Store performance improvement through layout optimization in the fashion retail industry

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Abstract

Facility layout is an important topic in operations management though it is usually viewed from the manufacturing perspective. Service operation layouts are not presented very deeply. There are more available sources in the retailing literature, but store layout itself is usually not in the focus. In this paper we analyze the current layout of a store of a fashion retailer. We chose the store of a major fashion retailer firm in Hungary. The research is scheduled between March – June 2018. We carry out observations to map customer flow and footfalls around the store and analyze the data.

Keywords: Facility layout, Retail service layout, Fashion retail

Introduction

Facility layout is the physical distribution of e.g. machines, equipment, offices, rooms within an organisation. It determines the location of inventories, resources and their relationship with each other (Waters, 2002). It also has serious strategic implications, because it can create the capacity, processes, flexibility, costs, work quality, customer relationship and facility image needed for the competitive advantage of the organisation. (Heizer – Render, 2005)

Concerning service facility layouts, the literature is not so abundant. First, we reviewed the textbook literature of operations management. Our findings are summarized in Table 1 below. Sources (1)-(6) are *operations management textbooks*, sources (7)-(9) are *service operations management textbooks* (references can be found under Table 1). Looking at sources (1)-(6) it is clear that manufacturing layouts outweigh service layouts. Unfortunately, the picture is not better if we take a look at the *service operations management textbooks*. Source (7) does not contain anything about special service facility layouts. Source (8) writes about those layouts that can be found in some of the *operations management textbooks*. Source (9) does not even investigate the topic of layouts. We found this situation quite surprising, because we think that the creation of efficient and proper service layout for service facilities should be as important as in the case of manufacturing facilities.

Table 1 – Types of facility layouts in (service) operations management textbooks

Facility layout types	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

	1	2	3	4	5	6	7	8	9
Process	X	X	X	X	X	X	X		
Product	X	X	X	X	X	X	X		
Hybrid	X			X					
Cellular		X		X	X				
Fixed position	X	X	X	X	X	X			
Retail	X	X	X					X	
Warehouse	X		X					X	
Office	X	X	X					X	
Service facility				X					
Freeflow						X			
Grid						X			
Spine						X			
Loop						X			

Sources in Table 1: (1) Waters (2002); (2) Chase et al. (2006); (3) Heizer – Render (2005); (4) Gaither – Frazier (2002); (5) Slack et al. (2006); (6) Russell – Taylor (2009); (7) Fitzsimmons – Fitzsimmons (2007); (8) Haksever et al. (1999); (9) Johnston – Clark (2008)

As the store we investigated operates in the fashion retail industry, we felt it necessary to also look around in the fields of retail and fashion management. In these fields store layout is usually not investigated on its own as it is one important part of store image. Because of this phenomenon it is hard to find sources that highlight the role of store layout, not to mention fashion store layout which counts as a very special topic.

The importance of store layout in the fashion retail sector
The fashion retail sector is highly competitive. In order to be successful, they need to position themselves well and store atmosphere is very important in this sector. (Birtwistle – Shearer, 2001, cited by Newman – Patel, 2004). The main task of visual merchandising is to create this atmosphere which can be considered as a critical success factor. Visual merchandising is the way via the fashion store communicates with the customer and tries to raise the customer's attention (Lea-Greenwood, 1998). The retail management literature usually treats store layout as one element of visual merchandising (see e.g. Varley (2006) where store layout is described in the chapter about visual merchandising). According to Newman (2003) (cited by Newman – Patel, 2004) store layout strongly influences customers' perceptions about store image and reputation. Because of this it is important to rethink those elements that shape store image. A well created store image can seriously enhance the messages to the customers and the positioning of the brand. Inside the store visual merchandising and store layout can further strengthen and support this perception to the customer.

Unfortunately, the literature mainly focuses on supermarkets or grocery stores, and specialized retail stores (like fashion retailers) are not well covered in terms of layout. Nonetheless there are some (five to be precise) rules of thumb for general retail layouts. First, the high-draw items should be located around the periphery of the store. Second, high-impulse and high-margin items should be placed on prominent locations (e.g. house wares, beauty aids, shampoo). This increases the probability that customers purchase these products even if they do not really need them. Third, distribute power items to both sides of an aisle and disperse them to increase the viewing of other items. Fourth, higher priced items should be placed on end-aisle locations because they have a high exposure rate. Fifth, the positioning of the lead-off department should be selected

carefully in order to convey the mission of the store (Aghazadeh, 2005; Aghazadeh, 2006).

Retail management literature usually differentiates between three traditional layout types (Levy – Weitz, 2001; cited by Vrechopoulos et al., 2004). The first one is the „*grid*" layout, which is a rectangular arrangement of displays and long aisles that generally run parallel to one another.

The second is the „*freeform*" layout, which is a free-flowing and asymmetric arrangement of displays and aisles, with a great variety in sizes, shapes and styles of displays. The fashion store investigated by our research also has this type of layout.

The third type is the „*racetrack or boutique*" layout, which consists of individual, semi-separate areas, each built around a particular theme. The layout leads the customer along specific paths in order to visit as many different areas as possible.

Retail layouts also have three basic functions (Aghazadeh, 2005):

- The layout should offer appropriate space for display and examination. It is important that all the departments are located so that they suit the buying process. An effective layout aids controlling the flow of traffic throughout the store.
- Recommend the items that are considered high quality, e.g. by placing them in prominent locations, near entrances and along main aisles.
- Assist in obtaining positive publicity. An ideal layout would give the same level of desirability for all locations in the store.

After presenting the three main retail layout types we can conclude that facility layout can influence many aspects of the buying process. It has effect on perceived utility (e.g. in case of planned shopping the product is easy to locate), ease of traffic, shopping experience and shopping time, though store layout itself is usually not in the focus. A recent literature review by Shandong et al. (2018) from 32 journals over the period of 2008-2016 also supports this.

The relationship between store layout and customer behaviour
Customer behaviour is strongly influenced by store image – to achieve this, the proper planning of the store layout is unavoidable, as the plan of the selling floor determines customer flow around the store, shopping behaviour, shopping atmosphere and operatiing efficiency. Besides that, store layout also affects loyalty towards the store and acceptance of prices by the customers – it serves not only the satisfaction of customer needs, but also alters their preferences and wishes (Vrechopoulos et al., 2004).

These phenomena are supported by psychological and neuropsychological studies which unanimously showed the importance of cognitive maps. Unfortunately, there are not so many studies related directly to customers, though it can be a vital factor for successful retailing. Sommer and Atkins (1982) conducted a research, where they asked the customers to place 11 products on the ground-plan of the store (they tried to figure out how these products are related to their cognitive maps). Most store is designed so that the customer starts walking towards his/her right, because most people are right-handed. During the research two customers executed a test, in which one of them walked around the store clockwise, while the other made the same counter-clockwise. The customer who walked clockwise remembered the store layout and the periphery products better, and spent more than the other customer, who walked around counter-clockwise. Based on these results it seems that there is a relationship between the detailedness of mental memories and the amount of money spent.

Another study investigated customer flow and search patterns. If clockwise layouts are better for the customer, he/she should find the desired products sooner. The research supported this hypothesis, so this kind of shopping seems to be more efficient. We can conclude that the customers' mental map is essential for their behavior (Groeppel-Klein – Bartmann, 2008).

Customer behavior measurement
The documentation and understanding of customer behavior is pivotal in order to be successful in the retail sector (Newman et al., 2002). There are numerous methods to observe customers.

One of the simpler methods is manual observation where customer behavior was recorded manually and was analyzed later. A disadvantage of the method is its subjectivity and its effect on the process (e.g. the customer started to behave differently when he/she felt being observed) and this leads to a reduction in data validity (Dodd et al., 1998).

Another possibility would be observation by cameras which can provide objective behavioral patterns. A special version of this method is the electronic footfall monitoring. These systems count the number of customers who enter or exit the store. Fashion retailers are eager to use footfall monitoring because footfall number is high and conversion (buying) rate is low compared to other sectors. (Dodd et al., 1998; Newman et al., 2002; Kirkup, 1999). Unfortunately, more complex and sophisticated camera observation systems in the fashion retail sector are not widespread in Hungary at all. The store we investigated is equipped with an electronic footfall monitoring system at the entrance and a CCTV system is also installed, but for security reasons, so its placement is not ideal for mapping purposes. Because of this fact we had to stick to manual observation in our research.

Research methodology
We chose a store of a major fast fashion retailer firm in Budapest, Hungary. The store is located in the downtown, frequently visited by tourists. The store opened in early 2016, so we are able to investigate the store in its initial phase, while benchmark data are already available. The store itself has two levels, one for men's and one for women's apparel. Of those, the women's apparel level is located at the street level, while the men's apparel level is located under the women's apparel. The research is scheduled between March – June 2018 and we are going to apply different research methods. We conduct interviews with the store manager and with the staff in the store. We also carry out manual and visual observations to map customer flow and footfalls around the men apparel level of the store and to identify hot and cold spots (the store has CCTV cameras installed, but for security reasons, so their placement is not ideal for mapping purposes). We use these data to analyze the current layout and make recommendations to improve store efficiency. The company preferred to remain anonymous, so we cannot give out its identity.

First, we made a drawing of the current layout of the store. We record customer flows on this drawing, using a separate sheet for each observed customer. We also collect some additional information such as gender, age, time spent in the store and buying (the customer bought something or left without buying) and KPIs like conversion rate and UPT (unit per transaction). For the analysis we divide the store into zones. The main sections of the store are the following:

- 1) the exterior of the store, customers enter and exit the store here.
- 2) entrance and exit zones, very few products are displayed here.
- 3) men's section.
- 4) women's section. The cashier's desk is also here.
- 5) fitting rooms.

As the data collection is still in progress, now we can only share the line of thought of our research. We collect data on comparable time periods in order to filter out as many influencing factors as possible. Customers are selected randomly and we record their movement around the store by following them.

Analysis and results

First, we investigate which zones are the most and least visited ones in the store. Of course, these data only tell us whether the customer was in a particular zone or not, but we do not know anything about his/her actions based on these data. It is possible that a zone is highly visited because it is mainly a traffic zone, and the customers do not spend much time there looking around. These zones can be identified by the buying preferences (i.e. did not buy anything and did not visit the fitting rooms either / did not buy anything but visited the fitting room / bought a product) of the customers.

Next, we analyze the traffic routes between the zones. We identify the most and least frequented routes and also the flow of movement between the zones.

After mapping the visiting and traffic patterns we examine which zones are the most interesting for the customers, where do the customers spend more time, where do they view the products and so on. During the observation we also take into account whether the customer's interest in the product was more serious or not. We can assess the role of a zone by a ratio. In every documented case we calculate this ratio for every zone, if the observed customer visited that zone. This ratio shows us which zones serve mainly traffic purposes and which are the zones customers were interested in. The higher the ratio the more interested customers were in that particular zone. We can compare the zones to each other by assessing this ratio.

Conclusion

After the analysis we will be able to differentiate the zones from each other based on their roles. There are zones that mostly serve traffic purposes while others are popular among customers because they are interested in the displayed products. We expect that the motion of the customers also supports some earlier results, namely that customers prefer moving clockwise and prefer their right-hand side.

Our research deals with a practical and relevant problem. From business perspective it may add valuable insight to the firm and the store manager. As the men's apparel section is located underneath the street level, the store manager typically does not have direct visual oversight of it, so no detailed information is available of customer movements and preferences there. From the perspective of (service) operations management the paper investigates a problem which recently belongs to the domain of retailing to a greater extent, and which is not well covered in the operations management literature. We think that our research, which is based on an actual fashion retail store, can provide results that can also be used in teaching (service) operations management.

There will be of course some limitations of our research. It is sure that the method of observation causes some errors during the documentation of customer flow. We learn on-the-job how can we improve the quality of our observations. It is also important to

tell that besides store layout there are other important factors that affect customer behavior – e.g. the price of the different products, just to mention one. Nonetheless we think that our results demonstrate that store layout needs to be taken into account and the store management can orientate customers towards or away from certain parts of the store purely by the layout of the store.

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