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A Facilities Planning Approach on Tenant Mix and Positioning of a Community Shopping Mall

Madonna F. Andrada, Johanz Matthew M. Rivera
School of Industrial Engineering and Engineering Management
Mapua University
Intramuros, Manila, Philippines
mfandrada@mapua.edu.ph, jmmrivera23@gmail.com

Abstract

The shopping mall industry has rapid growth and it is highly attractive in the Philippines. Shopping malls compete with one another through their tenants to increase the malls' foot traffic. This industry is driven by location, land area, mall tenants, anchor stores, and consumer behavior. The industry's primary key success factor is tenant mix. However, as defined by Casazza, (1985), "there is no single optimal tenant mix for shopping malls" and tenant mix should be tailored to meet the location, size, demographic profile and consumer needs. In most cases a tenant mix for one mall could be a mistake for another. Dawson (1983) recommended that in a shopping mall non-anchor stores should not be clustered but dispersed throughout the mall because consumer focus on a shopping mall is changing as non-anchor stores and anchor stores are sharing the spot light as trend setters. In this study, researchers used this new erected shop: King Doña Carmen, as the subject, to determine the tenant mix and positioning that will decrease the payback of this shopping mall. The methodology involves four phases, first, knowing the consumer behavior through survey questionnaire, second, identifying the optimal tenant mix through benchmark with competitors and the result of phase one, third, using linear programming to identify the number and types of store to be placed in each floor and to propose a new layout design using Systematic Layout Planning to improve rent income, and fourth, have a strategy timeline within the term lease of 20 years. It is concluded in the study that the result of the linear programming model to maximize the disposable income of consumers and facilities layout design through Systematic Layout Planning will reduce the company's payback period by two years and increase its monthly rent income.

Keywords
Shopping malls, community malls, tenant mix

1. Introduction

A shopping mall is a modern, chiefly North American, term for a form of shopping precinct or shopping center, in which one or more buildings form a complex of shops representing merchandisers with interconnecting walkways that enable customers to walk from unit to unit. Malls are booming across Asia. The continent is now home to some of the world's largest shopping centers. Many malls in North America are considered "dead" (for the purpose of leasing) when they have no surviving anchor store or successor that could serve as an attraction or as an entry into the mall. This is where the term dead mall came to be, which is a shopping mall with high vacancy rate or low consumer traffic, or that is dated or deteriorating in some manner (Kris Hudson, 2009). Without the pedestrian traffic that anchor stores typically generate, sales volumes decline and rental revenues from these stores can no longer sustain the costly maintenance of these malls (Newman, 2009). Without consumer access, smaller stores inside malls are difficult to reach. The factors affecting the community mall industry are location where it can be identified whether the possible foot traffic to the mall to be built is attractive, land area which influences the gross leasable area of the mall to be built, mall tenants that directly contribute to the mall's retail revenue, and anchor stores that influences pedestrian traffic in the mall, and consumer behavior which is highly variable depending on the trend consumers want. Key success factors in the industry are tenant mix which is the tenant mix that influences the branding image of the mall to the consumers, and involves the selection of tenants that will reside in the mall, where it affects the customer's shopping experience. The gross leasable area is the main resource of a shopping mall that influences how many tenants may lease in the malls, and Omni-channel retailing in which integrates mobile, online, and in-store experiences to complement rather

than compete with one another. King & Sons Realty and Development Corp. is a registered real estate developer. The company was registered with the Securities and Exchange Commission on October 29, 1999 with SEC Registration No. 1562884. Its primary purpose is to acquire, hold, dispose of, by purchase, sale, exchange, mortgage, lease or otherwise to improve, alter, develop, enlarge and manage, conditionally or absolutely, real estate or any interest therein. The company is a family owned corporation registered as a stock corporation, with Narciso Santos as president, Gloria Santos, Danilo Fajardo, and Gilberto Santos as Vice Presidents in Finance, Operations, and Marketing, respectively. Their internal auditor is Gabriel Santos, and has four board members Gian Santos, Gonzalo Santos, Dan Fajardo, and Danica Fajardo. They have 3 malls, two of which is located in Quezon City, and one in Pasig. The company's current operating community malls are Shop King Don Antonio (2015) and Shop King Karangalan (2013). Their latest project Shop King Doña Carmen is expected to open on November 2016. King & Sons Realty and Development Corporation develops and manages their shopping malls, also known as Shop King, unlike other larger scale real estate companies such as Ayala Land and SM Prime Holdings who registers a separate company for their mall management. Their malls, Shop King, falls under the community malls category that features anchor stores larger than neighborhood malls. The company's income on their shopping malls are dependent on their mall tenants, these tenants come in variety of mix some of which are retail, service, food, etc., which is influenced by their gross leasable area and number of tenants in the mall which concludes the critical role of tenants in the shopping mall business. In the case of King & Sons Realty and Development Corporation Shop King malls as of today are leased to them at least in a 20-year period. After the period has expired that is where the company negotiates with the land owner whether to renew the contract of management of endorse the current management to the land owner. Shop King Malls follow a first-come first-serve basis on tenant occupancy. The first tenant to finalize a contract has an advantage among other tenants to choose their tenant location. Each confirmed and registered tenant is under contract for at least 6 months' duration, and required to pay 3 months' security deposits and 1 month rent advance, the amount varies depending on the amount per square meter negotiated per tenant, which can be consumed or refunded upon end of contract. However, the security deposits and rent advances are forfeited upon leaving while under contract. As of May 23, 2017, Shop King Doña Carmen has 20 confirmed tenants out of the estimated total leasable 80 units. At approximately 25% tenancy rate, monthly income is estimated to P 2.1m not including security deposits and advances. Shop King Doña Carmen need to have at least 62 tenants to have an ROI within 7-9 years.

2. Methodology

The researchers used its theoretical framework to identify the optimal tenant mix and positioning of the tenants to improve Shop King Doña Carmen's rent income for the period of the land lease and get a payback period within 7-9 years. The descriptive approach or method was used for the completion of this study. The purpose is to determine buyer behavior and consumer needs and wants using survey method. The consumer survey is the most important source of data. This is because it provided detailed data on what the consumers want and how much they spend on what they want. Updated tenants and location, and monthly rent income from tenants are provided by the company Shop King. The data gives and overview on whether the shopping mall meets what the consumers want. The data collected were recorded and tallied and compared to current situation of the shopping mall. Charts and tables were used for a better and clearer presentation of research findings. The author will be using market survey to assess Shop King Doña Carmen's consumer needs and wants within their service area of 5.0km. The author used the survey questionnaire to acquire information about the needs and wants, and disposable income of consumers in Shop King Doña Carmen. By the use of the identified consumer needs and wants the author tallied the consumer needs and want to the current list of tenants of Shop King Doña Carmen to identify which current tenant satisfied the consumer needs and wants. Shop King Doña Carmen's tenant mix was benchmarked with other competitors within Shop King Doña Carmen's service area if it results in gaps or overlaps. The total number of respondents in the study is 384. Through the result of tallied data and benchmark the author was able to propose a tenant mix. The disposable income of consumers and proposed tenant mix was used to make a theoretical positioning method using linear programming to decrease the payback period of Shop King Doña Carmen and make a revised floor plan to maintain an 81% tenancy rate.

3. Results

The market sample from 384 respondents, identified the potential foot traffic and the disposable income of consumers in Shop King Doña Carmen's service area (5km). Consumer needs and wants has been tallied and the resulting potential foot traffic and disposable income of consumers. In decreasing order, the tenant category with the highest

potential foot traffic is food shops, followed by dessert shops, banks, beverages shops, beauty and health shops, clothing stores, beauty and health services, perfume shops, entertainment services, foot wear shops, bookstores, baby shops, bags shops, cellphone shops, drugstores, restaurants, jewelry and accessories stores, salon, baby services, sports shops, watch services, eyewear stores, other services, toy stores, barbershops, logistics and transport services, hardware stores, appliance stores, office stores, photo services, dental services, furniture stores, printer services, camera shops, and watch stores. The remaining tenant categories had no potential foot traffic. The ten highest foot traffic generators are food shops, dessert shops, banks, beverages shops, beauty and health shops, clothing stores, beauty and health services, perfume shops, entertainment services, and footwear shops. Considering these foot traffic generators, these types of tenant categories should be prioritized. However, considering the disposable income the consumers are willing to spend, the ten highest income generators are the tenant categories of banks, cellphone shops, drugstores, clothing stores, baby shops, bags shops, appliance stores, bookstores, restaurants, and beauty and health shops. Both the foot traffic generators and the income generators have tenant categories in common. These categories are banks, beauty and health shops, and clothing stores. These specific tenant categories should be prioritized as potential tenants in Shop King Doña Carmen. Benchmarking with other competitors, The top 10 with highest ratio of tenant categories in SM City Fairview are food shops with 16.9% of its tenant, clothing stores with 10.6%, beauty and health services with 8.0%, Restaurants with 6.3%, Beverages shops with 6.0%, Dessert shops with 5.8%, Footwear shops with 4.1%, Others, which includes Government agencies such as Phil Health, SSS, etc., with 3.9%, beauty and health shops with 3.4%, and Entertainment services, which includes arcade, karaoke, lotto, etc., with 3.1%. For SM City Novaliches the top 10 tenant categories with the highest ratio are food shops with 23.1%, followed by desserts shops with 9.6%, restaurants with 8.7%, beverages shops with 7.7%, clothing stores with 6.7%, banks with 4.8%, jewelry and accessories stores with 4.8%, beauty and health services with 3.8%, entertainment services with 3.8%, and beauty and health shops with 2.9%. Robinsons Novaliches' top ten tenant categories with high ratios are "others", clothing stores, cellphone shops and services, food shops, footwear shops, beverages shops, beauty and health shops, jewelry and accessories stores, entertainment services, and beauty and health services. With ratios of 18.4%, 14.6%, 13.1%, 13.1%, 5.3%, 4.4%, 2.9%, 2.9%, 2.4%, and 1.9%, respectively.

Table 1. Consumer Needs and Wants Percentage

Market Survey	Percentage
FOOD SHOPS	7.33%
DESSERT SHOPS	7.11%
BANKS	6.96%
BEVERAGES SHOPS	6.01%
BEAUTY AND HEALTH SHOPS	5.83%
CLOTHING STORES	4.56%
BEAUTY AND HEALTH SERVICES	4.34%
PERFUME SHOPS	4.01%
ENTERTAINMENT SERVICES	3.75%
FOOTWEAR SHOPS	3.72%
BOOKSTORES	3.57%
BABY SHOPS	3.32%
BAGS SHOPS	3.24%
CELLPHONE SHOP	3.02%
DRUGSTORES	2.99%
RESTAURANTS	2.99%
JEWELRY AND ACCESSORIES STORES	2.70%
SALON	2.70%
BABY SERVICES	2.59%
SPORTS SHOPS	2.41%
WATCH SERVICE	2.08%
EYEWARE STORES	1.97%
OTHERS SERVICES	1.93%
TOY STORES	1.82%
BARBERSHOPS	1.75%
LOGISTICS AND TRANSPORTS SERVICES	1.42%
HARDWARE STORES	1.09%
APPLIANCE STORES	0.91%
PHOTO SERVICES	0.84%
OFFICE STORES	0.84%
DENTAL SERVICES	0.62%
FURNITURE STORES	0.44%
PRINTER SERVICES	0.44%
CAMERA SHOPS	0.40%
WATCH STORES	0.33%

The consumer needs and wants from the market survey is shown in table 1. The ten highest foot traffic generators are food shops, desserts shops, banks, beverages shops, beauty and health shops, clothing stores, beauty and health services, perfume shops, entertainment services, and footwear shops. The percentage with respect to total potential foot traffic are 7.33%, 7.11%, 6.96%, 6.01%, 5.83%, 4.56%, 4.34%, 4.01%, 3.85%, and 3.72%, respectively. Comparing the percentage of consumer needs and wants with the benchmark with competitors of Shop King Doña Carmen. Every tenant category is relatively in-line with the common tenant categories in SM City Fairview, SM City Novaliches, and Robinsons Novaliches. The average percentage in the benchmark for tenant categories are: Foodshops with 18%, clothing stores with 11%, Beauty and health services with 5%, berverages shops with 6%, and beauty and health shops with 3%. While the resulting percentage in the market survey are: foodshops with 7.33%, clothing stores with 4.56%, beauty and health shops with 4.34%, beverages shops with 6.01%, and beauty and health shops with 5.83%.

Table 2. Proposed Tenant Mix

Tenant Categories	Potential Foot Traffic	Percentage	SQM to be allocated
FOOD SHOPS	201	7.55%	171
DESSERT SHOPS	195	7.32%	166
BANKS	191	7.17%	162
BEVERAGES SHOPS	165	6.19%	140
BEAUTY AND HEALTH SHOPS	160	6.01%	136
CLOTHING STORES	125	4.69%	106
BEAUTY AND HEALTH SERVICES	119	4.47%	101
PERFUME SHOPS	110	4.13%	93
ENTERTAINMENT SERVICES	103	3.87%	87
FOOTWEAR SHOPS	102	3.83%	87
BOOKSTORES	98	3.68%	83
BABY SHOPS	91	3.42%	77
CELLPHONE SHOP	83	3.12%	71
DRUGSTORES	82	3.08%	70
RESTAURANTS	82	3.08%	70
JEWELRY AND ACCESSORIES STORES	74	2.78%	63
SALON	74	2.78%	63
BABY SERVICES	71	2.67%	60
SPORTS SHOPS	66	2.48%	56
WATCH SERVICE	57	2.14%	48
EYEWARE STORES	54	2.03%	46
OTHERS SERVICES	53	1.99%	45
TOY STORES	50	1.88%	42
BARBERSHOPS	48	1.80%	41
LOGISTICS AND TRANSPORTS SERVICES	39	1.46%	33
HARDWARE STORES	30	1.13%	25
APPLIANCE STORES	25	0.94%	21
OFFICE STORES	23	0.86%	20
PHOTO SERVICES	23	0.86%	20
DENTAL SERVICES	17	0.64%	14
FURNITURE STORES	12	0.45%	10
PRINTER SERVICES	12	0.45%	10
CAMERA SHOPS	11	0.41%	9
BAGS SHOPS	9	0.34%	8
WATCH STORES	9	0.34%	8
TOTAL	**2664**		
Total Leasable Area availabe (sqm.)	**2,263.00**		

Using the percentage of the potential foot traffic to be generated and multiplying it to the total available leasable area of Shop King Doña Carmen which is total to 2263 sqm. For the ground floor there is an available leasable area of 672 sqm and for the second floor there is and available leasable area of 1591sqm. The proposed tenant mix ratio allocation per store category is made and shown in table 2 Proposed Tenant Mix.

The researchers used the linear programming model:
Objective:

$$\text{Maximize: } \sum\left(\frac{DI}{TATA}\right)_{mn} x_{mn}$$

Subject to:

$$\sum x_{m1} \leq 672 \text{ sqm}$$
$$\sum x_{m2} \leq 1591 \text{ sqm}$$
$$\sum x_{1n} \leq STA_1$$
$$\sum x_{2n} \leq STA_2$$
$$\vdots$$
$$\sum x_{mn} \leq STA_m$$
$$X_{mn} \geq 0$$

DI – Disposable Income
TATA – Total Area to be Allocated (sqm.)
STA – area in sqm to be allocated per tenant category as shown in table 2

Table 3. Result of LP Model using excel solver

TENANT CATEGORIES	GROUND FLOOR	SECOND FLOOR	MIN. AREA (SQM)	NO. OF STORES	
				GROUND FLOOR	SECOND FLOOR
FOOD SHOPS	0.00	170.74	4.00	0.00	42.69
DESSERT SHOPS	0.00	165.65	4.00	0.00	41.41
BANKS	162.25	0.00	100.00	1.62	0.00
BEVERAGES SHOPS	0.00	140.16	4.00	0.00	35.04
BEAUTY AND HEALTH SHOPS	30.65	105.27	10.00	3.06	10.53
CLOTHING STORES	106.18	0.00	4.00	26.55	0.00
BEAUTY AND HEALTH SERVICES	0.00	101.09	15.00	0.00	6.74
PERFUME SHOPS	0.00	93.44	5.00	0.00	18.69
ENTERTAINMENT SERVICES	0.00	91.00	40.00	0.00	2.28
FOOTWEAR SHOPS	0.00	86.65	4.00	0.00	21.66
BOOKSTORES	0.00	83.25	10.00	0.00	8.32
BABY SHOPS	77.30	0.00	10.00	7.73	0.00
BAGS SHOPS	7.65	0.00	4.00	1.91	0.00
CELLPHONE SHOP	0.00	70.51	4.00	0.00	17.63
DRUGSTORES	69.66	0.00	30.00	2.32	0.00
RESTAURANTS	0.00	69.66	50.00	0.00	1.39
JEWELRY AND ACCESSORIES STORES	62.86	0.00	4.00	15.72	0.00
SALON	0.00	62.86	20.00	0.00	3.14
BABY SERVICES	0.00	60.31	10.00	0.00	6.03
SPORTS SHOPS	56.07	0.00	20.00	2.80	0.00
WATCH SERVICE	0.00	48.42	5.00	0.00	9.68
EYEWARE STORES	0.00	45.87	4.00	0.00	11.47
OTHERS SERVICES	45.02	0.00	40.00	1.13	0.00
TOY STORES	0.00	42.47	8.00	0.00	5.31
BARBERSHOPS	0.00	40.77	20.00	0.00	2.04
LOGISTICS AND TRANSPORTS SERVICES	0.00	33.13	30.00	0.00	1.10
HARDWARE STORES	25.48	0.00	50.00	0.51	0.00
APPLIANCE STORES	21.24	0.00	20.00	1.06	0.00
OFFICE STORES	0.00	16.03	30.00	0.00	0.53
PHOTO SERVICES	0.00	19.54	10.00	0.00	1.95
DENTAL SERVICES	0.00	14.44	10.00	0.00	1.44
FURNITURE STORES	0.00	10.19	50.00	0.00	0.20
PRINTER SERVICES	0.00	10.19	10.00	0.00	1.02
CAMERA SHOPS	0.00	9.34	10.00	0.00	0.93
WATCH STORES	7.65	0.00	5.00	1.53	0.00

The objective function is the summation of the "Maximize" row. Where the "Maximize" row is the sum of the area to be allocated in the tenant category (food shops, dessert shops, etc.) on the ground floor multiplied by the disposable income per total area to be allocated for that tenant category and the area allocated in the tenant category on the second floor multiplied by the disposable income per total area to be allocated for that tenant category. Which is subject to the constraints: Available leasable area for ground floor, where the total area allocated for the ground floor (changing variables) should be less than or equal to the maximum leasable area on the ground floor which is 672 sqm. Available leasable area for second floor, where the total allocated area for second floor (changing variables) should be less than or equal to the maximum leasable area on the second floor which is 1591 sqm. And the maximum possible area allocated to tenant categories, which is the sum of the area allocated to the tenant category (eg. Food shops) on the ground floor and second floor should be less than or equal to the maximum area for that tenant category (e.g 171). See table 2 for reference. Dividing the estimated minimum area per tenant category with the resulting area (changing variables) would give the potential no. of stores to be placed in that specific tenant category, as shown in table 3. The LP model has successfully allocated all leasable areas with the corresponding number of stores per category. Using the data gathered, the authors came up with the layout a revised floor plan that decreased the payback period of Shop King Doña Carmen.

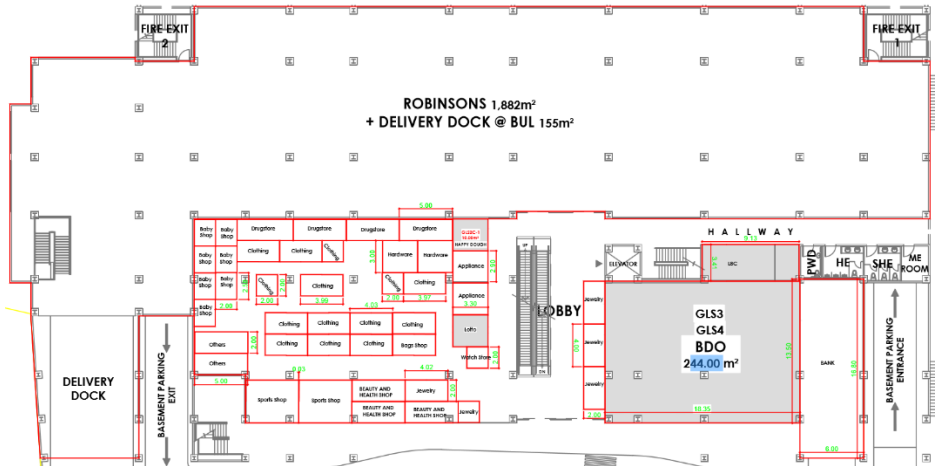

Figure 1. Proposed Floor Plan for Ground Floor

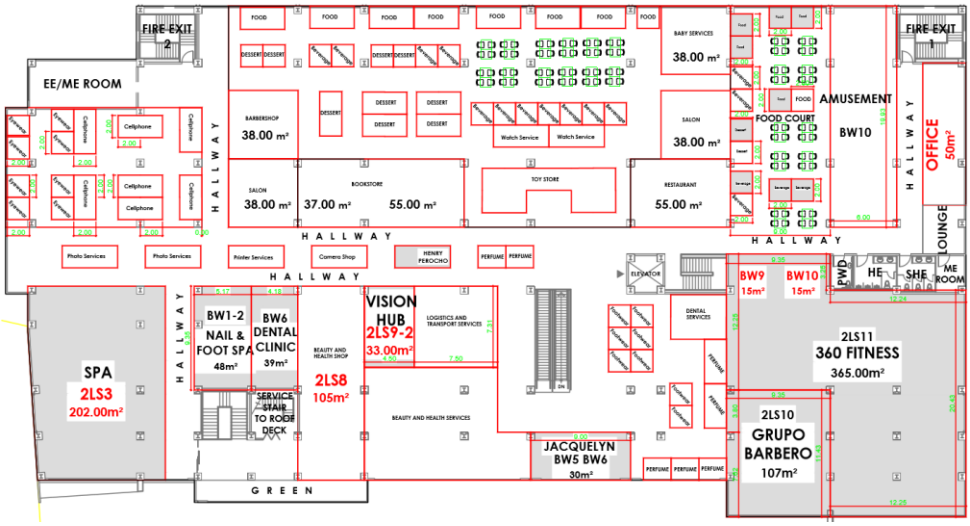

Figure 2. Proposed Floor Plan for Second Floor

As Gruen, V. states, anchor stores or stores that generate high foot traffic are normally located as far from each other as possible to maximize the amount of traffic from one anchor to another. Block layout is used for simple positioning of tenants in Shop King Doña Carmen. The shaded locations are the areas that are already occupied. In the ground floor, the current total tenant capacity is 19 tenants but with the proposed floor plan it became 54, it is suggested that 162 sqm for banks, 30 sqm for beauty and health shops, 106 sqm for clothing stores, 77 sqm for baby shops, 8 sqm for bags shops, 70 sqm for drugstores, 62 sqm for jewelries and accessories, 56 sqm for sports shops, 45 sqm for "others", 25 sqm for hardware stores, 21 sqm for appliance stores, and 7 sqm for watch stores. These tenant categories are arranged in decreasing order by potential foot traffic generated, the ones that generates high foot traffic are banks, beauty and health shops, and clothing stores. In theory, to utilize these foot traffic generators, it should be put as far away from each other as possible. Thus, the proposed floor plan for ground floor is shown in figure 1. In the second floor, the current total tenant capacity is 59 but with the proposed floor plan it became 97, the suggested area in sqm to be allocated for food shops is 170 sqm, dessert shops is 165 sqm, 140 sqm for beverages shops, 105 sqm for beauty and health shops, 101 sqm for beauty and health services, 90 sqm for perfume shops, 91 sqm for entertainment services, 86 sqm for footwear shops, 83 sqm for bookstores, 70 sqm for cellphone shops, 69 sqm for restaurants, 62 sqm for salons, 60 sqm for baby services, 48 sqm for watch service, 45 sqm for eyewear stores, 42 sqm for toy stores, 40 sqm for barbershops, 33 sqm for logistics and transport services, 20 sqm for photo services, 15 sqm for dental services, 10 sqm for printer services, and 10 sqm for camera shops. These tenant categories are arranged in decreasing

order by potential foot traffic generated, in these categories the highest foot traffic generators are food shops, dessert shops, beverages shops, beauty and health shops, and perfume shops. The proposed floor flan for the second floor is shown in figure 2. In comparison, the proposed floor plan was able to generate an increase in income that reduced the payback period by two years, which is in line with the goal of 7-9 years payback period rather than the previous income projection which has a payback period of 9.4 years. Since, the data is based on the consumer needs and wants this tenant mix will be sustainable.

4. Conclusion

The primary objective of the study is to assess the consumer behavior of Shop King Doña Carmen's service area (5km radius) if the mall meets the consumers' needs and wants, which will be used to evaluate Shop King Doña Carmen's tenant mix and benchmark it with competitors near Shop King Doña Carmen. It is concluded in the primary objective of the study that the ten highest foot traffic generators are food shops, dessert shops, banks, beverages shops, beauty and health shops, clothing stores, beauty and health services, perfume shops, entertainment services, and footwear shops. Considering these foot traffic generators, these types of tenant categories should be prioritized. However, considering the disposable income the consumers are willing to spend, the ten highest income generators are the tenant categories of banks, cellphone shops, drugstores, clothing stores, baby shops, bags shops, appliance stores, bookstores, restaurants, and beauty and health shops. Among comparison with the three competitors it is concluded the tenant categories they have most in common are food shops, clothing stores, and beverages shops. Analyzing consumer needs and wants with the current confirmed tenants of Shop King Doña Carmen almost everything is in line with the consumer needs and wants except for one, which is Gym Services. Therefore, using the percentage of the potential foot traffic to be generated and multiplying it to the total leasable area of Shop King Doña Carmen which is total to 6101 sqm. The proposed tenant mix ratio allocation per store category is made and shown in table 3.3 Proposed Tenant Mix. Using the formulated LP model, it has successfully allocated all leasable areas with the corresponding number of stores per category. The store per category is equal to the allotted area in sqm divided by the estimated minimum area per category. Using the data gathered the author was able to recommend a revised floor plan that decreased the payback period of Shop King Doña Carmen.

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Biographies

Madonna F. Andrada is a professor from Mapua University for almost 15 years under the School of Industrial Engineering and Engineering Management. Previously, Madonna was an industry practioneer to various jewelry manufacturing , working on systems operation and design for productivity and process improvement, installation and implementation of production line, facility design layout and inventory management and control. After several years of experience in the industry, she decided to shift in teaching and joined the school. Today, Madonna was handling the following courses for Industrial Engineering students: Production Systems, Production Operations Management, Facilities Planning and Design, Economics , Engineering Management and Organizational Dynamics and Retail Management. Her primary research interests are in the field of: Operations Management such as Inventory Management System, Capacity Planning, and Scheduling, Layout Planning and Design, Warehouse Management, Material Handling and Retail Operations. Apart from these activities, she was also an active member of different school organizations and currently, the Extension Service Coordinator for Social Community Involvement Program

of the department. Madonna's academic background include a B.S. in Industrial Engineering from Mapua Institute of Technology (1996), Career Service Professional from Civil Service Commission (1999) Master in Industrial Engineering and Management from the Polytechnic University of the Philippines (2005) , and Professional Industrial Engineer (2008).

Johanz Matthew M. Rivera earned his bachelor's degree in Engineering Management from Mapúa University before eventually becoming a Fire Officer at the Bureau of Fire Protection in the Philippines. He is an enthusiast of data management and currently his interests lie in the application of Visual Basic Programming in Excel for Data Management. Hanz is a Civil Service Exam (Professional) Passer (April 2016), and a Registered Master Electrician (April 2018). He is currently assigned at Candelaria Fire Station and during his spare time he works on his data management project.