. It refers to the action potentials that can be afforded, such as online branding, advertising, promoting, or showing themselves and their work to hunt for potential clients or cooperators [4]. When the first digital nomad finds ways to market, brand, or show oneself online for obtaining work, client, or cooperators and succeeded, more digital nomads will do the same thing to keep up. Different from regular workers, digital nomads tend to conduct those activates whenever and wherever possible.

"...While I have been a nomad long enough that I think I can offer some good advice. I've been a lawyer even longer. I've been blogging about game development legal topics on my law firm site for over a year. I'd like to share information about legal issues faced by bloggers, digital nomads and other Internet entrepreneurs..." S3

4.2 Work proceeding affordance

Work proceeding affordance is the second technology affordance, which keeps the ongoing work smoothly. Researching for the next meeting on the way, finding a co-working place, recruiting online, communicating by

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[1] In this section, the quoted paragraph with the number of research object (in Table1) is an example for showing part of the text data which is used for analyzing.

email or instant messaging software, etc., digital nomads more rely on digital technology to exchanging information for work. Different from regular workers, digital nomads tend to conduct those activates whenever and wherever possible.

"As a digital nomad, I am often in some form of transit such as a long subway, bus, or high speed rail ride, or waiting in an airport. As such, being able to work literally on the go is a must for my remote job. As such one of the first things I do in any country I land is secure a local SIM with enough data to tide me over for the entire duration of my stay. Thus even if I lose access to wifi, I can tether to my phone" S6

"And not just so you can upload a photo of your breakfast on Instagram – since you're not working from an office and your clients are most likely based abroad, the only way you can get in touch with them is over the Internet! This means panic attacks whenever the connection decides to die in the middle of an important Skype call, and that your choice of accommodation, cafes and restaurants is no longer based on your personal preference but on the holy grail of every freelancer – the wifi connection." S4

4.3 Work supporting affordance

The third technology affordance is for making sure the online work to be secured and legally protected, named as *Work supporting affordance*.

"Data privacy is a huge concern for digital nomad professionals, particularly when they carry sensitive client or business data with them." S3

"Let's not forget about the practicalities of going freelance. Before you start working for yourself, you need to register as self-employed with your national Revenue Services. If you're based in the UK, set up as a sole trader or a limited company with HMRC – it's surprising easy and only takes a few minutes!" S4

4.4 Reminder

Self-discipline has to be one main skill if one wants to maintain the digital nomads' lifestyle. It is a social behavior because of the lesson learned from more and more successful digital nomads. Nowadays, they tend to technology for certain assistants. *Reminder affordance* is identified as one technology affordance, which provides the functions to remind the boundary between work and leisure. With the help of technology, it becomes general knowledge among digital nomads, such as forming a routine, offline hour, time off, etc., and they act it out.

"Oh, and I turn the wifi off at night, so that when I turn on my computer and work I'm not immediately caught up in emails. I don't turn the wifi on until the 1000 words, as well as my health tracking spreadsheet, are complete. Then I go online, and cycle through my inboxes, Facebook, the stats on my websites, and anything else that needs a quick check. I have tried to discipline myself not to get sucked into email at this point – I work through my emails as per my Inbox Zero rules, deal with quick stuff, file, delete and put into my 'action' folder for later." S6

4.5 Enabler

Enabler affordance provides the functions to enable users to engage in work-related or leisure-related actives. There are blogs, books, videos, audios, and conferences to spread these methods.

"I don't need to come into work if I don't think I will be effective for the day, as long as I hit the goals expected of me." S1

4.6 Community building

The identity of digital nomads was "reinforced by an active and social population of digital nomads, who made efforts to connect with other digital nomads and build the community as an informational and technical resource." [4]. Socializing as a natural identified social behavior for digital nomads is complicated. On the one hand, they seem to

be able to make friends all over the world. On the other hand, it is difficult for perpetual travelers to maintain long-term relationships. According to Sutherland and Jarrahi [4], community building can consolidate the digital nomad identity, which might be the reason for digital nomads to conduct interactions with each other online and offline. *Community building affordance* helps to develop and define the community as the foundation of the gig economy, its values, purpose, exclusionary or inclusionary delineations [4].

> *"You will meet a lot of fellow travelers on your solo adventure and who knows, some of them may even end up joining you! However, at the end of the day you are setting off alone and you will depend on yourself the majority of the time." S4*

4.7 Self-healing

Self-healing affordance is identified as easing and solving mental and physical issues of digital nomads. Although it cannot be easy for travelers to remain an exercise regimen, they are certainly trying and have many success stories to tell.

> *"I try and make sure I skype friends and family from home too, as those long term connections are so important, and I miss the comfort of the friend who knows your backstory, your mistakes and how you've grown, and loves you anyway. I don't want to be 'the friend that time forgot'..." S6*

> *"Staying fit while working and traveling is difficult for many people, myself included. I've collected a few smarter travel resources here for working out while you're on the road." S3*

4.8 Knowledge-sharing

Right now, when people want to know something, they tend to use a search engine, Google for instance. The answer usually comes from Q&A sites, forums, blogs, etc. Digital nomads like to share their knowledge and information about the cities they lived, the Apps they preferred, etc. *Knowledge-sharing affordance* acts as a great help for giving and receiving knowledge and know-how online [4].

> *"I plan on getting a few city-specific eBooks published on the Kindle store and continue to blog about issues about smarter travel that can help new digital nomad professionals, such as: Protecting clients' data（and your own）; Concentrating on work when there are so many travel-related distractions; When to take a break; Dealing with travel-related stress; and Making the most out of balancing work and travel." S3*

4.9 Culture emerging

Culture emerging affordance identified as one technology affordance helps digital nomads dealing with cultural issues（i.e. language, values, belief systems, rules, morals）.

> *"As part of my focus on 'doing new things', and experimenting further with 'doing new things I'm pretty sure I'll be bad at' I recently took 10 hours of art lessons at Noina's art studio. Noina comes highly recommended by Trip Advisor among others, and takes beginners." S6*

5. Discussions and Implications

The author identified nine technology affordances on the individual level in digital nomads community. Based on the affordance literature mentioned before, findings reveal two steps of the affordance process, that are Affordance Existence and Affordance Perception. Affordance Existence is defined as that the affordances emerge in the interaction of an object and its user[18][30]. Affordance Perception is defined as that the perception of a possibility for goal-oriented action afforded by an object for its user[18][30]. Several keywords emerge from reviewing the literature of digital nomads, such as digital worker, telecommuting, the mobility of resources, perpetual travelers, location-independent, solo working professional, self-description, social isolation, etc. The basic capability of digital nomads individually is that they are outstanding at something, as specialists and

professionals（i.e., designer, developer, consultant, etc.）. Then, they are IT adopters. This means they use digital technology frequently for maintaining working from anywhere. In order to be able to keep the lifestyle of digital nomads, their characteristics also consist of high self-management ability, culture adapter, the courage to change, etc. This does not mean that they must have above characteristics first and then become digital nomads. Overall, the key characteristics of digital nomads consist of a pursuit of freedom, location-independent professionals, perpetual traveling, experiencing something new constantly, which have been generating affordance that have been identified by this research with the interaction of varies technology.

Meanwhile, Affordance Actualization is defined as that the actions taken by an actor as he/she takes advantage of an affordance through the use of the technology to achieve a goal. Affordance Effect is defined as that the outcomes attributed to the actualization of an affordance. These technology affordances afford all the actors in the social group of digital nomads, and the actions and the interplay among themselves and others in society generate particular social behaviors. According to Leonardi [20], the technology affordance generated by the interaction with a particular technology can only be actuated at an organizational level when all actors agree on the use of similar technology features. Hence, what must be explained here is that the social affordances which will be explained in Part 2 are not a collection of individual technology affordances at an organizational level. There are lots of technologies with unique technology features in the digital nomads community. Hence, social behavior can be seen as the result of partial actors agreeing on the use of similar technology features, and the technology affordance triggers the social affordance.

This research also enriched the literature on digital nomads. According to the results of the literature review on digital nomads, rare research focuses on the entire individual digital nomads' "career span" from a digital ethnography perspective. This research extended the general understanding and enriched the details about the lifestyle of digital nomads. Meanwhile, their common social behaviors and the impacts of them which have happened, are happening or will happen in the future were also explored. In the term of practical implications, the findings of this study might enlighten personal and organizational readers from the perspective of the future of work. This study provides an overall perspective for personal and organizational readers that have interests in digital nomadism. For active digital nomads, this study also can help them rethinking and managing their current and future lifestyle.

6. Conclusion and limitation

This research adopted the Netnography method to look deeply into the nomadic lifestyles of digital nomads. A literature review of this research showed the under-researched phenomenon of digital nomads and the potential of using affordance theory for exploring the interplay among humans, technology, and society. Findings uncover nine technology affordances on the individual level and show the features of technology adopted by digital nomads and the characteristics of digital nomads.

Due to its exploratory nature, this research has certain limitations. Since the definition of digital nomads is also evolving, new types of digital nomads might not be covered by this research. The research method and sample size limited the findings to be generated from the content that the research objects posted.

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