Clothes maketh the man and the regional mall

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ABSTRACT

The attraction of shopping malls as a retailing structure can be explained by the interrelationships that exist between stores and the benefits these provide consumers. Malls can provide centers or anchors, (department and supermarkets), attractions (fashion, cinema and entertainment) and reasons to prolong a shopping trip (or stickiness, such as coffee, snacks and meals), which benefit in an ecological sense other retailers. In this paper we argue that the importance of attractions (destinations) is crucial for the survival of regional malls.

Keywords: simulation, agent based modelling, malls, regional development, anchors, attractions, stickiness, consumer behavior, retailing

1. INTRODUCTION

Shopping malls, are an important part of any developing and advanced economy. In the United States, for example, there are over 50 000 shopping centers and malls, which contribute an estimated 2.3 trillion dollars in sales to the world's largest economy and account for 75% of all non-automotive consumer sales (Miller & Washington, 2011). Shopping malls are also a feature of many towns and cities around the world. In fact, they are built to international templates: inside a mall in Rio de Janeiro looks just like inside a mall in Sydney or Paris, with the same brands and structure. Thus it is reasonable to suppose that malls have effectively evolved to an optimal layout and balance of retail options (Yuo & Lizieri, 2013). There is evidence that shopping malls have been slowly disappearing in the developed world. Retail consultant Howard Davidowitz (cited in Peterson, 2014) predicts half of all shopping malls to fail within the next 15 to 20 years. Current estimates also suggest that 15% of all current US malls will fail in the next years and this is reflected in US retailer Sears closing some 300 stores since 2010 (Peterson, 2014) and the investment in malls falling in the US from a high 175 million square feet in 2002 to 50 million square feet in 2011 (Miller & Washington, 2011). Malls in lower and middle class areas are expected to suffer the most (Peterson, 2014). The picture in Europe appears a little different, where there remains continued investment in malls, despite concerns about the effects of government austerity and economic conditions (Taylor, 2011). Malls, as do other brick and mortar retailers, also face the global threat of increasing online purchases by consumers (Book Publishing Report, 2012; French, 2013; Speer, 2012). While the economic impacts of malls are well understood, malls can also provide community benefits in regional areas:

- They provide a destination, especially in regional, or poor neighbourhoods, where other leisure options might be limited (West & Orr, 2003).
- They provide retail and service jobs with additional support jobs in mall management and maintenance (Bernat, 2005).

• They may contribute to a sense of wellbeing and satisfaction of consumers (El Hedhli, Chebat, & Sirgy, 2013).

Note that these community benefits, have lead some commentators to suggest that regional malls are commercially more viable than those in urban centers, partly because of their different structures and their fostering of consumer loyalty (Bodamer, 2011).

Given these community and economic benefits, there is need to investigate how regional shopping centers can be designed to attract and retain consumers so that a greater amount of purchases occur locally. The research also sought to understand the drivers of mall structure and the threats it might experience. This paper outlines a simulation model based on data from malls in Australia in regional and big city environments. We find that there are tipping points of mall survival based on the mix of attractions (destinations effects) and retention (coffee shops and food outlets), when compared to the option of purchasing online. Our preliminary results suggest the importance of fashion outlets as attractors of consumers to malls, which is mirrored in the occupancy statistics we collected. The danger, we caution, is that the consumers of fashion, especially Gen Y and young consumers are being drawn to online purchases, and without such a group's patronage, malls in both regional and urban centers may come under significant threat.

2. LITERATURE REVIEW

2.1. Choice of channel: Traditional channels versus online retailing

The choice between online versus traditional retail bricks and mortar buying behavior has been a topic of much debate over the last decade. The research has focused on the explanation of the migration to online, away from traditional retail purchases. Reasons for purchasing online rather than in-store include convenience (Rohm & 2004), lower prices Swaminathan, (Junhong, Chintagunta, & Cebollada, 2008) and greater choice (Liu, Burns, & Hou, 2013). Factors which inhibit online purchasing are; risk of fraud (Huong & Coghill, 2008), lack of trust (Toufaily, Souiden, & Ladhari, 2013) and the presence of incomplete information about the retailer (Dennis, Jayawardhena, & Papamatthaiou, 2010).

Because of the perceived risk of fraud, the need to develop trusting relationships with online retailers in an arena of incomplete and misleading information, consumers rely on word of mouth (WOM) and online reviews more than they do for traditional retailers (Utz, Kerkhof, & van den Bos, 2012). Related to WOM, is the role of social norms of behavior. That is, consumers see online retailing as becoming more useful and easier to use, because of the beliefs and actions of others (Činjarević, Tatić, & Petrić, 2011; Pavlou, 2002; Pookulangara, Hawley, & Xiao, 2011). Consumers do not only decide to use one channel of distribution (online versus brick and mortar retail) for all aspects of decision making. There is emerging evidence that consumers may use some channels to search for information such as online for prices and product availability (often called 'webrooming'), see (Anderson, Fong, Simester, & Tucker, 2010; Sands, Ferraro, & Luxton, 2010) and for others, use retail stores for purchases and deliveries (Chatterjee, 2010; Tuttle, 2013) The deciding factor as to whether the final purchase is made online or offline, appears to be the expertise and the fulfillment of gratification of consumers (Boyer & Hult, 2006; Činjarević et al., 2011). Consumers, who use traditional retailing as delivery or purchase points, can have a faster gratification of needs and wants than consumers who have to wait for delivery, and also may experience less risk since they are purchasing or receiving product or services through more traditional channels. There is also a risk for online retailers that a failure to deliver a product or service within a specified time can lead to greater consumer anxiety and smaller future order sizes (Rao, Griffis, & Goldsby, 2011).

2.2. Consumer behavior within a shopping mall and the mall as an ecosystem

While the growth of online purchasing has received considerable attention by researchers, as alluded to earlier, many consumer decisions still take place in more traditional retail formats such as malls. Malls themselves are significant attractors of consumer patronage, especially in developing economies, where they represent the advent of progress and western mystique (Arslan, Sezer, & Isigicok, 2010). One could also argue that malls provide people in rural and regional areas, experiences and access the consumer lifestyles of the bigger cities. Research suggests that the reasons consumer like to go to shopping malls include: comfort, entertainment, diversity, mall essence (or atmospherics), convenience, and luxury (Ammani, 2013; El-Adly, 2007). Other studies have conceptualized the mall experience of consumers as being either seductive, acting as interactive museum, a social arena, and functional means of obtaining of goods and services (Gilboa & Vilnai-Yavetz, 2013). Mall attendance has also been linked to a personality trait of fashion orientation (Michon, Chebat, Yu, & Lemarié, 2015). Research from India, suggests that anchor stores (supermarket and department stores), or one stop shopping, are an important driver for mall patronage (Swamynathan, Mansurali, & Chandrasekhar, 2013).

There are also benefits (increased traffic and complementary sales) for other retail chains collocating with anchor stores in shopping centers. Importantly, these benefits outweigh any increased competition from similar stores (Vitorino, 2012). This led some researchers to argue that the tenant-mix of types of stores (anchors and attractors) can be viewed as an ecosystem, where there are symbiotic relationships between different types of stores (Yiu & Xu, 2012). Importantly,

smaller stores, which may pay more rent per floor-space area have been shown to benefit from a "free rider" effect and access to externalities available to them in a shopping mall (Carter, 2009, p. 177). Other stores which provide benefits to consumers, and help retain them longer in malls are food and beverage outlets. US research suggests about 7% of consumers go to malls primarily for food and these venues encourage consumers to stay on average an extra 45 minutes in a mall, and will double their spend to an average of \$98.40 per trip (Miller, 2011, p. 112). It would therefore seem that the success of a mall depends on the interrelationships between three types of stores:

- Anchors (which attract consumers to the mall for functional reasons, such as grocery shopping and help generate mall traffic and externalities.
- Attractors (fashion and speciality retailers) which attract consumers for more discretionary spends.
- Retainers, such as coffee shops and food outlets, which make the consumer stay longer in the mall and so increase their discretionary spend.

The next section of this paper outlines the design of the simulation to examine what combinations of these factors make a sustainable retail ecosystem.

3. METHOD

3.1. Preliminary analysis on retail structure

We collected data on regional and suburban malls from two mall chains in Australia, the Stockland and Westfield chains. The information was downloaded from the of websites the chains respective at. http://www.stockland.com.au and http://www.westfield.com.au/. Regional malls are typically an order smaller than suburban and urban malls. Figure 1 shows the distribution of retailers in ten regional malls as compared to a suburban mall. Being designed around the department or "anchor" stores, regional malls have 0-3 department stores, while a standard suburban mall might have 5 or more department stores. As can be seen from Figure 1, the number of specialist retailers in a mall scales with the number of department stores.



Figure 1: Distribution of specialty and department stores in malls

3.2. Simulation Model

An Agent Based Model (ABM) based simulation was constructed of a regional mall based around the mall designs from Stockland and Westfield mall chains examined in the previous section. Only two department stores were placed in the regional mall with 30 specialty stores, which would include "fast food" and coffee chains as well as fashion retailers and service providers such as hair and nail salons, massage parlors, bank branches and other services. A regional mall would not typically include the more extensive entertainment services that would be seen in a suburban mall, such as cinema complexes or gyms. This model simulates the choice of consumers whether to purchase a particular product through a bricks and mortar store or through an online retailer. For simplicity we assume that the customers make such a choice for each type of product. Different products are accommodated by altering parameters in the model to produce a prediction of the social norm for retailing choice for each product.

3.2.1. Customers

The customers are represented by an agent, denoted *i*. Customers are randomly connected to other customers and exchange information about their retailing experiences through these social networks. The more links within the networks of customers the more effectively information about retailing alternatives can pass through the customers. The probability of agent *i* linking to another agent is given by the parameter η , which is randomly calculated for each agent.

Each time step t, there is a chance that the agent will perceive a need to make a purchase. The agent then chooses whether to purchase the product from the bricks and mortar retailer at a mall (BMR) or the online retailer (OR). The retailing choice of customer i at time step tdenoted $c_i(t)$ depends on its experience $x_{ij}(t)$ with the jbeing one of the categories of retailer (BMR or OR).

We assume the probability of choosing between the option of shopping from a retailer at a mall or an online retailer is a logistic function of the customer's levels of past experience with the retailers. The probability of customer i choosing BMR at time step t is then:

$$P\{i \text{ chooses } BMR\} = \frac{e^{\beta(x_{i,BMR}(t) - x_{i,OR}(t))}}{1 + e^{\beta(x_{i,BMR}(t) - x_{i,OR}(t))}}$$
(1)

This logistic equation is in common use in studying choice in economics (McFadden, 1974) and in marketing. The beta parameter controls the degree of noise in the model. When beta is zero, all options have equal likelihood. As beta increases, one choice (the higher experience or utility) increases in probability eventually excluding the alternative choice. The probability function (Eq. 1) arises naturally as the equilibrium solution to a variety of equations, such as the Fokker Planck diffusion equation and classical thermodynamics (Solé, 2011).

After the calculation of all the customers' experiences, the customers then share the experiences across their social networks. To calculate the sharing of information about retailers, each agent calculates a weighted average of their own experience with each type of retailer this time step with the experience of each of their network neighbors. The weight given to the neighbors' experience is $\alpha \in [0-1]$.

3.2.2. Department stores and specialist retailers

To simplify the simulation we assume only two types of retailers at the mall, department stores and specialist retailers. All department stores are retail destinations, so can initiate an agent's visit to a mall. For the specialist retailers, only a portion are retail destinations, which might be a hair salon or a gym and thus might be able to initiate an agent's decision to visit the mall, but the majority are coffee shops or fast food stores and are assumed to only generate impulse purchases from customers passing by the store on the way to their intended retail destination.

This ability of some stores to generate purchases from passing customers is what we call "stickiness". However this feature of malls is critical to their designs, which generally force customers to travel past multiple other retailers on their path to their intended destination at the mall. We assume that the number of impulse purchases customers make while in the mall is an important consideration in their choice to visit the mall.

3.2.3. Environment

Figure 2 shows the details of the mall environment with the regional mall pictured in the upper half of the environment and the regional community pictured in the lower. The social network of the agents is represented by lines joining other agents.

The mall is composed of two department stores: the larger house symbols colored red and blue. The retail specialists represented by the smaller house symbols colored in yellow. Each time step, there is a chance of an agent visiting the mall. For a visit the agent is randomly placed in the mall entrance area- the grey area between the mall and the community- and then the agent

travels towards the retail destination which initiated the shopping trip. As the agent travels to their chosen destination retailer, either a department store or one of the destination specialist retailers, the agent may come within a maximum distance of a specialist store or a department store. There is a chance, determined by the stickiness of the retailer and department store, that the agent will make a purchase with that store which was not the intended destination for the agent's visit to the mall. The agent then makes a purchase, incrementing the resources of the store.

When the agent reaches their destination retailer, the agent makes the purchase which was the initiation of the shopping trip, increasing the resources of the store and is then returned to the community. The number of transactions- both intended and impulse- that the agent made on the shopping trip then determines the agent's experience of the shopping trip, which the agent then shares with their social network on returning to the community. The greater the number of purchases at the mall, the better the experience and thus the more likely an agent and the agent's social network is to return to the mall on future time steps. Thus stickiness has a benefit to an individual store by generating a purchase, but also a benefit for all other retailers by increasing future visits to the mall.



Figure 2: Environment of the simulation

3.2.4. Simulation values and methodology

The ABM was created in *NetLogo* (Wilensky, 1999). In this version the only agents are the consumers, who all buy the same product, but choose between OR and BMR. The number of consumers is set at 100. The customers' initial levels of experience of the two categories of retails are randomized. The levels of the other parameters for the simulations are presented in Table 2 (see results of simulation runs).

 Table 1: Model parameters and their values

Parameter	Symbol	Value
Probability of forming links	Н	0.7
with other customers		
Degree of noise in customer	В	[0100]
decision		
Importance of social network	α	0.5
information		
Average stickiness of		[01]
specialist retailers		
Number of specialist retail		[030]
destinations		

We simulate various designs of a regional mall by varying the parameters which we assume a mall manager might have some control over, being the types of stores put in each location (the number of destination retailers chosen, as well as the average attractiveness/stickiness of specialist retailers in the mall).

4. **RESULTS**

Table 2 and Table 3 show the results of simulations in each of the models for differing designs of the regional mall. For each level of average stickiness and number of destinations, the average number of surviving specialist retailers (out of 30 original retailers in the simulation) for 50 runs is presented. As can be seen from Table 2, the number of surviving specialist retailers increases in the number of retail destinations as well as the average stickiness of the retailers. There is also significant complementarity among the specialist retailers so that at low levels of average stickiness even being a retail destination is not a guarantee of survival, while at high stickiness many of the retailers which are not destinations survive, as well as the destination retailers.

Table 2: Results of the simulations: Number of surviving	,
specialist retailers out of 30 originals, $\beta=2$	

	Average stickiness of specialist retailers			
Number of destinations	0.1	0.3	0.5	0.7
1	1.9	6.5	9.5	12.0
4	4.5	8.4	12.4	15.4
7	6.7	10.6	14.2	17.5
10	6.7	11.4	15.6	18.9
13	6.5	11.5	15.9	19.4

Table 3 shows the effect of a rise of the β or noise factor in the decision of consumers between shopping at the mall and shopping online. It can be seen from Table 3 that a rise in β leads to a decline in the average number of surviving specialist retailers.

A higher β means that consumers have less randomness in their decision between the two options and are thus more likely to make the decision based on the past shopping experiences and other known factors. Assuming that the online option is cheaper, one interpretation of a rise in β is that it represents a fall in income, which makes consumers more price-conscious. A fall in customer incomes leads to a drop in the average number of surviving retailers in the regional malls.

Table 3: Results of the simulations: Number of surviving specialist retailers out of 30 originals, β =20

	Average stickiness of specialist retailers			
Number of destinations	0.1	0.3	0.5	0.7
1	1.5	5.3	8.5	10.8
4	4.3	7.5	10.9	14.12
7	5.4	9.2	13.0	16.14
10	5.4	9.4	13.7	16.9
13	5.2	9.8	14.4	17.8

5. DISCUSSIONS

As we noted in the introduction, shopping malls are an endangered species. The simulation model demonstrates that the number of sticky shops (fashion etc) increases nonlinearly with mall size, where the indicator of mall size is the number of big anchor stores.

The tipping point in a mall's survival is an interesting mixture of positive feedback and other factors related to the mall strategy in terms of activity balance. If the mall experience declines, more shops will go bankrupt, making the experience decline even further. Without the specialist retailers (fashion etc), the mall will have very few shops, the anchor stores will pull out and the mall will close. But the specialist retailers may be exploited by the mall management, paying higher costs, both in rent, and in profit creaming. The mall can respond to this type of positive feedback effect, by reducing costs and adding incentives for the stickies, if the numbers start to decline, and there is already evidence of this occurring. A more dire situation is if the tipping point is a second order phase transition; such transitions, as for example in stock market crashes (Bossomaier, Barnett, & Harre, 2013).The essential feature of such tipping points is that a lot of information flows among the agents which make up the system, then everything goes quiet, and the system falls over (Harré & Bossomaier, 2009). The challenge, still an open research question for complex systems in general, is detecting and acting, before the system goes quiet.

So, given the social context of malls, especially in smaller communities, what can be done? The indications from the simulation model, are that the number of honey pots needs to be a higher proportion of the total venues, than in the biggest premium malls. One strategy is the *deus ex machina* fusion of clothes with food and other things, combining stickiness and destination effects. Other mixed mode offerings might include free internet access, and mixed-mode retailing which combines webbrowsing and bricks and mortar retailing like the searchable mall concept of Westfield.

Other honey pots might include child play areas (such as McDonalds have already introduced), and entertainment areas. Cinemas may require a threshold mall size to be viable, but there could be options in terms of games rooms, ranging from multi-player computer games to card and board games for seniors.

An additional, important consideration is the way the mall tipping point is very sensitive to the β parameter. At high β values, low noise, the tipping point as a function of number of honey points is sharp. But low noise corresponds to reduced money, or reduced willingness to explore and take risks. Thus as economic conditions decline, the mall may rapidly enter a domain, where it could go over the tipping point with little warning and opportunity to take ameliorative action.

The evidence, though, from the simulation model is clear: malls need to be proactive in generating new strategies to ensure their survival. Is the future in the US one of discount malls and premium malls only?

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