Generation Z: Correlation of Gender, Information Source, and Visit Frequency to Egress Wayfinding Strategy

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ABSTRACT

A shopping mall is one of the most favorite places to hang-out for the young generation; especially Generation Z. Generation Z has its characteristic of shopping behavior due to digital technology development. It affects their perception of their environment and then influences their way of choosing information from a building to solve specific tasks. This paper investigates the correlation of gender, information source, and visit frequency of Generation Z to their egress wayfinding in the real-world scenario. Their shopping experience preferences have an essential role in constructing the egress decision-making process' attributes. The research used a qualitative approach by conducting a semi-structured interview with 70 student-consumers in a shopping mall located around school and housing estates in the Southern Bandung. Participants were asked about their preferences and perception of the building. Then, they performed their egress wayfinding in evacuation scenarios and answered questions about the reason for route choice and aids from the environment. The findings show a strong correspondence between Generation Z's characteristics and their evacuation egress strategy. The study emphasizes the importance of understanding Generation Z's shopping behavior to design shopping experiences that help visitors orient themselves in the building, especially in an evacuation situation.

Keywords: *Generation Z, Wayfinding, The Evacuation Route, Shopping Mall, Digital Generation.*

1. INTRODUCTION

As the most recent and rapidly growing society, Generation Z is expected to impact retail shopping behavior than their predecessors more significantly. It was estimated that one-third of the US population would be Generation Z [1]. In Indonesia, the Ministry of National Development Planning predicted that in 2035 around 207.8 million people will be in the productive age (15-64 old years), which is around 68.1 percent of the total population. It included Generation Z as the golden generation that will be the demographic bonus [2]. Its characteristic that never experiences life without the internet and has a constant connection to information will shape a new paradigm of shopping behavior in many ways.

One of the critical reasons for this generation to consider shopping activities was time efficiency [2,3]. While many shopping buildings became more substantial due to fierce competition in product collection, shoppers had problems finding their way into the building [4]. Besides reducing the interest of these young shoppers to visit the building, this also could lead to danger, especially in evacuation situations [5].

The wayfinding concept in the architecture field played essential roles in designing significant buildings and maintaining indoor orientation for its occupants [6]. To make it suitable for the context, architects need to understand how occupants use the building. One of the crucial behaviors for public buildings using like shopping centers is finding an egress in an evacuation situation. Many research types examined individual attributes such as gender [7] and visiting frequency [8] to human wayfinding strategy. They used hypothetical scenarios and computational simulations such as virtual reality but rarely explored the occupant attribute's relationship as one generation cohort to their egress wayfinding strategy in the real-world scenario. This paper aims to understand the specific characteristic of the Generation Z shopper egress wayfinding process. Using a case study in a

shopping center in Southern Bandung, this research systematically discusses Generation Z egress wayfinding strategy that might impact building design and shopping management.

2. THEORETICAL BACKGROUND

2.1 Generation Z: Characteristic and Behavior

Generation Z refers to the generation after the Millennials, often referred to as *iGeneration*, *Post-Millennials*, *Gen Wii,* or *NextGen* [9,10]. This group has never known a time without the internet, making them the true digital natives. They have shopping orientation characteristics that are different from the previous generation, impacting their interaction with shopping building.

Wood [11] identifies four trends that are likely to characterize Generation Z as consumers:

1. **A focus on innovation**. Generation Z has an innate comfort with the virtual world. For them, the internet has always existed. Innovation is a constant given in their perception. They still have more choices in the marketplace, so their dependence on design-based or aesthetic differentiation in making choices tends to be intense.

2. **An insistence on convenience**. This generation lacks exposure to "from scratch" consumption, and it influences its reliance on convenience in every aspect of choosing a product and shopping orientation. It considers timesaving, ease of acquisition, and product experience.

3. **An underlying desire for security.** It may be more pragmatic and more scarcity-oriented than its predecessors. Generation Z may feel more careful and discriminating in where they spend their money. It may result in consumers who are very brand sensitive but not very brand loyal.

4. **A tendency toward escapism**. This desire for an opportunity to escape is facilitated by technological advances such as entertainment products like more realistic and compelling video games, 24/7 access to social networks, and greater mobility in devices (e.g., mobile phones with media and internet availability). In the social context, this phenomenon erodes their skills in face-to-face encounters and relationships.

2.2 Egress Wayfinding

Lynch [12] defined wayfinding as the consistent use and organization of sensory cues from the external environment. Passini [6] related it with the spatial orientation derived from a spatial understanding of the environment and required a cognitive-mapping process. As a person who continually acquires new information in interacting with the environment, these cognitive maps change. Hence, it is essential to emphasize the study of the wayfinding process, especially for Generation Z, who have a new perspective in interpreting and interacting with their environment.

Egress wayfinding is a cognitive process of finding an egress path in a complex building using spatial orientation. It is crucial, especially in an evacuation situation, where people are forced to make decisions immediately. Thus, it is essential to understand how some generations' characteristics related to its evacuation strategy egress wayfinding. Andresen [13] suggested a taxonomy of evacuation wayfinding using presumption in Agent-Based Modelling that some people have an inaccurate mental representation of spatial knowledge. It leads to a different choice of routes in solving evacuation wayfinding tasks, instead of being just determined by shortest path or travel time optimization like in many kinds of research of egress wayfinding. He suggested three tools to solve evacuation tasks: internal spatial memories, external aid or information, and internal generalized knowledge, leading to wayfinding strategies, such as path following, path searching, path planning, map/sign usage, herding, and generalized search strategy. This taxonomy relied on a considered approach but lack of personal habits of the individual [13].

Spatial memories. This aspect consists of route knowledge (action-based), point knowledge, and survey knowledge (cognitive map-based). Route knowledge enables the Wayfinder to follow a set of route segments which connect between landmark. By moving step by step from landmark to landmark, the Wayfinder finally arrives at the desired destination (path following). The Wayfinder cannot plan tracks or routes because they cannot point directly to the desired destination from the starting point or give information about the sub destination unless it is the adjacent one. Point knowledge is knowledge about the destination's location relative to him/her position. The Wayfinder has no information about the possible route, route segments, or landmark's spot between the starting point and destination. Thus, the Wayfinder has to look for paths or routes closer to the destination (path

searching). Survey knowledge is knowledge about multiple objects of the current environment, their relative positions, and possible connections. The Wayfinder can evaluate his mental map and plan an appropriate path to the desired destination (path planning).

External aid or information. The Wayfinder can search for signs or maps to help him/her solve the wayfinding task. If the sign is available, he/she can follow the instruction until the destination or familiar place. External aid can also be in the form of social assistance, such as herding. Dalton [14] constructed four kinds of social wayfinding, such as strong synchronous type, weak synchronous type, strong asynchronous type, and weak asynchronous type. These types of social wayfinding review others' presence as information to solving the wayfinding task.

Internal generalized knowledge. This tool relates to information that someone uses when doing wayfinding tasks in a similar environment. People tend to categorize their experiences and then compare new surroundings to a similar and familiar one [13]. Once classified, the experience will be related to attributes, implications, and expectations. Someone who faces an environment that has never been visited before can still retrieve information about the type of environment. This information does not always make spatial explicit but gives clues about properties. Andresen [13] calls this *generalized knowledge*. For instance, in an arbitrary train station, people expect the possibility to enter trains via platforms. After leaving a subway train, they expect the exit of the station somewhere upstairs.

Many researchers suggest that gender is one of the attributes that influence wayfinding. Julian [15] used the two-way analysis of variance, which resulted in a statistically significant difference in gender and memory of design features in the built environment, but no significant differences for gender and wayfinding preferences. Zomer [16] said that there are substantial gender differences in favor of men found for both Orientation Ability and Knowledge Gathering and Processing Ability. It is contrary to the finding of Ipek and Halime [17] that suggests there are no differences in gender for choosing the staircase as vertical cues. Thus, it needs further study about the relationship between gender and evacuation wayfinding strategy in Generation Z. Visit frequency is also likely to be assumed as familiarity for many research [4,8,18] and suggests affecting evacuation wayfinding strategies.
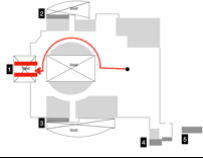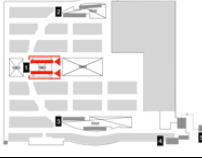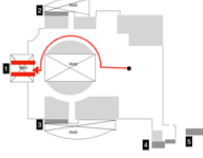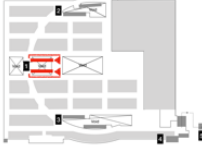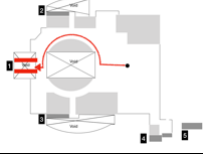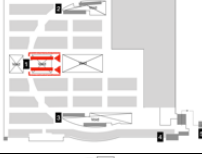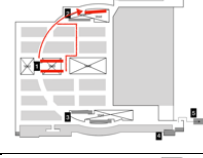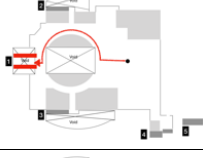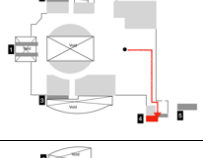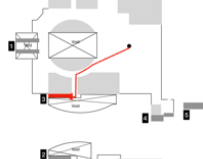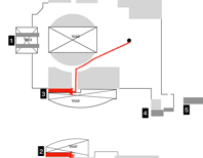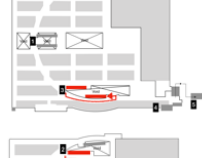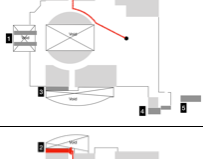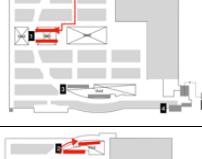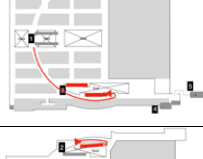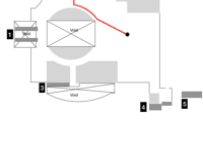
3. METHODOLOGY

This research used a qualitative approach by conducting a semi-structured interview with 70 student-consumers (45 females, 25 males, aged between 17-23-years-old) in a shopping mall located around school and housing estates in southern Bandung. The qualitative approach is suitable for studying things in their natural setting and interpreting phenomena [19,20], such as wayfinding behavior in real-world scenarios. This research intended to focus on how characteristics (gender and visit frequency) of generation Z as exposed digital consumers relate to its egress wayfinding in shopping buildings, especially in the use of source information. This research conducted three stages in gathering data: first, recorded interviews of participants about their perception of the building, such as the purpose of visit and interest; second, recorded egress wayfinding task using GoPro4 Camera individually; and the last, interviews about the reason behind their route choice. We transcribed the interview result using InterviewScribe into text data, which was then analyzed using Nvivo software. The aim is to categorize their tendency to build, such as visit purpose, interest in building, and information source they were using to solve the evacuation task. We used correspondence analysis with JMP Software to see the correlation between their characteristic (such as gender and visit frequency) to their source of information.

4. FINDING AND DISCUSSION

Based on the analysis, 11 types of "evacuation routes" that participants chose (Table 1). Only 29% of participants went to the emergency stair, while the rest went to other exit ways. Most of their reason for their choice was because of the Habitual Route. The Habitual Route is an action-based (route knowledge) kept in the long-term memory of the individual. The participants who have been familiar with building feel the confidence to pass through the regular route, and some said it is a kind of reflex on choosing the path. In evacuation scenarios, people tend to see the fastest and most secure way to go to the safe place or exit; this is different from prior research that suggests they looked for the shortest path to exit. To know the shortest one, people need to have a cognition map to compare one alternative to others. In this case, participants who did not have any interest in exploring the building would only have limited knowledge or a partial cognitive map. That is why most of them chose to go to the familiar one.

Table 1. Evacuation Route Type in the Case Study

No	Route type (Participants)	Segment			
		4th floor	3rd Floor	2nd Floor	1st floor
1	R1 (7)				
2	R2 (8)				
3	R3 (17)				
4	R4 (2)				
5	R5 (2)				
6	R6 (20)				
7	R7 (5)				
8	R8 (4)				
9	R9 (1)				
10	R10 (1)				

11	R11 (3)	
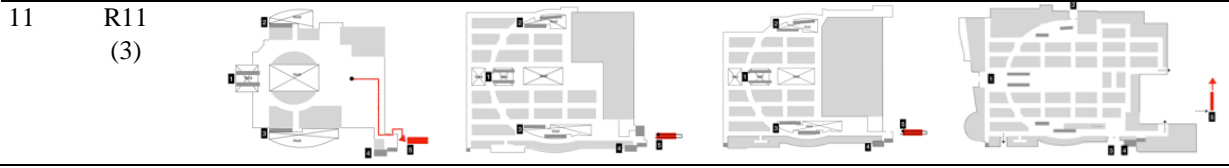
4.1 Generation Z as Consumers in the Case Study

In terms of familiarity and regular route, they are influenced by the regular activity that the occupants often do, or in this case, the path that they often choose in average condition. As consumers, participants in this research tend to have some interest in innovation, convenience, and escapism. Most consumer characteristics are related to escapism, such as hanging out with friends, play and study, and searching for convenience such as different ambient (Figure 1). Though generation Z are presumed exposed more to digital technology, social activities seem to dominate their decision-making. Considering the ages of participants (between 18-23-years-old) on an identity crisis stage, they tend to seek recognition from their circle. They prefer a shared space with friends, especially giving different ambient from other parts of the building and facilitating free Wi-Fi. The impact of these tendencies is that they seldom explore the building more if the products or building's layout does not attract them as individually or socially coherent. The preferences to explore also influence their movement in the building, vertically and horizontally, and form a cognitive map.
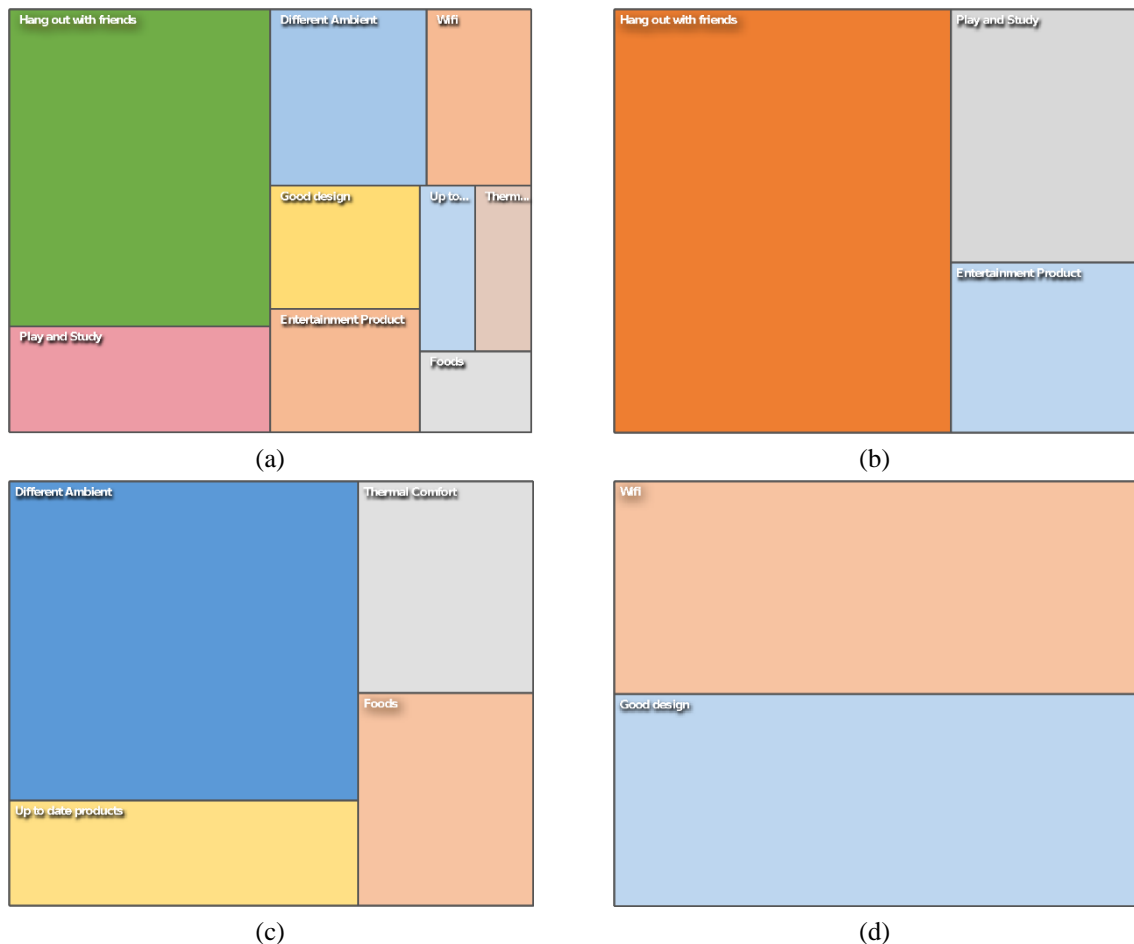

(a)

(b)

(c)

(d)

Figure 1. Most Activities of Generation Z in the shopping center. a) overall activities. b) activities related to a tendency toward escapism. c) Things related to convenience. d) Things related to innovation

4.2 Characteristic of Generation Z and Their Evacuation Wayfinding Strategy

4.2.1 Correlation between Gender and The Information Source.

In this study case, there was significant correspondence between gender and information source (p= 0.0047) used in solving the evacuation wayfinding task (Figure 2). Males tended to use internal spatial memory, specifically survey knowledge (cognitive map representation). In contrast, females tended to use external aid information, generalized learning, and spatial memory, specifically Route Knowledge (action-based model). In line with Lawton's finding [21], men use orientation strategy while women tend to use route strategy in any outdoor situation. Meanwhile, Lopez et al. [22] indicated that men and women differ in their self-reports of spatial orientation strategies and confidence in their ability to solve spatial tasks.

In this research, the social factor seemed to influence this decision making. Most of the females chose route three as evacuation egress. This route relates to their habitual social activities; after hanging out in the food court on the 4th floor, they like to go in a group to eat in another place outside near the exit door. This place is famous in their circles because of the lower price and various meals, so it becomes a social landmark. Every day, this social landmark guides them and unconsciously forms route knowledge that they enjoy and easy to recall in an uncertain situation. In this research, females tended to use path following social landmarks. Simultaneously, males of generation Z tended to use their survey knowledge, chose route six or an evacuation route because males were more curious about experiencing the building. Hence, they like to explore the place and functionally oriented. This exploration is often done in peer-group or company, demonstrating social aspects in mental map forming.

4.2.2. Correlation of Frequency of Visit and Information Source.

Another characteristic that significantly affects the individual use of information sources in egress wayfinding is visit frequency (p=0.0179). This result suggests that a person who claimed his/her visit frequency more than 50 times (very familiar) tends to use survey knowledge. A person who claimed to have 0-9 frequency of visits tends to use external aid information, and the person who claimed to have the frequency of visit between 10-49 times tend to use route knowledge. There is a probability that the more often participants visit the building, the more often they use cognitive mapping representation in solving evacuation wayfinding tasks. Seeing the building more often helps construct more rigid cognitive maps of a building, which allow the participant to use allocentric strategies or environmentally-centered framework where location and orientation are independent of the navigator's position but referring to the spatial relationship between landmark [22]. Participants with less visit frequency (adequate familiar) tend to solve the evacuation wayfinding task based on their past action (route knowledge). Those who are unfamiliar with the building solve the task based on external aid or environmental cues.

4.2.3 Correlation of Source of Information and Route Decision.

There was significant correspondence between the source of information and route decision (p= 0.0015). The participant who chose the evacuation route (route 6) seems to use survey knowledge and general knowledge (Figure 4). Most of them claimed that they passed the route before, and they feel confident about its safety even though this route serves less signage and physical information that directs to it. Among the 'other routes,' route number three (Table 1) or route to a social landmark was chosen by the participants who tend to use route knowledge. At the same time, participants who used External Information Aid tend to select route number two. This result suggests a relationship between route configuration and information received in solving the evacuation wayfinding task.

This result is in line with [23], stating that the evacuation routes used in a daily situation will not be used in an emergency. In a pending case, visitors tend to use the safest path to exit. Generation Z exposed to the digital world has its perception of a safety path influenced by its familiarity with the environment. This sense of familiarity is affected by their interest in the building. It tends to search for space where it shares the same experience, contrasts ambient, and provides the facility to access the digital world. This space character can be a consideration for building designers or management of a shopping center to arrange a more effective evacuation scenario and, at the same time, increase the spatial experience of visitors.
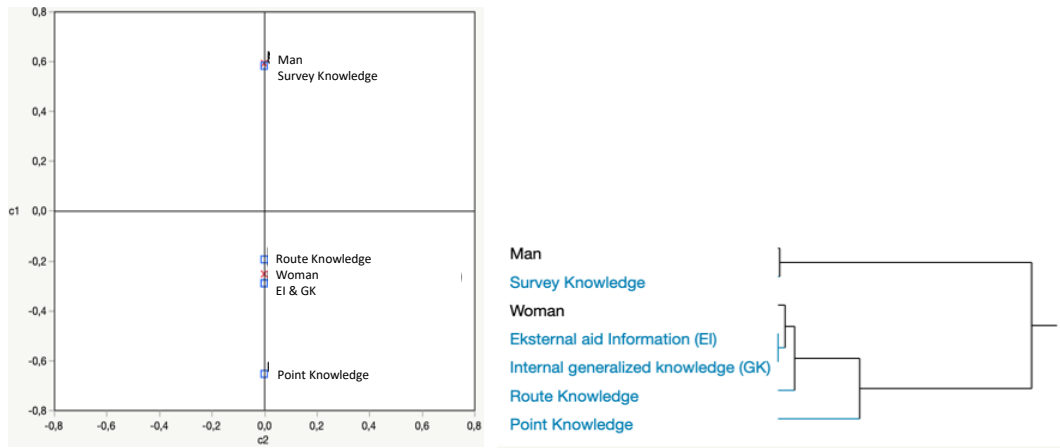
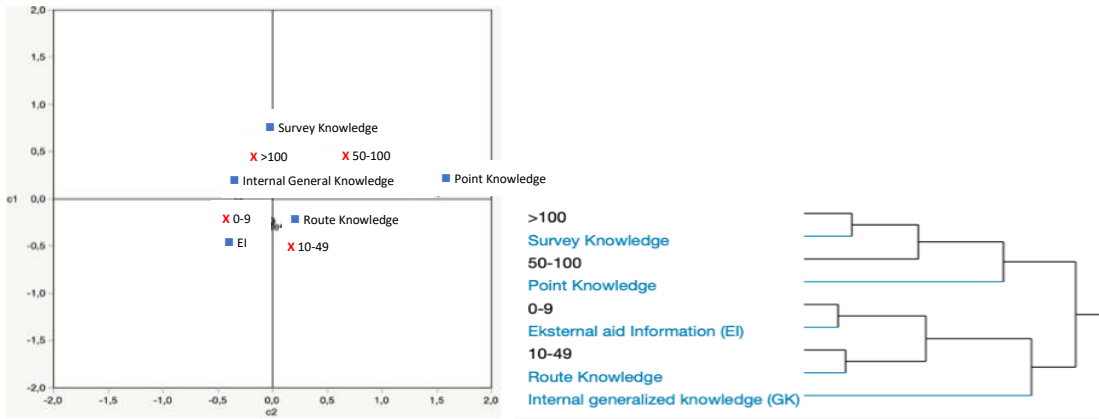**Figure 2**. Correspondence Analysis of Gender and Information Source.

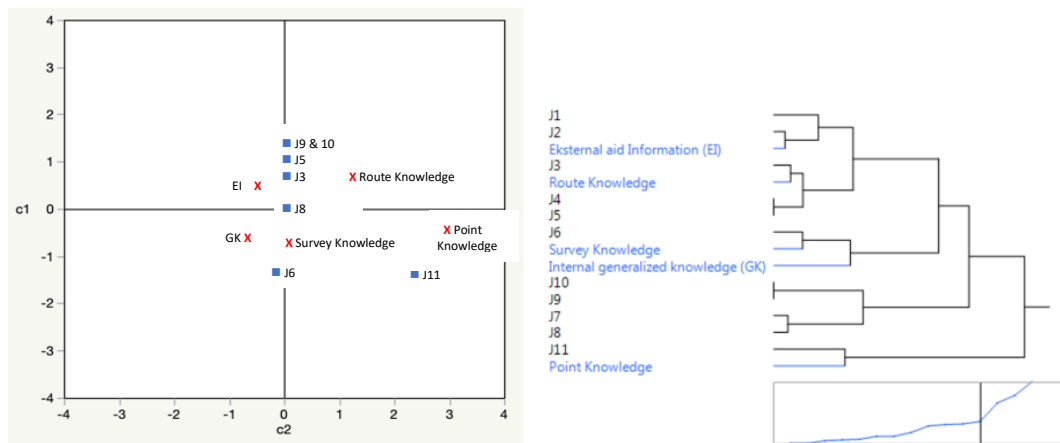**Figure 3**. Correspondence Analysis of Visit Frequency and Information Source

Figure 4. Correspondence Analysis of Information Source and Route Decision Type

5. CONCLUSION

Generation Z is perceived to have characteristics in experiencing shopping activities that influence its evacuation task as the digital generation. Although they have an orientation to escapism, convenience, innovation, and security, the social a-synchronized aspect seems to dominate its decision making in solving the task. Demographic characteristic such as gender also affects the use of knowledge type, which leads to the strategy. Both male and female respondents have strong tendencies to remember the route, which marks their social activities, such as hanging out and groups study. This research argues that evacuation routes should be designed to be used in a daily and familiar situation. Because in an uncertain state, visitors tend to use the safest path to exit in their perception. Knowing what triggers this generation movement in a daily or regular situation could become a consideration for regulation or design of building safety and management operations. The limitation of this research is that the sample size precludes any generalization. Future studies could be undertaken in shopping malls with more significant samples where visitors could be varied. The analysis cannot put the setting in a realistic evacuation condition due to safety reasons so that future research can combine this result in evacuation simulation-based research.

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