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Digital Immigrants' Goal Structures in Online Learning*

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Ⅰ. Introduction

The idea of learning online was introduced in the initial stage of the Internet, but it was in the 2000s that it gained significant interest. Connectivity, accessibility, and flexibility are regarded as main features (Gaur, 2015), which allow an opportunity for a new dimension of learning characterized by informal and self-regulated learning (Lee et al., 2019; Tan, 2013). Therefore, online learning not only enhances the effectiveness of conventional learning methods but also provides an opportunity for people who are left out of the boundaries of formal education to continue learning.

Technological advancements have led to the development of various online learning technologies including Learning Management System (LMS) and Massive Open Online Courses (MOOCs). Over the past few decades, people and educational institutions have adopted e-learning supported by various technologies. Additionally, online contents in social media can be significant learning resources (Park and Ren, 2019). Particularly, senior adults or digital immigrants become a significant user of educational technologies and

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online learning content (Liyanagunawardena and Williams, 2016).

Digital immigrants are a significant group of users who are utilizing the Internet to continue learning (Notess and Lorenzen-Huber, 2007; Samsudin and Chng, 2018). Digital immigrants are the generation who were exposed to new technologies later on in their lives (Prensky, 2001). Due to the different environments in which the two generations were raised, digital immigrants were believed to lack the skills to effectively use the new technology (Zur and Zur, 2011). However, recent reports reveal that the percentage of the elderly group who adopted the Internet has been steadily rising over the past decade, showing that 67 percent of adults over the age of 65 declared themselves Internet users (Anderson, 2017). The study also reveals that 83 percent of those aged 50–64 replied that they were either somewhat or very confident in using electronic devices to access the Internet. According to recent survey, main user groups of YouTube are 40s and 50s in South Korea rather than 10s and 20s (Baek, 2021). In addition, as they transform into an aging society, digital immigrants are becoming a substantial user group of information and communication technology (ICT). In 2017, the global population of those over 60 years of age reached 962 million, which is more than twice the number of that in 1980—and by 2050, the population of those aged 60 or over is expected to outnumber the population of people aged 10–24 (United Nations, 2017).

Despite digital immigrants' increasing use of online learning content, their adoption of online learning has been rarely investigated (Liyanagunawardena and Williams, 2016). Most research regarding online learning has focused on the adoption of a young age group (e.g., Bilgiç et al., 2016). Prior research reveals that work requirement and user-friendly interfaces are critical factors, which facilitate elderly users' adoption of online learning (Bai et al., 2020). Such finding suggests that the elderly's adoption of online learning is different from the use of the young generation whose critical factors include self-management (Sukmaningsih, 2019) and interactive technological environments (Pinheiro and Simões, 2012). Accordingly, it is required to investigate digital immigrants' adoption in order to understand the social diffusion of online learning. The primary objective of this study, therefore, is to explore digital immigrants' actual use of online learning by clarifying their goals for online learning. More specifically, this study attempts to develop digital immigrants' goal hierarchy of online learning, consisting of its attributes, mediate goals (consequences), and ultimate goals (values).

In terms of methodology, this study employs a laddering approach and means–end chain analysis, which is used to elicit the hierarchical

structure in the means–end chain (Gutman, 1982). As the understanding of digital immigrants in online learning is still at a preliminary stage, insights in their online learning may be a hint to future research on this topic. By exploring digital immigrants' online learning, this study can enrich research of users of online learning.

Ⅱ. Digital immigrants in online learning

"Digital immigrants" are people who encountered new technologies later on in their lives (Prensky, 2001). The term generally refers to middle-aged adults, namely those aged 40 and above. Previously, access to and usage of digital technology were characteristics widely discussed regarding the divide between digital immigrants and the younger counterparts (Schweitzer, 2014). Accordingly, previous works by scholars identified barriers for the elderly to learn online (Notess and Lorenzen-Huber, 2007). While Internet access among the elderly has significantly increased among the past few years (Smith, 2014), the actual skills required to effectively use the technology and derive beneficial outcomes, often referred to as the second-level divide and the third-level divide (Van Deursen, 2017), has not been overcome.

However, recent studies show that a growing number of digital immigrants are utilizing online learning for both academic and personal purposes (Samsudin and Chng, 2018). Although their usage of the Internet is limited in comparison to digital natives, they will eventually take advantage of various formal and informal learning opportunities offered on the Internet (Notess and Lorenzen-Huber, 2007). The increasing use of the Internet among digital immigrants has led scholars to examine an age variable in formal online learning environments, such as MOOCs (Williams et al., 2018). There is still a lack of studies on digital immigrants' use of online learning. Given the rapid growth of online learning resources and digital immigrants' increasing participation in online learning, there is a need for further research on their adoption of said resources.

As older users are faced with cognitive decline, leading to barriers regarding location and material conditions, online learning is considered a more flexible approach without time or location limits (Ruey, 2010). Prior studies have examined the possible facilitators and barriers for older users' adoption of online learning services. A study examined adoption and barriers for e-learning for Chinese older users aged over 50 (Xue et al., 2020). The study found that internal barriers consisted of age-related changes and external barriers such as equipment-handling difficulties. On the other hand, the factors to adoption included

time flexibility, whereas the indirect factors were user-friendly and adaptive design of the e-learning services. Prior study examined the relationship between specific learning processes, such as intrinsic motivation, metacognition, self-regulated learning, learning strategies and outcomes in older users, looking into how the e-learning environment helps encourage older users to engage in learning activities (Limone et al., 2018). A study looked into the technical and communication challenges that digital immigrants face during the online learning, in the context of higher-education programs (Salazar-Márquez, 2017). A case study was conducted to examine how digital immigrants utilize technology in their process in the e-learning environment in Malaysia (Kee, 2020). However, there has been lack of research that examined how digital immigrants practice and use online learning services.

Ⅲ. Methodology

3.1 Participants

This study examined 22 Korean adults aged 40 and above. We recruited participants through a post on a bulletin board of a regional online community, because we planned to conduct an offline interview. Interviews were conducted either offline or via phone calls. The average duration of interviews was 43 minutes. We stopped conducting an additional interview when we felt data saturation, indicating that an interviewee did not provide new information or topic, was reached. At the end of the interview, participants were each given 10,000 Korean Won (approximately US$ 8.4) in the form of gift certificates. As for gender, nine respondents were male and thirteen were female. Information on the participants' demographics is summarized in Table 1, and each participant' information is presented in Appendix.

<Table 1> Demographics of participants

Variable		*Frequency*	*Percent*
Age	40 - 49	10	45.5
	50 - 59	10	45.5
	60 and over	2	9.1
Gender	Male	9	40.9
	Female	13	59.1

3.2 Means-end chain approach

This study employed a mean - end chain (MEC) approach, which is a useful way to discover a hierarchy-of-goals structure for an object (Gutman, 1982). The MEC approach posits that the attributes of an object function as the means by which individuals achieve goals or values, which is subsequently the means to realize another higher goal or value (Reynolds and Gutman, 1988). This approach has been widely used to explore individuals'

goal structures in using diverse objects such as organic food (Grunert and Bech-Larsen, 2005), mobile commerce (Heinze et al., 2017), and location-based service (Jung and Park, 2018). The four steps of the MEC approach are as follows: (1) laddering interview (semi-structured interview); (2) content Analysis; (3) constructing the goal structure; and (4) drawing the hierarchy of goals map.

3.2.1 Step 1: Laddering interview

The laddering interview technique is a type of in-depth interviewing and analysis methodology (Reynolds and Gutman, 1988). It is often used to elicit the hierarchical structure in the means–end chain (Gutman, 1982). A laddering interview is regarded as a useful method to understand the underlying goals. In this study, three laddering questions were asked in the following order: (1) What type of contents do you watch on the Internet (PC or mobile) for learning; (2) What attribute(s) of online learning is/are important in consuming those contents; (3) What is/are the consequence (s) of watching those contents; (4) Why is the answer to question 3 important?

3.2.2 Step 2: Content Analysis

After collecting the responses from the participants, the next step is to analyze the contents of their responses. In this study, one of authors coded the responses through an open coding procedure. The codes were not generated in advance; instead, they were derived from the participants' responses. By doing so, the actual expressions with which the respondents answered can be reflected in the codes. After coding all the responses, another author, who conducted several online user studies, participated in verifying the codes determined by the first coder. Twenty codes were generated, and the consistency level between two coders was 92 percentage. Two coders discussed and reconciled inconsistent codes. Finally, terms and definitions were decided. From the content analysis procedure, fourteen codes (four main disciplines of digital immigrants' online learning activities, four attributes, and six goals) were generated. The codes generated and their examples are presented in Table 2.

3.2.3 Step 3: Constructing the goal structure

The next step in the analysis was to construct the digital immigrants' goal structure in online learning. Coded responses were compiled into a means–end chain. Answers to the first question—"What type of contents do you watch on the Internet (PC or mobile) for learning?"—served as the starting point. The second question—"What attribute(s) of online learning is important in consuming those contents?"—was then posed in relation to the response of the first question and the next question (i.e., What is the consequences of

watching those contents?). The relations generated by the process (content à attribute à goal à (higher goal)) were analyzed in an implication matrix, which shows the number of times each element led to another element. Abstractness values were calculated by dividing the in-degree by the in-degree plus out-degree. Abstractness scores are used to determine which codes served as means and which as ends. Codes with high abstractness scores are usually regarded as ends, while calculated by dividing in-degree plus out-degree

<Table 2> Codes

Codes	*Examples & Description*
C1. Leisure	Sports, pastime, arts
C2. Economy/Finance	Economy, real estate, and finance
C3. Information technology trends	Digital media, big data, Internet of Things, artificial intelligence
C4. Etc.	Language, health, religion
A1. Accessibility	State of being able to be accessible anytime anywhere without difficulty
A2. Diversity	Condition of having or being composed of differing elements or components
A3. Up-to-dateness	Being continuously added or replaced by latest versions
A4. Repeatability	Being able to be shown, done, or made again
G1. Self-esteem	The appraisal of one's own personal value
G2. Enjoyment	State or process of taking pleasure in something
G3. Recognition	Feeling of being respected and appreciated by others
G4. Productivity	The effectiveness of productive effort
G5. Gaining insight	Gaining deep and accurate understanding of a problem or situation
G6. Positive relations	Engagement in meaningful relationships with others

<Table 3> Implication matrix

	A1. Accesibility	A2. Diversity	A3. Up-to-dateness	A4. Repeatability	G1. Self-esteem	G2. Enjoyment	G3. Recognition	G4. Productivity	G5. Gaining insights	G6. Positive relations	Out-degree
C1. Leisure	13	9	2	9							33
C2. Economy/Finance	3	6	8	2							19
C3. Information Technology Trends	4	4	8	3							19
C4. Education	4	13	3	4							24
C5. Etc.(Health/Regision /travel)	3	12	2								17
A1. Accesibility						13	1	15	2	3	34
A2. Diversity						3	2	8	14	3	30
A3. Up-to-dateness						1	4	5	12		22
A4. Repeatability						1	1	2	2	5	11
G1. Self-esteem									2		2
G2. Enjoyment					2						2
G3. Recognition					6						6
G4. Productivity					14	2	11		3	2	32
G5. Gaining insights					14		6			4	24
G6. Positive relations					9			2			11
In-degree	27	44	23	18	45	20	25	32	35	17	286
Abstratness					0.957	0.909	0.806	0.500	0.593	0.607	
Centrality	0.213	0.259	0.157	0.101	0.164	0.077	0.108	0.224	0.206	0.098	

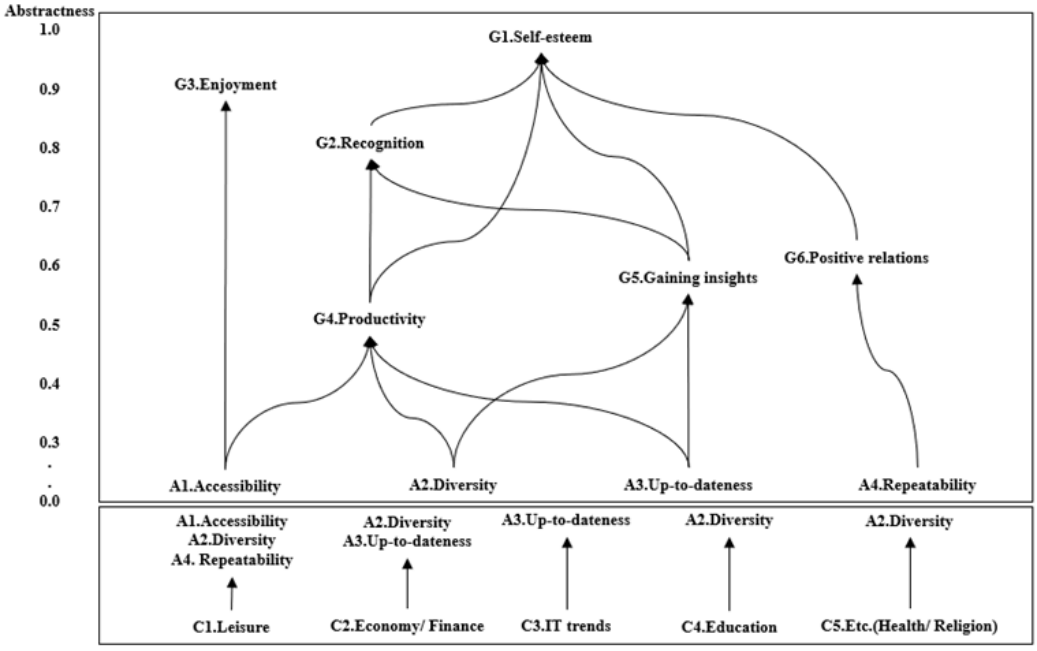
by the sum of all active cells in order to determine which code plays a significant role in the goal structure. The implication matrix was then used to construct hierarchical goal structure and is presented in Table 3.

3.2.4 Step 4: Hierarchy of goal map

The final step of the means – end chain analysis was to draw the hierarchy of goals map. The linkages of the means and ends were reflected in the implication matrix. However, applying all the linkages in the implication matrix can degrade the visibility of the hierarchical goal structure map. Therefore, a cutoff level was employed to embrace only the important linkages. As there may be empty cells or linkages that were mentioned only once or twice, it is important to count only the ones that matter (Reynolds and Gutman, 1988).

<Table 4> Statistics for determining cutoff level

Cutoff level	*Number of active linkages in the implication matrix*	*Percentage of active linkages at or above the cutoff level (%)*
3	258	90.2
4	234	81.8
5	**210**	**73.4**
6	200	69.9
7	182	63.6



<Figure 1> Hierarchy of goals map

One of the methods is to study the number of linkages in proportion to all linkages in the implication matrix. In so doing, it is important to maintain balance between complexity and interpretability. This study decided on the cutoff level of five linkages, suggesting that linkages of five times or more appeared in the map. This accounts for 73.4% of all the active linkages in the matrix. This cutoff level fits Gengler and Reynold's (1995) criterion, which recommends including at least two-thirds of all active linkages. Employing a lower cutoff level may provide more information, but the complexity may make it difficult to interpret. Therefore, a cutoff level of five was imposed to derive only the key relationships. The statistics for determining the cutoff level are presented in Table 4, and the hierarchy of goals map is presented in Figure 1.

Ⅳ. Results

The means–end chain analysis of the interviews revealed the four main disciplines that digital immigrants learned online, namely leisure, economy/finance, information technology trends, education, and others (health/religion). Among all the disciplines, consuming contents of leisure was most frequently observed, accounting for 29.5% of all disciplines. Education came next, accounting for 21.4%. Those disciplines are linked to four attributes of online learning, which are subsequently connected to six goals for online learning.

The implication matrix, which presents all means–end relations between codes, shows that digital immigrants brought up four attributes (A1. Accessibility, A2. Diversity, A3. Up-to-dateness, and A4. Repeatability) and have six different goals for online learning: four mediated goals (G3. Recognition, G4. Productivity, G5. Gaining insights, and G6. Positive relations) and two ultimate goals (G1. Self-esteem and G2. Enjoyment). In the hierarchy-of-goals structure, attributes serve as the basis for achieving mediated goals, which are in turn means to reach ultimate goals.

As seen in the implication matrix, two attributes (A1. Accessibility, A2. Diversity) and two goals (G4. Productivity, G5. Gaining insights) showed high centrality. The linkages involving these four topics account for 45.1% of all the linkages in the matrix. Noticeable linkages were also related to those topics. Findings reveal two thick ties between knowledge domains and attributes (C1. LeisureàA1. Accessibility, C4. EducationàA2. Diversity); two heavy links between attributes and goals (A1. AccessibilityàG4. Productivity, A2. DiversityàG5. Gaining insights); and two dominant relationships between goals (G4. ProductivityàG1. Self-esteem, G5. Gaining insightsàG1. Self-esteem). In particular, G4. Productivity is a hub element in that it is not

only connected to three of four attributes but is also a means to achieve two of the three ultimate goals. According to centrality values, G4. Productivity functions as a core, connecting attributes and ultimate goals in the goal structure of digital immigrants' online learning.

In the additional question concerning platforms used for online learning, all of the respondents answered that they access various social media for learning purposes. YouTube, Facebook, Instagram, Blogs, Internet cafes, and TED Lectures posted on YouTube frequently appeared in their answers. Among the different social media platforms, 82% of the respondents answered that they use YouTube for online learning, and only 20% had experienced online learning contents provided by MOOCs, government institutions, and online educational institutions. This result implies that digital immigrants are actively using informal learning platforms (i.e., YouTube) for learning purposes. This is in line with findings that social media platforms are increasingly being used for educational purposes (Morrison and Koole, 2018).

Ⅴ. Discussion

5.1 Summary of findings

This study aimed to explore what digital immigrants learn online and to discover their underlying goals; accordingly, laddering interviews were conducted to present the relationships between their various goals for learning online. According to the results, the different knowledge domains where digital immigrants learn online include leisure, economy/finance, IT trends, education, and others.

Leisure (C1) is linked to Accessibility (A1), Diversity (A2), and Repeatability (A4) attributes of online learning. When learning leisure contents such as cooking, dancing, and playing the game of go, respondents may think that easiness to access contents and a wide range of contents are critical characteristics of online learning content. Particularly, leisure contents are related to repeatability, implying that the possibility of repeated use is important in consuming leisure contents. The majority of the respondents answered that learning leisure requires repetitive practice, and they are involved in offline clubs and classes while employing online learning as a supplement. In other words, the easily accessible and repeatable nature of online learning led to digital immigrants' additional learning from online leisure contents. As the goal of learning is to achieve a certain level of proficiency required to socialize in various groups, respondents emphasized the need for contents that can be repeated in order to facilitate learning.

Another main learning domain is Education (C4), indicating the acquisition of information regarding children's education or schoolwork. Many respondents, regardless of gender, answered that they were currently receiving information regarding how to teach personality education for their children and how to study and gain admittance to better schools. It is widely known that Korean parents have a high passion for educating their children (Shin et al., 2019). Approximately 73 % of Korean elementary, middle school, and high school students were receiving private tutoring in 2018 (Kim, 2019). Through online learning content, Korean parents learn diverse ways to instruct their children and how to have children prepare for schoolwork and an entrance examination. Online learning contents provide a wide range of formal and informal content related to child education and preparation for an entrance examination. The use of online channels has thus become a promising way for educational professionals to expand the reach of educational contents (Langworthy, 2017). Through online channels, educational professionals not only provide their teaching but also share information and insights on new educational polices. Parents are confused with overwhelming information on educational policies in South Korea.[1] Respondents answered that they are currently learning about various college admissions policies from online resources. This implies that digital immigrants utilize the online learning environment to acquire varied knowledge to educate children. Accordingly, our results show that the purpose of acquiring educational information from online contents is connected to the Diversity (A2) of online learning content.

Economy/Finance (C2) and IT trends (C3) are other subjects of digital immigrants' online learning. Economic and financial knowledge are regarded as essential components of daily life and interactions, particularly to digital immigrants. In addition, IT trends is one of their online learning subjects, implying that they try to improve their digital literacy by gaining IT-related knowledge in online learning environments. Given that age is a major cause of digital divide (Lewis, 2016), our findings reveal that online learning can be a way for senior adults to acquire IT-related knowledge and, ultimately, to advance their digital literacy. When it comes to online learning of economic, financial, or IT-related knowledge, digital immigrants regarded Diversity (A2) and Up-to-datedness (A3) as relevant features of online learning. Economic, financial, or IT knowledge, which is diverse and continuously updated, can be efficiently obtained on the Internet, which is characterized by the large amount of information and the

1) dongA.com (Sep. 6, 2020). Overflowing entrance exam information in YouTube, How far should I believe. https://www.donga.com/news/Society/article/all/20200906/102806463/1

great speed of information diffusion. Digital immigrants also acquire a wide range of other knowledge, such as information on health, religion, and language, from online learning, because individual creators' rush in sharing knowledge leads to the richness in online spheres. Thus, our findings show that their learning of other subjects (C5) relates to Diversity (A2).

Regarding the various goals of online learning, this study found two ultimate goals of digital immigrants' online learning: Self-esteem (G1) and Enjoyment (G2). Self-esteem not only has higher centrality than Enjoyment, but also plays a role of the superior goal of all mediated goals. Self-esteem (G1) can be achieved by Productivity (G4), Gaining insight (G5), and Positive relations (G6). The attributes of Diversity (A2) and Up-to-dateness (A3) are commonly connected to Self-esteem (G1) mediated by Productivity (G4) and Gaining insight (G5). This finding implies that as they attain diverse and current knowledge from online channels, digital immigrants become more productive, gain insights into the world, and can ultimately reach self-esteem. The relations that Productivity (G4), Gaining insight (G5), and Positive relations (G6) have a means to reach Self-esteem (G1) can be explained by Harter's model of self-worth (1987), which posits that perceived competence and social supports are significant antecedents to self-esteem. Perceived competence indicates one's perception of one's own abilities to master certain tasks, and social supports describes one's perception of how much one feels supported by others (Harter, 1987). Online learning makes digital immigrants feel that they are productive and insightful in their social life, which may lead to their perception of increasing competence and ultimately build their self-esteem. In addition, digital immigrants' knowledge from online learning can be the catalyst for their social interactions, and such positive relations can likewise increase their self-esteem. Productivity (G4) and Gaining insights (G5) are also associated with Self-esteem (G1), as mediated by Recognition (G3). The finding shows that digital immigrants' productivity and insights by online learning enable them to attain respect from others such that they feel confident about themselves. The relation of recognition and self-esteem is explicated by Maslow's argument that respect from others is an essential component of self-esteem (Maslow, 1954). Considering that, although self-esteem is a critical component of psychological wellbeing (Paradise and Kernis, 2002), it declines in old age (Robins and Trzesniewski, 2005), our findings reveal that online learning plays a key role in digital immigrants' daily life.

Enjoyment is the other ultimate goal for digital immigrants' online learning. In our findings, the goal is achieved mainly by the chain of Leisure (C1) and Accessibility (A1).

Leisure contents are easily accessible for digital immigrants in online channels, and ultimately provide enjoyment.

5.2 Implications

This study has a few implications for the study of online learning. First, it provides a detailed picture of digital immigrants' online learning from the goal-pursuit perspective. Despite the growing use of online learning, prior research has focused on young people's use online learning, and there has been little research on how parents or the elderly use online learning. Our finding implies that digital immigrants recognized central attributes of online learning, such as accessibility, diversity, and up-to-dateness, which the young also expects in online learning (Bilgiç et al., 2016). There are, however, differences in perceptions of online learning by generation. This study reveals that digital immigrants think of repeatedness as an important feature of online learning because of their declining cognitive capability. Additionally, while digital natives' main purpose for online learning is efficient acquisition of knowledge, digital immigrants pursue diverse goals, such as gaining insights, enhancing social relations, and self-esteem. Such result implies that digital immigrants use online learning differently from the young in that their online learning is intertwined with their life, rather than just related to knowledge acquisition. Thus, the most important contribution of this study is the specific examination of online learning in the context of elderly's learning, which focuses on the connection between the knowledge domains and digital immigrants' goals. By empirically exploring what goals are being pursued in their use of online learning, it enhances our understanding of digital immigrants' goal-pursuit behaviors in the online learning context. We expect that our research will contribute to a conceptual foundation for future research on the elderly's adoption of online learning.

Another implication of this study is to reveal the value of online learning for digital immigrants. Acquiring knowledge through online learning is an important means of achieving diverse higher-level goals, such as gaining insights, positive social relations, and self-esteem. Digital immigrants also accomplish the higher goal of enjoyment by consuming leisure contents, which is conveniently accessible in online channels. In other words, online learning not only helps digital immigrants to have meaningful lives by increasing their self-esteem but also satisfies their hedonic need.

Third, the findings provide a fundamental understanding for future research by suggesting critical factors that influence digital immigrants' adoption of online learning and possible hypotheses. The study demonstrated

that accessibility, diversity, up-to-dateness, and repeatability are important attributes of online learning in digital immigrants' adoption. Furthermore, such attributes can be antecedents to the higher goals (e.g., self-esteem), mediated by other factors (e.g., productivity, positive relations). Our findings are therefore useful in building a conceptual model of adults' adoption of online learning.

The goal-oriented exploratory approach of this study is unique from prior relevant studies and even the user adoption domain in information systems research. Researchers have investigated user adoption of online learning by mainly employing traditional adoption models (e.g., Lee and Suh, 2008; Suh and Lee, 2009). However, the traditional models have limitations because of its assumption that ICT users are passive and just respond to a technology, rather than active agents (Bagozzi, 2007). Such perspective has focused on users' perception, which is limited by the boundaries of the prescribed technology (Jung, 2014). The limited view may hinder comprehensive understanding the emerging user-empowering or user-tailorable trend indicating that ICT provide users with a wide range of options for configuration and purposes (Germonprez et al., 2007). In our exploratory approach investigating digital immigrants' goal structure for online learning, they attempt to achieve different goals in different ways. Accordingly, our approach can be an alternative of user behavior research by delivering a more specific and nuanced explanation of user adoption.

From a practical standpoint, despite the popularity of online learning for digital immigrants, our findings imply an importance of digital literacy, defined as the ability to use digital resources. Although online learning has become a typical way to acquire knowledge in a digital society—and its importance continues to grow in the age of COVID-19—the elderly are left behind. It is reported that age has become the main cause of the digital divide along with an economic factor (Lewis, 2016). To rigorously evaluate and acquire online resources, digital literacy education is required for the elderly. Accordingly, governments need not only provide the elderly with digital literacy education but must also create an ecosystem that can support various types of online learning contents for the elderly.

5.3 Limitations and future research

This study has a few limitations. First, this study examined digitla immigrants' goals for online learning without considering possbile impact of types of platforms. Digital immigrants may have different goals by platform. For example, while they may try to seek more diverse content in YouTube, they may consume in-depth content in TED. Accordingly, we can assume their contingent

knowledge acquisition behavior based on types of platfoms, and future research needs to examine impacts of platforms' attributes on digital immigrants' learning goals.

Although this study attempted to find digital immigrants' goal structure for online learning, our findings included parts of higher goals (e.g., self-esteem). We can expect that their adoption of online learning can be related to a wide range of higher goals in that their online learning is incorporated with their life. Therefore, from the goal-oriented perspective, we suggest that future research needs to examine how their online learning affects their life values, such as well-being in theoretical frameworks of psychological wellbeing (Ryff and Keyes, 1995).

Ⅵ. Conclusion

This study explored digital immigrants' goal structure in online learning through means–end chain analysis. In particular, it identified the different knowledge domains that Korean digital immigrants are studying online, the various goals that they pursue, and the relationships between different goals. As the understanding of elderly participants in online learning is still at a preliminary stage, insight into the various goals that they possess may enrich previous studies in respect of online learning. Also, the hierarchy of goals identified through laddering interviews can help promote development of learning materials suitable for older participants in online learning.

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이 정 훈 (Lee, Jung Hoon)

고려대학교 미디어학 학사를 취득하였고, 현재 CJENM에 재직하고 있다. 주요 관심분야는 디지털 콘텐츠, 광고마케팅 등이다.

남 진 영 (Nam, Jin Young)

브리티쉬컬럼비아 대학교 경영학사와 고려대학교에서 미디어학 석사학위를 취득하였다. 현재 고려대학교 미디어학과 박사과정에 있으며, 주요 관심분야는 디지털 미디어 산업, 지능정보기술 영향 등이다.

정 윤 혁 (Jung, Yoon Hyuk)

루이지애나 주립대학교에서 경영학(경영정보 및 의사결정) 박사학위를 취득하였고, 현재 고려대학교 미디어학부 교수로 재직하고 있다. 주요 관심분야는 디지털 미디어 산업, 가상세계, 정보 프라이버시 등이다.

Appendix. Each participant's information

	Gender	Age	Occupation	Interview method	Interview duration (minutes)
1	Female	48	Unemployed	Phone	58
2	Female	47	Unemployed	Phone	48
3	Female	61	Employee	Face-to-face	38
4	Male	52	Self-employed	Face-to-face	40
5	Female	55	Employee	Phone	43
6	Female	51	Unemployed	Phone	45
7	Male	45	Employee	Face-to-face	40
8	Male	46	Employee	Face-to-face	37
9	Female	48	Unemployed	Face-to-face	42
10	Female	50	Employee	Phone	40
11	Female	44	Employee	Phone	46
12	Male	53	Employee	Phone	44
13	Male	49	Employee	Phone	42
14	Female	51	Unemployed	Face-to-face	52
15	Female	51	Self-employed	Face-to-face	47
16	Male	62	Unemployed	Phone	41
17	Female	45	Self-employed	Phone	40
18	Male	52	Self-employed	Phone	48
19	Female	46	Employee	Face-to-face	50
20	Male	57	Unemployed	Phone	36
21	Female	47	Employee	Phone	32
22	Male	55	Self-employed	Face-to-face	35

<Abstract>

Digital Immigrants' Goal Structures in Online Learning

Lee, Jung Hoon · Nam, Jin Young · Jung, Yoon Hyuk

Research Purpose

Advances in digital technology have facilitated the widespread adoption of online learning, which has become a substantial way of learning. Although digital immigrants have become a main group of users of learning online, there is a lack of understanding of their online learning. This study aims to explore digital immigrants' adoption of online learning from the goal-pursuit perspective to gain insight into how they use online learning.

Research Method

A laddering interview was conducted with 22 Korean adults to elicit their goals in online learning. Then, a means‐end chain analysis was used to derive their hierarchical goal structure.

Findings

The results reveal digital immigrants' goal structure of online learning, consisting of four attributes of online learning (e.g., accessibility, diversity, up-to-dateness, and repeatability) and six goals (e.g., self-esteem, enjoyment, recognition, productivity, gaining insights, and positive relations). This study contributes to the literature by providing a rich picture of their use of online learning.

Keyword: online learning; digital immigrants; goal structure; laddering interview; mean‐ends chain

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