

I Can't Wait!:

Towards a human-centric and smarter convenience store service experience

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Abstract—In contemporary societies, most people consider waiting in line to be an unpleasant, yet necessary, task in several aspects of their daily lives. One context where this sense of impatience and displeasure is particularly apparent is in a convenience store setting, where speed and efficiency take precedence. The frequent recipients of customers' irritations towards waiting are the frontline service employees. In our qualitative investigation into the work experiences of convenience store employees in Taiwan, we found that the pressure exerted from waiting customers to be one of their main sources of occupational stress and emotional strain. Therefore, we further propose some technological suggestions, such as the incorporation of wireless sensors networks (WSN) into the physical convenience store setting with the intent of alleviating frontline employees' sense of anxiety and trepidation towards serving waiting customers.

Keywords—convenience, frontline service employees, ubiquitous computing, seamlessness, seamfulness

I. INTRODUCTION

In this day and age, it is fair to assume that most people have competing demands on their time. Definitions of time that have emerged in the recent decades, such as "time crunch," "time deficit," "time-buying," "time-saving services," all suggest that time is a scarce resource that must be judiciously utilized. The concept of "convenience" has changed in definition over time [1]. Originally, convenience implied that something was functional, easy to use and labor saving. In modern times, the concept of convenience also began to imply the ability to control time. Convenience stores can be considered an embodiment of modern connotations of convenience. Consumers in Taiwan have come to expect convenience stores to be a one-stop store, where they can efficiently take care of an assortment of their daily needs.

In our multi-phase research on convenience store culture in Taiwan, we examine the convenience store experience from both the perspectives of customers and frontline service employees. We found that the customers' assumptions and expectations of speedy, efficient services within convenient stores often take physical, mental and emotional tolls on the providers of these services. In addition to the parts of the job that involve physical exertion, such as hurried, repeated lifting and moving of merchandise, there are also considerable sources of mental and emotional strain, which are derived from interactions with customers. In this phase of our research, which specifically focuses on the experiences of frontline service employees, we discovered that frontline service employees bear the brunt of customers' frustrations, especially those relating to situations where a customer has to wait for a particular service.

In this paper, we examine the on-the-job conditions of convenience store workers in Taiwan, and identify some key problems of their working conditions. In addition, we propose some technological ideas that can be used to alleviate frontline service employees' sense of mental and emotional strain when serving customers.

II. LITERATURE REVIEW

The first convenience stores were established in the United States in 1927. The name 7-Eleven originated from the store's opening hours (from 7am to 11 pm). This name remains today, despite of the expansion of store hours to 24 hours in 1963 [2]. The convenience store concept spread to Asia, with stores first established in Japan and Taiwan in 1964 and 1977, respectively. Taiwan now has the highest density of convenience stores in the world. According to statistics released by the Fair Trade Commission in Taiwan [3], there are approximately 9,204 convenience stores in Taiwan, and around 4,209 of these stores are located in Taipei, the capital city. Whilst there is a wealth of research

conducted on convenience stores in Asia, such as those by Terasaka [4] and Cheng et al [5], among others, these studies tend to be from business, management, marketing and retail perspectives. Upon examination, there is an absence in academic research and literature that addresses the convenience store perspective specifically from the experiences of its frontline service employees. However, other studies, such as those by Mohr and Bitner [6] and Katz *et al.* [7] have suggested that the experiences of frontline service employees are an important component to consider in the overall process of service experience, since frontline service employees are the most visible representatives of the company. Their attitudes towards, and interactions with, customers, such as displays of courtesies, friendliness and efficient and effective service delivery have considerable effects on customer satisfaction, as found by Rafaeli [8].

The nature and content of convenience store work is generally conceptualized as low status, low pay, and monotonous. Convenience store workers are paid minimum wage in Taiwan. Comparatively, they work longer hours, and get paid less than their counterparts working in other retail sectors. Further, their lack of occupational status, or what Hochschild refers to as a “status shield” [9] leaves them vulnerable to the verbal abuse and mistreatment of customers. Customers’ disrespect and mistreatment of frontline service employees in other occupations, such as airline staff, and fast food chain employees are similarly documented by Hochschild [9] and Leidner [10]. However, despite the fact that these jobs can be monotonous and routine, they often require the infusion of many elements of “invisible skill,” such as emotional work. These skills, while critically important in customer interactions are usually disregarded or taken for granted by both upper-level management and customers, as illustrated by Hochschild [9], James [11], Korczynski [12], and Tancred [13].

One particular source of emotional strain in customer and service provider interactions is in instances where customers have to wait in line for service. Previous studies of queue psychology and behavior, such as those by Maister [14] and Larson [15] have focused on the feelings derived from waiting from customers’ viewpoints. Maister in his research uncovered that waits are considered unpleasant if the individual is alone, unoccupied or uncertain about the duration of their wait. Further, Larson [15] found in his study that an important component of waiting satisfaction is dependent on whether “social justice” is present in the waiting process. He discovered that different types of line formations influenced customer perceptions of social justice. Testing sites for queue psychology and waiting behavior in expansive spaces, include banks, large retail outlets and theme parks like Disneyland, according to Katz *et al.* [7], Larson [15], Maister [14], which are not typically part of the average individual’s daily path. During this research process, it became apparent that there is a lack of research regarding waiting in small, confined spaces, where the wait is unanticipated, spontaneous and unpredictable. Moreover, previous studies focused mainly on the waiting experiences of customers, however, there is less focus on the frontline service employees who must handle visual, verbal and

emotional cues of impatience and annoyance derived from waiting. To address this absence, we will examine how convenience store employees in Taiwan cope with waiting customers, and make suggestions for technical enhancements that can serve to improve the overall service experience.

III. METHOD

To operationalize this study, a purposive, non-random sample was generated in order to reach the interviewees of interest. We sought interviews from employees from each of the major chain stores in Taiwan, including Uni-President 7-Eleven, Family Mart, and OK Mart, who are employed either full time or part time, and in managerial positions, from both franchise and direct sales stores, working in stores that are in residential areas, commercial districts and in busy thoroughfares, such as train stations. We interviewed 11 frontline service employees from several convenience stores in Taiwan, from these different employment locations, backgrounds and characteristics. The semi-structured interviews typically lasted between 1-2 hours and were both audio and video recorded, with the interviewees’ consent. Afterwards, the interviews were transcribed verbatim and then coded and analyzed, following Glaser and Strauss’ Grounded Theory Method [16]. After this lengthy analysis process, we identified particular on the job situations that could be improved by technological enhancements.

IV. RESEARCH FINDINGS

For a full time convenience store employee, a shift lasts for at least eight hours. During this shift, they are responsible for both behind the counter and over the counter tasks, as shown in Figure 1. A shift consists of a two- to three hour rush period. There are also spontaneous peak times that can occur either because of inclement weather conditions, or events that take place nearby the store. During peak periods, our interviews reveal that employees will accelerate their actions in order to pass customers through the payment process as quickly as possible. However, the payment process is not a simple matter of scanning the item(s)’ barcode, taking money and making change. Rather, because of the plethora of services offered by convenience stores in Taiwan, the checkout process can consist of several tasks, if the customer chooses to multitask. We outline two common scenarios below:

1) Scenario 1:

An office worker can stop into a convenience store on his way to work. While he stands at the cash register, he hands over his breakfast item, makes his request for a certain espresso drink, then perhaps he remembers that he has to pay his cell phone and electricity bill.

2) Scenario 2:

A university student stops into a convenience store on her way home from classes. She stops in to pick up a ready-made dinner and to pick up books she ordered from an online bookstore.

In both situations, since the transaction may consist of several customizable parts, thus the cashier must perform several steps before the customer can leave the store. S/he

must first listen to, and retain customer requests. Then s/he must mentally design an order of operations prior to turning around to either operate the coffee machine or the microwave, which are located on the counter behind the cash register. Then the cashier will either process the bill payment or begin to search for the online order, which are usually stored in a cabinet underneath the counter. All of these actions must be performed in a highly efficient manner, in the shortest time span possible. In our research, we observed that for the less experienced employees, the acceleration of motions, alongside with their perceptions of customer impatience often leads to stress and confusion, which has a counter effect of slowing them down. One employee explains:

I start to get really nervous. It's like I want my hands to go faster, but they can't. Then I look out at the line and everyone looks really impatient and that makes it even worse...I just put my head down and try to go even faster. (Female, 20s, part-time)

This employee works in a convenience store located in the Taipei Main Station has frequent fractious encounters with customers. She says:

Commuters in a rush make really rude comments while they're waiting in line and when it's their turn, they throw the money at me and then just grab their stuff and run out the door. That's really counterproductive, because I have to crawl behind the counter picking up coins and put them into the cash register before I can ring up the next sale. Then it begins again, with the next customer really unhappy with me because I made them wait. (Female, under 20s, part-time)

Similarly, our other interviewees felt that irrespective of the demands on their physical stamina, the emotional demands on the job were much more of a burden. Another employee reflects:

I wonder why customers have to be so rude and dismissing. Yes, I work in a convenience store. But I work really hard. Would it be too much to ask of them to see

me as a person too? Do they have to be so angry? (Female, under 20s, part-time)

In contrast to the experiences of grocery store clerks documented by Rafaeli [8] the convenience store employees in our study tended to be less confrontational or in control of the encounter. Instead of directly confronting rude customers, they tended to internalize and then either redirect or attempt to assuage their negative feelings towards their customers.

Throughout this research, we found that one of the most common forms of exacerbation that occurs between customers and frontline service employees is on the occasions that waiting is involved. Major convenience store chains in Taiwan, such as Uni-President 7-Eleven have strict policies that lines are not to exceed over three people in length. Once a fourth person joins the line at the cash register, frontline employees are required to ask their colleagues to abandon other tasks to assist waiting customers. Usually a request for assistance is accomplished by pressing a button located beneath the counter, or by shouting either the names of their colleagues, or simply the phrase "Cash register!" Garnered from our observations in the field, the cashier must shout his/her request a number of times before being heard over the hubbub of the store, or because his/her colleague is occupied with other tasks in the stockroom. Upon arrival at the cash register, usually the cashier will shout, "I can help the next waiting customer." However, it is usually unclear which waiting customer s/he is referring to. Thus, there is usually a tumult that follows when an additional cash register is opened, as customers vie to be the next served. Because of the compact size of convenience stores, waiting in line can be an uncomfortable experience for both the customer and the cashier. The line is dense and customers are squeezed in close proximity to each other between merchandise shelves and other browsing customers. During the wait, customers are usually unoccupied according to our field observations and interviews, their focus and line of vision is usually directed towards the cashiers. This in turn causes considerable consternation for the frontline service employees, especially those who are new to the job.

In comparison, for a seasoned employee, serving a customer at the cash register consists of a sequence of well-

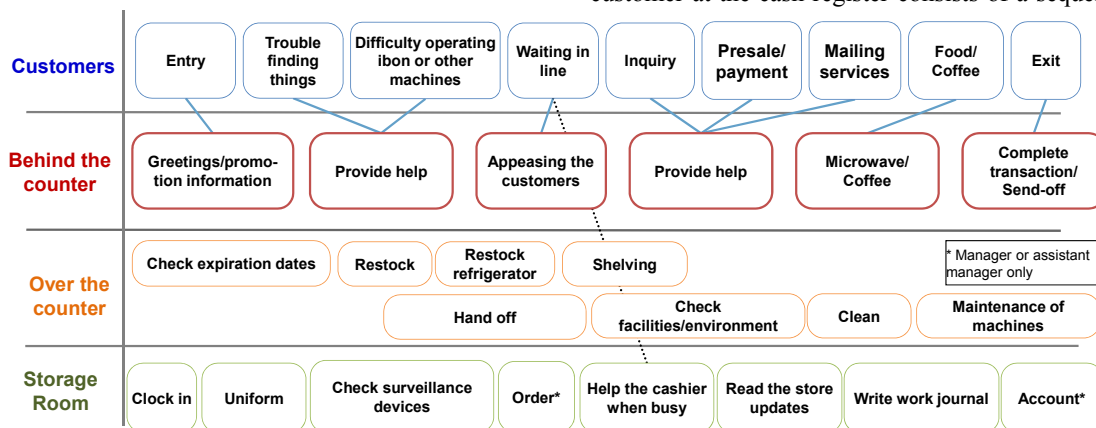


Figure 1. Figure 1. On-the-job description at a glance.

honed motions. He describes:

If the customer is a regular whom you can trust, you will be tearing the [receipt] stub when she's counting out the money. You count the money the same time she's counting. Then you give her the receipt and it takes less than five seconds. But if you're new, and you'll make people wait for you. The customers will be wondering "Why is this taking so long? How come this clerk knows nothing?" because they don't care if you're new or not. (Male, 30s, store owner)

In this particular situation, the frontline service employee is experienced enough to anticipate the actions of the customers. When the customer presents him with a bill that she wants to pay, he is able to condense the motions required to complete the process. He also is observant and counts the money simultaneously with the customer. Since this is one of his stores' regular customers, he has placed implicit trust in their interactions, so he knows that she will have the right amount of money to complete the transaction. These three elements of anticipation, observation and implicit trust trim down the customer's waiting time. However, these elements may only come into place if the cashier has spent enough time within the store, interacts with customers on a regular basis, and has a comprehensive understanding of the inner workings of each transaction. These elements can be considered a part of the 'invisible skill' described by James [11], Korczynski [12], Tancred [13], and Bolton and Boyd [17] involved in his job, but that is rarely recognized or appreciated by the customer, unless it is absent from the interaction. We found that all employees engage in the critical tasks of noticing, perceiving, absorbing and responding to customers. This task involves a considerable amount of both accumulated experience and consistent effort, but the employee is not given adequate tools to support these skills. We propose that some of these tools can be implemented into the actual convenience store environment, and we describe these suggestions in the following section.

V. TECHNOLOGY SUGGESTIONS

The preceding sections illustrate that the convenience store environment is typically an environment that is full of activity. One of the most noticeable activities is waiting in line. Our research revealed that the compact size of the store could make waiting in line uncomfortable. In addition, time spent waiting in line may be prolonged because a customer may require more than one service at a time. Moreover, the lack of constructive distractions in the store makes waiting in line irritating and uninteresting. These elements may cause customers to act unpleasantly towards the service providers.

With these realities in mind, we will suggest some technological enhancements with the intent of alleviating in store tensions that may arise during waiting periods. Adding too many conspicuous devices to an already crowded and hectic convenience store environment may not be the most aesthetically pleasing, or practical option. With these considerations in mind, we suggest weaving some technologies unobtrusively into the fabric of everyday life. This paradigm was first proposed by Weiser [18] in the field

of ubiquitous computing. Following Weiser's concepts, we will deploy sensors, actuators, and other computing devices (hereafter referred to as "smart devices") into the physical convenience store environment. This enhanced environment will have the ability to react to people, make decisions and subsequently provide attentive services whenever necessary.

Instead of choosing and deploying smart devices based solely on technology-orientated considerations, we will also take users' perceptions into consideration. To this end, we divide smart devices into two complementary categories: seamless and seamful designs [19]. Seamless technology and devices are inconspicuously placed into an environment. In contrast, seamful technology and devices are intended to be noticeable, and to engage, and perhaps entertain people within the environment.

When applied to a convenience store setting, seamless designs are unobtrusively integrated into the store. The physical setting and the appearance of the store are not perceptibly altered. With seamless devices, we can collect data about in-store activities, send information, and monitor waiting activities. We propose the following enhancements:

A. Seamless Sensing for Ubiquitously Collecting Information

1) Real-time Context-aware Monitoring

We can collect real-time information from both customers and the store environment using wireless sensor networks (WSNs). This is possible since wireless sensor nodes are compact enough to be easily hidden (or embedded into an off-the-shelf device) and have satisfactory computing power for the task of sensing changes from customers or the environments, or even for accepting remote control commands to activate their associated actuators. The Point of Sale Systems (POS) will serve as a portal to provide comprehensive contextual information for a convenience store worker to readily access what s/he is interested in. More specifically, we can embed sensors into a convenience store to detect and monitor the number of people standing in various parts of the store. For example, one of the most high traffic areas within a convenience store is in front of the cash register. We can identify this area as a "hot zone" and when the embedded sensors (e.g. WSN-based floorboards) detect a certain number of people standing in this area, a signal for assistance will be transmitted to other clerks in other areas of the store. In addition to detecting the number of people waiting, these sensors can also be utilized for security purposes. They can detect and alert employees if there is unusual activity in restricted access areas of the store.

2) Mobile Devices for Instant Assistance Request

Since the workload in a store is often unpredictable and spontaneous, we suggest a frontline service employee needs a mechanism to send out assistance requests to another clerk who carries a mobile device. This mechanism can also reside in the Point of Systems.

In short, seamless devices can serve several purposes in a convenience store environment. They can work in tandem

with frontline service employees to monitor in-store activities; moreover, these devices can collect real time data for subsequent research and practical purposes.

In contrast to seamless devices and technologies, seamful devices and technologies are deployed with the intent of engaging customers, or at least to distract them from the tedium of waiting in line, or to provide alternative methods of checking out, to shorten their wait. The seamful devices and technologies we currently suggest to deploy into a convenience store environment are as follows:

B. Seamful Actuating for Attentively Providing Ambient Services

1) Attention Distraction using playful and informative technologies

Currently, there are some approaches, such as the Get in Line program developed by Carnegie Mellon University that try to make waiting-in-line less boring and more interactive. This may be a promising approach for an amusement park but it may not be appropriate in a convenience store setting, because of its shorter duration of waiting and demands for higher efficiency. However, we suggest that providing segments of practical, useful information or entertaining interactive activity will help distract customers from focusing on the reality that they may be wasting time.

2) Alternative Check-out Choice

Certain technologies can be chosen to decrease the time spent waiting in line, as explored by Katz *et al.* [7]. Customers can preorder items on the Internet, or by telephone and pick up their purchases at self-service counters. Alternative checkout services may allow customers to avoid entering hot zones, and give them more control over their time.

In summary, by providing customers with useful, and perhaps enjoyable distractions and alternatives through seamful design and technologies, we envision that the waiting experience inside a convenience store may become more pleasant and purposeful.

VI. CONCLUSION

From our research thus far, we have uncovered the following issues regarding convenience store working conditions; first, predictably, their work tasks are varied, scattered and fragmented. Secondly, waiting in line causes consternation for both the customer and employee. Thirdly, frontline service workers must employ considerable implicit emotional labor and skills to carry out their roles. We find that these invisible skills are a critical component for interacting efficiently with customers. However, we further discover that these skills are not adequately supported, either through employee training or by the physical work environment. (Aspects relating to employee training are beyond the scope of this paper, but can be found in our other research). For this research, we proposed some technical enhancements to alleviate some of the strains derived from unpleasant customer interactions. We have proposed a hybrid strategy to seamlessly or seamfully weave technologies into a convenience store. These enhancements

will give us the opportunity to potentially provide some support for the invisible skills necessary for successful service experiences.

We emphasize that the nature and content of convenience store service experiences are complicated and multi-dimensional. However, we believe through multi-disciplinary research and applications, we will be able to create a more human-centric, user-friendly overall convenience store experience.

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