

Motivations, Limitations and Revenue Management Implications of Daily Deal Offerings

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Abstract

Offering daily deals has become a popular marketing approach in recent years. This research investigates whether daily deals add value to suppliers businesses. We investigate motivations for daily deals, revenue management implications and limitations of such, and differences between conventional marketing approaches and daily deal offerings. The research method included questionnaires, interviews, and direct collection of deal data via the internet. We find that daily deals can add value by informing better revenue management practices. Daily deals can be utilized to improve pricing, manage capacity and develop loyalty. We also find that the demand curve for our sample of daily deals is elastic, which reflects the bargain seeking behaviour of buyers. Furthermore, the demand for certain deals is found to be less elastic than others, suggesting that suppliers can potentially offer deals at higher prices to yield more revenue.

Keywords: Daily deals; Price elasticity; Revenue management

Introduction

Technological advancements and the rise of e-commerce have made daily deals a popular marketing approach for helping businesses to gain brand awareness and grow their customer base. Typically, daily deal suppliers offer deep discounts for their products and services by advertising them on the daily deal websites for a limited period of time. The websites are renewed continuously and different combinations of deals are emailed to subscribers every day. Customers who buy goods will normally have them delivered to their local address, whereas customers who buy deals for services are given a period of time to redeem their vouchers. By providing consumers with incentives to buy, suppliers acquire in return detailed sales and demographic information about consumers [1]. The information allows suppliers to analyze existing customers and search for potential opportunities in other market segments. The deals also assist suppliers to achieve their marketing strategies which can include promoting brands, attracting more customers, or increasing earning revenue from returning customers. These benefits, however, are not without certain costs, including the loss of revenue due to the offer and reductions in customers' perceived value of the product or service.

This paper describes research that considers whether daily deals add value to suppliers' businesses, differences that exist between daily deals and conventional marketing approaches, and various limitations and problems of daily deals for suppliers. Suppliers of products and services have different expectations of daily deals depending on the circumstances their business faces. Suppliers may view the deals as a tool to gain exposure for new stores, fill excess capacity during downtime, and provide funds for the business to meet its short term obligations. Suppliers are also aware that benefits gained from daily deals come at a price, and that the profits forgone to promote the deals may not be recovered given the bargain seeking behaviours of customers.

Our analyses consider the characteristics and categories of deals advertised on a New Zealand daily deal website for a period of three weeks. The characteristics include the price after discounts, the quantity of vouchers sold and the length of the redemption period. Categories include for example cafes, bars and restaurants and health care services (See Appendix 1 for a listing of the characteristics and categories). The results show a downward sloping demand curve and different price

elasticity's for different categories of services. When demand is elastic, there is a greater change in the quantity demanded than in the change in price. Since revenue is the product of price and quantity, reducing the price when the demand is elastic will generally increase revenue and benefit a cost leadership strategy. When demand is inelastic, meaning there is a smaller change in the quantity demanded than in the change in price, decreases in price can result in lower revenue. Businesses following a differentiation strategy based on quality may find it more beneficial to maintain their prices.

The results generally show that the demand for deals across all categories is elastic evidenced by smaller gradient values indicating that buyers are price-sensitive. In addition, the demand for deals from high-priced restaurants is more inelastic than low-priced restaurants. This implies that high-priced restaurants should carefully consider possible pitfalls from price discounting. Finally, a positive association is found between prices of the deal and the length of redemption period, which suggests that deals are more expensive if they can be redeemed over a longer period.

This research makes several contributions. Firstly, it adds to the hospitality literature by focusing on suppliers' motivations, marketing impacts, and managerial implications of daily deal websites. According to service dominant logic, understanding customers' needs is essential for the success of any business [2]. Thus, from a practical point of view, it is important for the daily deal websites to understand the benefits and costs to their customers, namely the deal suppliers. Secondly, the debate about daily deals has to date drawn on the United States experience. Based on this evidence, it remains unclear whether daily deals positively impact suppliers' sales figures through, for example,

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opportunities to up-sell or negatively impact longer term profitability. This research examines daily deals in New Zealand, where the population (4 million) and geographical area (104,000 square miles) are significantly smaller than those in the US (318 million and 3.7 million square miles). It considers the deals available through GrabOne, the country's largest site with 19,778 participating businesses (from a total of 53,000 retail organizations) and 1,486,371 members registered out of a total population of 4.4 million (of which 3.5 million are members of the working age population). It is therefore of interest to local deal suppliers to understand how daily deals impact their profitability. Thirdly, we show how information concerning price elasticities can be obtained from analysis of such deals.

The structure of this paper is as follows. The next section reviews the literature and identifies gaps in the literature. The following sections discuss the methodology and report the results including differences between daily deals and other mechanisms, motivations and limitations of offering daily deals, and quantitative analyses. The concluding section discusses the research limitations and avenues for future research.

Previous Research

Daily deal websites evolved from group buying websites, which first became available online in the late 1990s [3]. Consumers typically made purchase commitments through online payment systems without sellers' interventions. Nowadays, group buying websites attract customers through emails and updates and offer daily deals tailored to each local market. There are several relevant literatures for this topic including revenue management, marketing, hospitality and economics.

Revenue management is defined as "the application of information systems and pricing strategies to allocate the right capacity to the right customer at the right price and at the right time" [4]. It aims to improve revenue (and profitability) by setting different prices according to predicted demand levels. Revenue management aims to distinguish between price-sensitive and price-insensitive customers, through distinctions such as off-peak versus peak periods, and restrictive versus flexible conditions. Marmostein et al. [5] discuss how the internet can improve yield management practices, which refers to obtaining the best possible yield from available units of capacity. The internet helps firms manage capacity by leveraging better quality of information (e.g. posted consumer reviews) and faster access to information and translating it into appropriate offers to the market. Edelman et al. [6] illustrate that internet daily deal vouchers can benefit affiliated merchants by facilitating price discrimination and advertising. Vouchers support more profitable price discrimination when the customers buying the vouchers are more price-sensitive than others in a market. Daily deals provide inexpensive advertising that helps to promote a firm's products or services. Furthermore, since there is usually information asymmetry between consumers and suppliers, the quality of goods and services with experience attributes is typically unknown to consumers and cannot be observed prior to consumption [21]. Introductory offers encourage consumers to try a firm they might otherwise ignore, particularly in the case of start-up companies. However, pricing can become a concern for daily deal suppliers as their customers may not be willing to pay the full price once they have benefited from the discounts. This reluctance discourages suppliers who expect return customers to pay in full from advertising via daily deals. However, if suppliers expect their customers to be bargain seekers, then daily deals would be a useful tool to capture more revenue from market segmentation.

In revenue management, capacity management is concerned

with optimally selling a fixed perishable capacity within a given time horizon by controlling the availability of the products [7, 8]. Filling unused capacity during an off-peak period is an essential part of capacity management and daily deals provide an opportunity to do this. According to Huefner and Lergay III [9], turning non-productive or idle capacity into productive capacity can earn greater yields for merchants. On the other hand, a merchant that sells too many deals may incur capacity issues due to inadequate resources to serve all customers.

Several studies have investigated the difference between advertising on daily deal websites and other marketing approaches. Tuten and Ashley [10] consider the benefits of group deals to include taking advantage of opportunities to up-sell and positive word-of-mouth. Kumar and Rajan [11] compare coupons from daily deals with traditional coupons. They argue that daily deals, because they attract mainly bargain seekers, produce lower profit and lower potential for repeat visits than do traditional coupons. This type of customer may represent the lower-end market in terms of market segmentation. Boon et al. [12] compare daily deals with other online marketing mechanisms such as e-couponing and email marketing. They concluded that daily deals represent both a great opportunity and a potential threat for consumer exploitation. The studies noted here clearly indicate that differences exist between daily deals and other marketing approaches. However, the previous studies investigating these differences have all been conducted in the US. Boon et al. [12] suggest that future research should explore the marketing power of daily deals in other countries. Dholakia [13] shows that daily deal offers are growing rapidly while traditional marketing approaches including yellow pages, TV commercials, and print promotions have shrunk from 2009 to 2011.

Another aspect of daily deals that has been studied is the different approaches used to increase sales for deal suppliers and websites. Hu et al. [3] find that posting the number of sign-ups leads to higher deal success rates than not posting, which possibly explains why these websites frequently update the number of sign-ups. Jiang et al. [14] propose online dynamic pricing strategies based on consumer purchase history and posting recommended offers to incentivize customers into purchasing additional coupons. Chen et al. [15] investigate the difference between the uniform price mechanism, under which the discounted unit price remains the same irrespective of the quantity purchased, and the proportional price mechanism under which the savings shared by the purchasers increase in proportion to their purchased quantities. Their results show that the proportional mechanism, which introduces an element of competition amongst buyers, results in a higher quantity being purchased than does the uniform price mechanism.

While a number of studies have focused on benefits of daily deals [6,10], only a few studies consider their drawbacks. Dholakia [13] surveyed 324 businesses that conducted a daily deal promotion in the US market and found 55% of them made money, 27% lost money and 18% broke even on their promotion. Boon et al. [12] considered all deals and deals by category in the U.S. They calculated the average revenue to be just US\$18,297, with a range between US\$2,038 and US\$31,437. This finding suggests that in some cases daily deals provide little additional revenue to businesses offering the discounts.

Kumar and Rajan [11] examined both the short-term profitability and long-term profitability of daily deals and found that daily deals do not necessarily yield profits. Deep discounts often entice one-time coupon users and merchants may not be able to recover their losses on the coupons from the small number of repeat customers they acquire. In a similar vein, Hughs and Beukes [16] report that the cost

of steep discounts does not translate into higher long-term profits for merchants using daily deal websites. These studies show that daily deals can negatively impact the profitability of suppliers' businesses and the willingness of customers to repurchase from suppliers. The suppliers of perishable services need to take into account the costs of forgoing revenue opportunities. Although daily deals provide consumers with a short-term incentive to purchase, it is unclear whether the profit forgone will be recovered from returning customers or through word-of-mouth advertising over the long-term.

Several studies discuss the managerial implication for the businesses of deal suppliers. Del Rey [17] advises potential merchants to consider the profit pay-off and their affordability. Inexperienced merchants, who do not advise sites how many coupons to offer, may find their businesses overwhelmed by more customers than they can handle. Similarly, Hughes and Beukes [16] note that when a business cannot service daily deal customers due to capacity constraints, its image and ability to create long-term value can be damaged. Kumar and Rajan [11] warn suppliers to be strategic regarding offering discounts and to guard against cannibalizing existing revenue. They find that many customers will expect to pay the same low price for future purchases. They suggested that suppliers need to impose certain restrictions, such as limiting the offer to new customers to price-protect their goods and services. Reinartz and Kumar [18] have identified customer related indicators, such as cross-buying behaviour, which significantly influence the profitability of suppliers. They recommend that managers should consider customer lifetime duration and build competitive advantage by developing longer term relationships with customers. Kang et al. [19] suggest that e-coupons tend to be more useful for service firms or service-oriented retailers, because they have higher fixed cost structures. In these businesses, increases in sales volume are likely to generate contribution margin which helps cover fixed costs and makes it easier to reach a breakeven position. Table 1 summarizes the key variables believed to influence the success of daily deals.

Our study considers how the quantity of deals purchased is impacted by price and the elasticity of demand, and introduces redemption period as an additional variable to be considered. The research approach is described next.

Method for New Zealand study

Although the population in New Zealand is much lower than the US, daily deals are nevertheless popular. GrabOne, one of the most well-known local daily deal websites, has worked with 17,456 businesses in New Zealand and attracted 1,333,542 subscribed members. Auckland encompasses just over 60% of businesses and about 30% of the population in New Zealand. GrabOne has 74% of the online daily deal business. While our survey is limited it is reasonably representative in that it focuses on deals offered by New Zealand's most popular daily deal website in its largest city, in terms of population and number of businesses. This paper investigated the characteristics of GrabOne deals for a period of 21 days and considered their association with the quantity of deals sold.

Qualitative data was collected through discussions with suppliers of daily deals to gain insight into their thinking about the deals. A small number (eight) of the merchants who advertised on the GrabOne website during the period from June to September 2013 were contacted and questioned¹ about their motivation to use, experience with and opinion of, daily deals.

¹ The questions asked included for example: Do the deals add value to your business? If so, in what respect? What are the pros and cons of offering daily deals? How do daily deals affect the way you manage the business?

The main source of quantitative data was the GrabOne website over a period of three weeks from 28th August 2013 to 17th September 2013 focusing on deals offered in Auckland (the largest city in NZ with a population of 1.4 million). The characteristics of the deals were gathered from the website, including the discount proportion, the discounted price in dollars, the quantity of vouchers sold for the deal, and the redemption period in days. Most of these characteristics follow Boon et al. [12], who performed daily deal content analysis by category. *Category* refers to the types of goods or services offered and include Activity and Sightseeing, Beauty, Salon and Massage, Cafes, Bars, and Restaurants, Fitness, Health Care, Home and Garden, Products and Stocks, and Others (see Appendix 1 for a description of each category).

Discount represents the proportion of discounts forgone by the merchant. In other words, this represents the proportion of money saved by purchasing the deal. *Price* represents the price of the voucher in \$NZ, and is the discounted price. *Quantity* refers to the number of vouchers sold or the purchase volume for the particular deal, which reflects the demand for vouchers.

Redemption period represents the length of time for which the voucher is valid and covers the period from the day the voucher is validated to the expiry date.

The final sample comprised 108 observations. The analysis assumed that businesses in each of the sectors were homogeneous. This assumption was especially pertinent for estimating the demand function. It was tested by separating the low priced from high priced restaurants and estimating the demand function obtained for each subsample. The data was analyzed in several ways. Firstly, the Revenue earned from each deal was derived by multiplying the Quantity by the Price, once the deal was closed. Secondly, various deal attributes were analysed. For example, the maximum, minimum and average revenue amounts by category and in aggregate were calculated. Attributes were then plotted against each other to reveal any underlying relationships. Graphs of some of those relationships are provided later in the paper. Price elasticity of demand was calculated for each category to identify which product or service categories are more price sensitive than others. The next section presents the findings from the qualitative data then the quantitative data.

Authors	Year	Variables
Pricing approaches		
Edelman, Jaffe, and Kominers	2011	Price sensitivity and advertising
Huefner and Largay III	2013	Increasing yield from idle capacity
Jiang, Liu and Wang	2013	Dynamic pricing and customized offers
Chen, Wang and Xie	2011	Uniform or proportional pricing
Del Rey	2010	Matching capacity and demand
Marketing approaches		
Reinartz and Kumar	2003	Cross buying behavior of customers
Marmorstein, Rossomme, and Sarel	2003	Information quality and accessibility
Kang, Hahn, Fortin, Hyun and Eom	2006	Nature of business: services or products
Dholakia	2011	Traditional or daily deals
Hughes and Beukes	2012	Scale of discounts
Kumar and Rajan	2012	Coupon type: traditional or daily deal
Boon, Wiid and DesAutels	2012	Type of offer: daily deal, e-coupon and email
Hu, Shi and Wu	2013	Displayed customer sign-ups figures

Table 1: Key variables influencing success of daily deals.

Qualitative findings: Motivations for and issues raised by daily deals

Responses to the questions revealed several distinguishing features about the daily deals. Firstly, the cost structure of daily deal websites differs from that of traditional marketing channels offering print, audio and television adverts where the costs of advertising are fixed and are not strongly connected to sales. The costs of running daily deals are commission-based, and dependent on the sales made from the deals. This means there are no upfront costs in running the deals. This is an obvious advantage for smaller businesses who are often unable to access more traditional advertising channels due to high cost barriers [20]. With daily deals, even small businesses with low advertising budgets can make an offer to customers, at an appropriate time and affordable cost. In uncertain business environments, a fixed amount spent on traditional advertising may not be recovered from subsequent sales. Daily deals in comparison incur commission only when deals are sold. Thus some businesses find this a useful way to explore markets for new products or services. Merchants can exploit the bargain seeking behaviour of consumers and utilize the deals to gauge the popularity of new product or services. They also gain valuable customer feedback for future improvements to their offerings.

Secondly, marketing using daily deals is much faster than conventional marketing channels. Conventional paper coupons delivered via newspaper or magazine distribution channels are slow and have long lead-times. Advertising needs to be planned well in advance and the timing of the offer agreed before it is presented to potential customers. In contrast, daily deals allow merchants to simply provide daily deal website staff with information about the deals they wish to launch. Instant results can be obtained as bargain seekers notice and purchase the deals. The fact that Web users are in a more active state of mind when considering deals makes it more likely they will engage with the advertising messages, which leads to more effective communication. This is in contrast to the passive role required of consumers viewing television or hearing radio adverts.

Thirdly, daily deals differ from traditional marketing due to the ease of measuring results. It is not easy to evaluate the performance of traditional marketing mechanisms such as TV commercials because it is difficult to distinguish between customers who have seen the advertisement and those who have not. In comparison, merchants can easily identify who has purchased the deals because customers are required to present their vouchers for redemption. The daily deal websites also supply results so that merchants can review the effectiveness of their deals. For example, merchants can analyze past purchasing patterns and adjust their offerings so that more is sold in the future.

Merchant responses revealed their various motivations for using the deals. These included increasing their profile with people who would not normally frequent or were previously unaware of their business; generating foot traffic for new stores and for locations with few passers-by; promoting products and as a way of signaling information. As previously discussed in the literature, offering daily deals is an effective way to reduce the cost of information asymmetry associated with experience and credence attributes of a product or service [21]. Daily deals improve customer acquisition by increasing brand awareness. According to one respondent, it's about getting customers to notice the brand while they are visiting the deal site. When a customer needs a related product or service in the future, their ability to recall the brand name may influence their purchase even though they did not purchase

the deal. Daily deals are also expected to increase brand awareness through word-of-mouth transmission to friends and family.

A second motivation identified by suppliers for placing offers through daily deals is the opportunity to up-sell and cross-sell products and services. When customers redeem the coupon, they are likely to spend more than the full value of the coupon, especially in settings such as restaurants and retail shops. Health care service providers, such as optometrists or dentists, follow a similar rationale when they provide discounted check-up deals. During the initial service they acquire customer information that is not available to competitors, and use it to up-sell additional services. Daily deals provide an opportunity to establish a relationship with the customer, so that they are more likely to become regular customers. Common deals of this type include short-term gym memberships or group training classes which rely on customers developing a fitness habit that will endure beyond the deal period. Suppliers expect the revenue foregone in the short term through the discounts offered can be exchanged for longer term customer loyalty and profitability. According to Storbacka and Nenonen [22], customer relationships significantly influence the heterogeneity of firm performance. The short term trials offered through daily deals add value to merchants' businesses in the following ways. Firstly, they attract customers from competitors if the deals are offered before competitors realize a similar opportunity. Secondly, they build trust with certain customers who may become regular customers in the future. Finally, they provide useful information, via feedback and evaluations, for future improvements such as better demand forecasting and product development.

Merchants used daily deals to fully utilize their capacity when there is downtime or during off-peak periods. Perishable services, such as unsold hotel rooms, cannot be stored and their value cannot be recovered once forgone. By offering discount coupons, merchants can fill the empty capacity and recover some of the fixed costs. Likewise, firms with excess available hours for waiters, dentists, hairdressers, and other service staff have the same incentive to fill their capacity. According to the responses, merchants are aware of the distinction between peak and off-peak periods as well as special events or public holidays and seek to better use spare capacity. One interviewee stated that he would forecast demand for the next few months. If the forecasted demand is low, he would consider running a daily deal. This suggests that experienced merchants tend to offer daily deals prior to quiet periods for higher utilization of physical, human and organizational resources. Additionally, they appear to limit the time for redemption. By ensuring the redemption period and times when coupons can be redeemed do not overlap with peak periods, such as dinner rush or holidays, merchants can avoid being overwhelmed by voucher holders. The final motivation mentioned by merchants for running a daily deal was to acquire a cash injection. Since customers are required to pay before consumption, businesses can receive an immediate cash injection to avoid or overcome problems arising from insufficient cash flow.

In addition to the many benefits of daily deals, respondents referred to various costs of such deals. They recognized many deal buyers are opportunists who will not become regular customers and will readily switch to other businesses promoting their own deals. The ability of merchants to profit from daily deals is reduced if deal purchasers are not turned into repeat customers. This would prevent merchants from covering the initial revenue loss through subsequent, fully-priced transactions. These issues notwithstanding, more businesses indicated that they earned profits from daily deals than those that did not.

Suppliers were also aware that customer experiences with daily deals purchases would influence their profitability. The customer's perception of value received has an impact on suppliers' future revenue. Customers are more likely to be satisfied when they perceive the service received to be at least equal to their reference price. Information about the deal must be clearly presented to avoid customer misunderstandings and complaints which affect their decisions to return. Merchants should be aware that the amount of the discount they offer could potentially cheapen their brand. Customers may perceive the discounted price to be the normal price for certain businesses, particularly those who are profiting from the deals offered. One downside of attracting customers through discounted prices is the possibility that they will exert pressure to receive price reductions in the future. A final factor influencing customers' experience of daily deals is the timely availability of the product or service.

The costs of running daily deals may involve increased staff time to answer enquiries related to the deals and advise customers how to redeem the deal, especially those who have limited computer skills or are new daily deal users. Merchants who are aware of these additional administrative costs carefully control the timing and duration of their deal offering to ensure they coincide with quiet business periods. Customers generally redeem their vouchers close to the expiry date. This means there are periods of intense time and effort associated with coupon redemption. Staff will engage in additional work to process and keep track of the vouchers. Deal suppliers also incur costs when they negotiate with customers holding expired vouchers. This section has considered the merchants' motivation for and issues raised by daily deal offerings. The next section discusses the results of the quantitative analyses.

Quantitative Results

The analyses considered 108 daily deals listed on the Grab One site over a three week period in 2013. Table 2 reports the summary statistics for the deals, for each category of deal offered and in aggregate. The

largest number of deals on offer is in the category *Cafes, Bars, and Restaurants* (49) with the next two categories being *Activity and Sightseeing* (16) and *Beauty, Salon, and Massage* (15). The discount provided across all deals averages 53.4%, slightly more than half of the original price, with a maximum of 99% and a minimum of 37%. This confirms the results of previous studies that found deals generally have large discounts.

The average price paid and quantity purchases are \$111 (NZ\$1 = US\$0.85) and 303 units, respectively. In addition, the average revenue generated from a deal before paying any commission to the website is \$13,354. The maximum and minimum revenue earned for the deals are \$71,160 and \$3,510, respectively. The average revenue figures vary by industry with the highest average revenue per deal found in the *Fitness* category (\$27,869) followed by the *Health Care* category (\$22,882).

The average period of redemption is 70 days, indicating that most deals are completed within the two to three months following the offer. The maximum and minimum lengths for the redemption period are 182 and 2 days, respectively. This indicates that deals are typically short-lived. Reasons given by respondents to explain the short deal life include preventing the liability accumulating excessively and ensuring profitability in the long-term by limiting the discount to a short time frame.

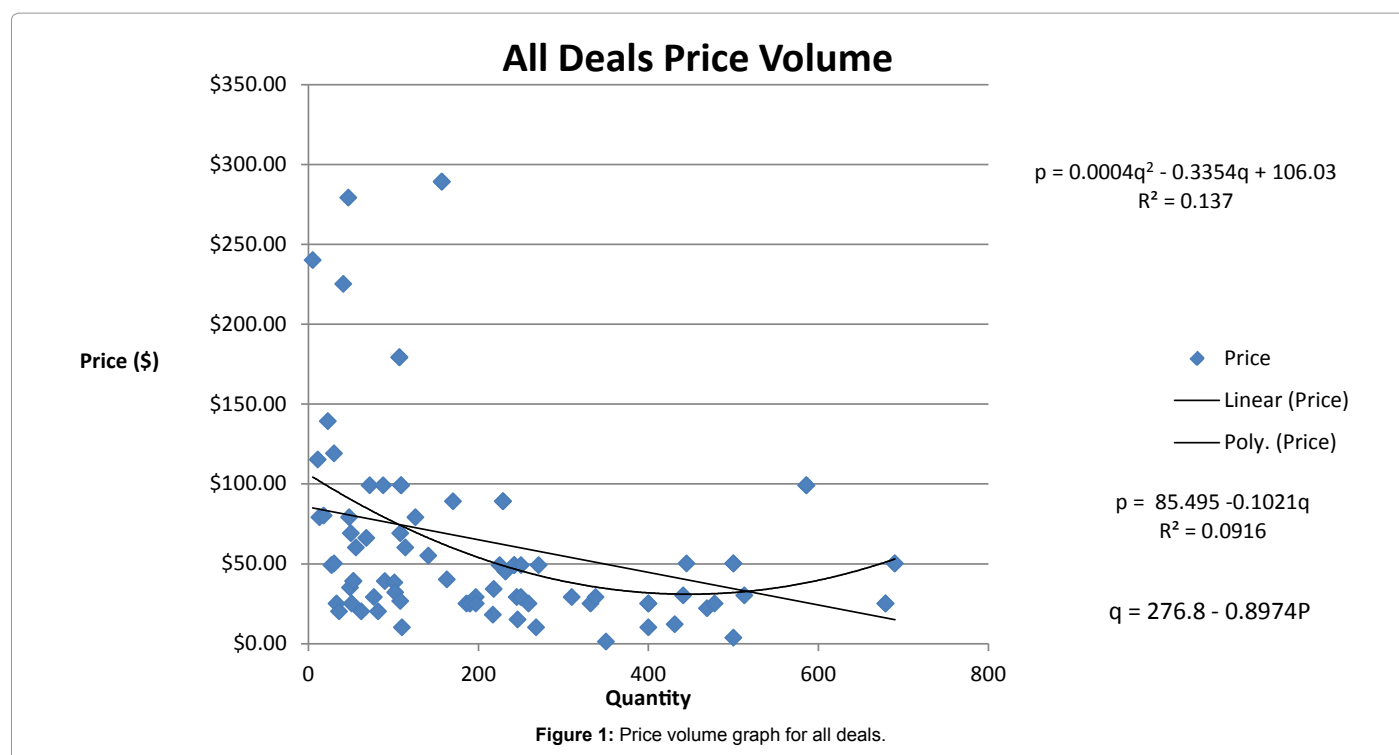
Figure 1 plots the relationship between price and quantity. The downward sloping demand curve indicates that the price of the deal is negatively associated with the quantity. Over the next few pages we show how this information can be used to estimate demand functions and price elasticities. However, we emphasize that these are illustrative given the size of our samples and more data would be needed to obtain more robust estimates.

The demand equations are shown for a linear ($q=276.8^{***}-0.897p^{***}$) and polynomial function ($q=324.85^{***}+0.0055p^2-2.34p^{**}$). The prices for unit elasticity are \$154 for the linear and \$122 for the polynomial

² Statistical significance is denoted as follows: * - 10%; ** 5%; *** 1%

Category	Number of deals	Average price (\$)	Average Discount (%)	Average quantity	Average Redemption period (days)	Average revenue per deal (\$)		
Activities and Sightseeing	16	\$186	47.70%	468	62	\$10,099		
Beauty, Salon, and Massage	15	\$67	59.40%	164	85	\$11,673		
Cafes, Bars, and Restaurant	49	\$63	51.40%	375	64	\$15,868		
Fitness	4	\$174	59.80%	173	52	\$27,869		
Health Care	5	\$319	55.00%	122	88	\$22,882		
Home and Garden	9	\$273	50.70%	32	95	\$7,460		
Products and Stocks	8	\$20	54.40%	293	54	\$3,897		
Others	2	\$20	84.00%	220	77	\$1,930		
Total	108	\$111	53.40%	303	70	\$13,354		
Category	Minimum discount (%)	Maximum discount (%)	Minimum quantity	Maximum quantity	Minimum Redemption period (days)	Maximum Redemption period (days)	Minimum Revenue (\$)	Maximum Revenue (\$)
Activities and Sightseeing	39.00%	57.00%	1	2,000	2	94	\$1,900	\$22,250
Beauty, Salon, and Massage	44.00%	94.00%	13	586	43	93	\$720	\$58,014
Cafes, Bars, and Restaurant	37.00%	69.00%	3	1,779	2	154	\$825	\$71,160
Fitness	51.00%	72.00%	108	271	43	62	\$7,452	\$45,373
Health Care	45.00%	79.00%	50	229	62	96	\$3,450	\$35,100
Home and Garden	40.00%	66.00%	5	114	62	182	\$1,200	\$44,970
Products and Stocks	50.00%	80.00%	30	1,000	12	93	\$1,100	\$15,000
Others	69.00%	99.00%	90	350	62	92	\$350	\$3,510
Total	37.00%	99.00%	1	2,000	2	182	\$350	\$71,160

Table 2: Summary statistics.



(the alternative price for the second root is \$162). Appendix II shows the formulae for calculating the prices for unit elasticity for the linear and polynomial functions.

Of course, this assumes that these are similar firms, which is clearly not the case, and that the price and volume is a snapshot of the change in price and demand. In order to show a more homogeneous sample of firms, Figure 2 plots the prices and quantities for the café, bars and restaurants category. The price demand relationships are shown for a linear ($q=615.67^{***} - 5.83p^{**}$) and polynomial ($q=807.5^{***} + 0.0928p^2 - 15.46p$)³ price demand function and their associated r-squared values. The prices for unit elasticity are \$53 and \$42 (the alternative price for the second root is \$69) for the linear and polynomial functions respectively. This implies that demand is relatively inelastic above a price of \$50 and elastic below that. However, it can be seen that there are not a large number of deals with prices above \$50 suggesting that there may be heterogeneity within this sample and thus different pricing elasticities due to different strategies pursued by merchants.

Liu and Zhang [23] suggest that pricing differences may exist between firms that provide high quality products or services and firms that provide low quality products or services. They find that even though the profit of both types of firms decreases as customers become more strategic and engage in profit skimming behaviour by choosing to purchase at times advantageous to them, the low-quality firms suffer substantially more than high-quality firms.

Informed by the prior research, the Café, Bars and Restaurants sub-sample compares results for high-end and low-end deal providers. Given that quality cannot be directly measured, the daily deal price is used to proxy for quality. It was assumed that low-end (high-end) restaurants generally adopt a cost-leadership (differentiation) strategy. It was expected that demand for low-end restaurants would be

relatively price elastic and demand for high-end restaurants relatively price inelastic.

The restaurants and cafes were classified into high-and low-end groups in the following manner. Firstly, the *original* price per person is identified (this adjusts for offers covering multiple persons) for each deal offered in the Cafes, Bars and Restaurants category, then the average original price per person for all deals was calculated. Restaurants offering deals with an original price per person above the average were classified as high-end while those offering deals with an original price per person below the average were classified as low-end. Outliers are removed for both groups. Price elasticities have then been calculated for each group separately.

Figure 3 shows the demand curves in terms of price and demand for high-end and low-end restaurants. It reveals that high-end restaurants have a relatively inelastic demand compared to low-end restaurants by having a steeper slope. The prices at which unit elasticity occurs are \$80 for the high-end restaurant assuming a linear function (\$76 if a polynomial function is assumed) and \$57 (\$42 for a polynomial function) for the low-end restaurants⁴. This indicates that for the low-end group, a small change in the voucher price would cause a relatively larger change in the quantity demanded for the deals than for the high price group, which is less price sensitive. The graph also shows that low-end restaurants are selling more deals than high-end restaurants. These results suggest that for low-end restaurants owners, occasional price reductions can succeed in attracting customers provided the increase in quantity outweighs the decrease in price, resulting in higher revenue and profit. In contrast, those high-end restaurants whose prices are generally high need to carefully consider reducing prices since the demand is relatively inelastic. These differences notwithstanding, those in this group with more medium range prices could consider price reductions.

³ Note that the results for the p variables are statistically insignificant which reinforces our earlier comments about small sample size.

⁴ These results must be treated cautiously as none of the coefficients were statistically significant for either model due to small numbers in each group.

Cafes, Bars, and Restaurants

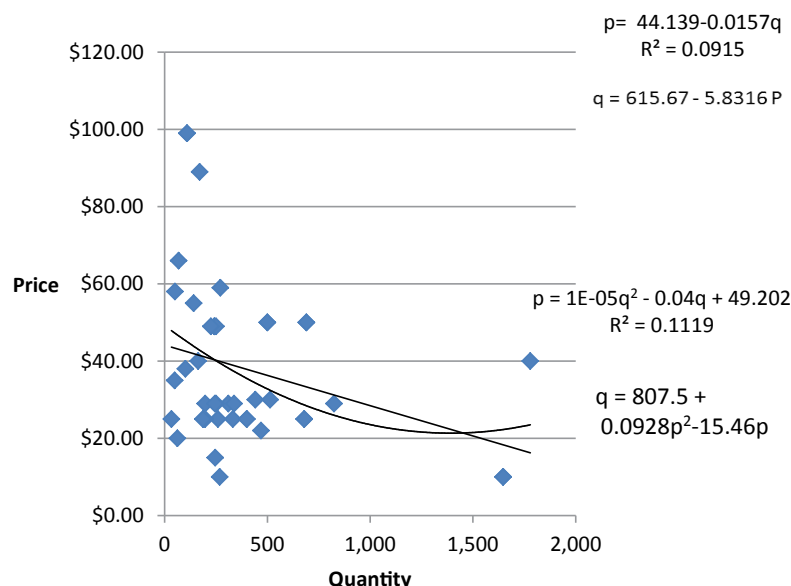


Figure 2: Price volume relationship for Cafes, Bars and Restaurants.

Subcategories of the Dining Deals

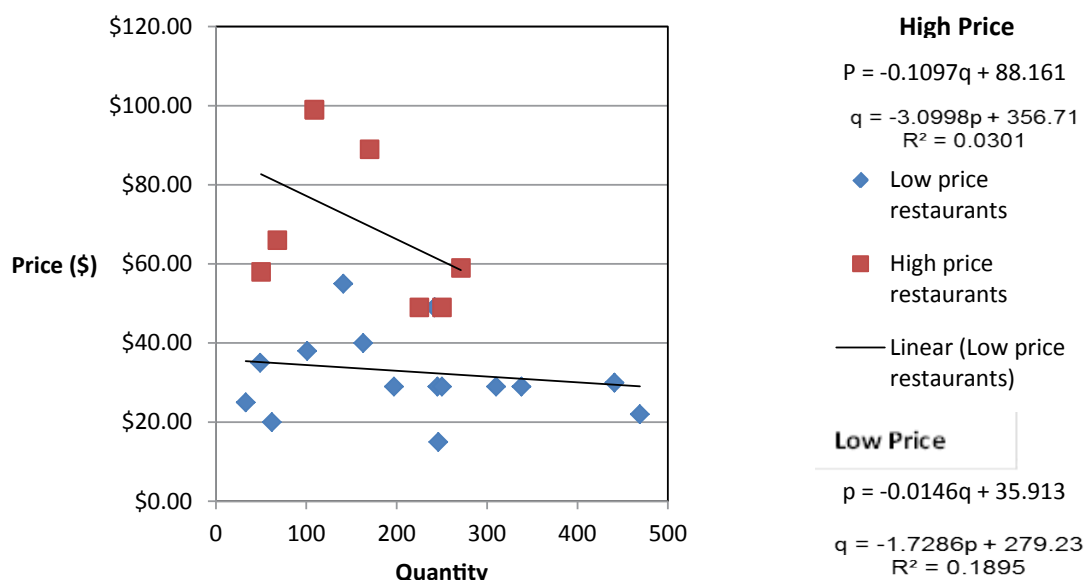


Figure 3: Elasticity for high-end and low-end restaurants.

The identification of price levels at which unit elasticity occurs suggests that firms need to consider more carefully the amount of discount they are willing to offer. Those with inelastic demand need to offer fairly significant discounts to increase demand whereas those with more elastic demand can stimulate additional volume with more modest discounts. For the restaurant group, the average discount was 54% for the high-end and 54% for the low-end. The latter may be offering larger discounts than needed [23].

The results regarding the length of the redemption period have several implications to deal suppliers. Figure 4 shows that the redemption period is positively associated with price. This implies more expensive deals provide longer redemption periods and cheaper deals are likely to expire earlier than expensive deals. The length of the redemption period is negatively associated with the quantity of deals sold, and Figure 5 shows that consumers prefer to purchase deals for which they get more immediate gratification. Both buyers and sellers of

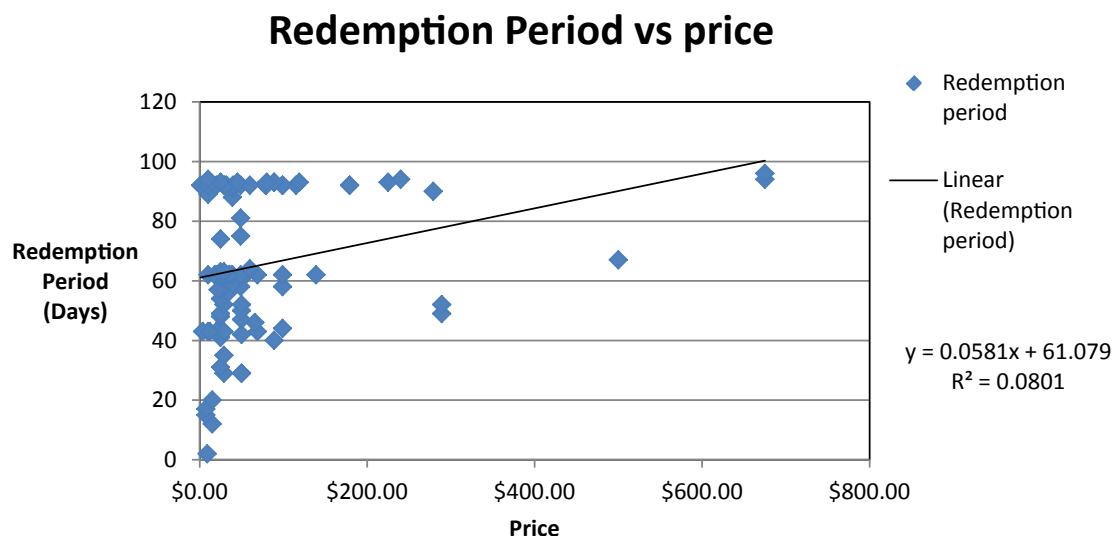


Figure 4: Redemption period versus price.

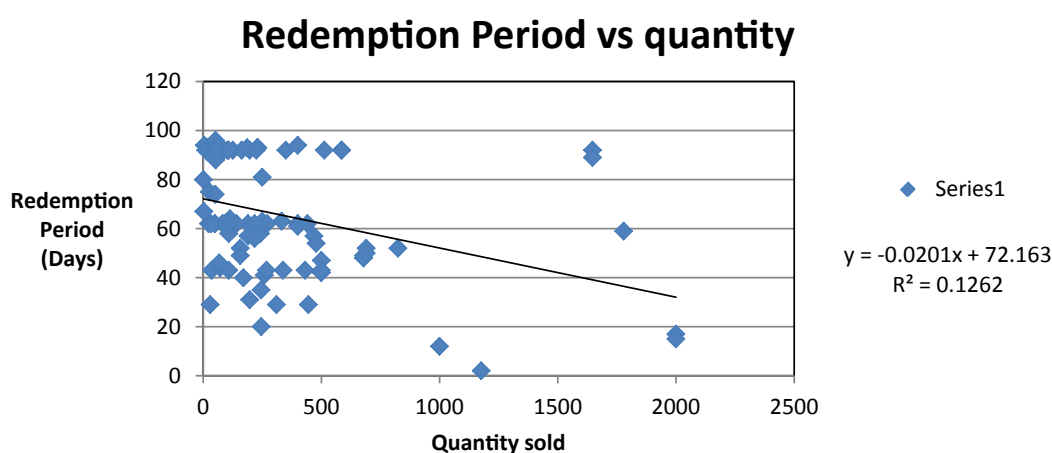


Figure 5: Redemption period versus quantity.

daily deals have reasons to prefer shorter redemption periods. Buyers can get more immediate gratification and reduce the risk of voucher expiration while suppliers protect themselves from overselling and the risk of under-capacity during peak periods. The evidence suggests that consumers are driven by short term incentives when it comes to purchasing daily deals. This finding confirms Dhokalia [13] and Kumar and Rajan [11]. Over the longer term, profitability of the deals is uncertain as it is unclear how customers will react to offers made by competitors in the same or similar industries.

Conclusion

This research investigated the motivation, limitations and revenue management implications of daily deal offerings and is the first to study daily deals in New Zealand. A comparison of daily deal offerings with other marketing mechanisms suggests they are a more effective and affordable marketing tool than traditional marketing mechanisms. Additionally, the motivations for suppliers to run daily deals were investigated. Daily deals were found to add value to the businesses of affiliated merchants and facilitate revenue management. In businesses with high fixed costs, investments in capacity cannot be withdrawn in

the short term and daily deals facilitate the utilization of idle capacity to improve profitability. Despite the usefulness of daily deals for marketing products and services, increasing brand awareness and boosting cash flow, they can also create unsatisfied customers and lower profitability.

The study also considered the limitations of daily deals. Some businesses experienced losses or reductions in profitability from deal redemptions, depending on the size of the discount being offered. Daily deals can impact on suppliers' businesses both positively and negatively. Experienced suppliers can benefit from offering daily deals at the right time and new suppliers should be aware of the potential consequences of running daily deals. Overall, the responses from merchants indicate that online deals add value to their businesses when viewed from a marketing perspective.

This research analyses characteristics of daily deals and reveals the average revenue from daily deals to be \$13, 354. It found a positive association between the price and the length of redemption period indicating higher priced deals are redeemable over longer time periods.

The *Cafes, Bars and Restaurants* data was partitioned into low-

quality and high-quality restaurants to better understand how elasticity might differ within similar businesses. The demand curve for all deals is downward sloping and elastic, suggesting that buyers are bargain seekers and their buying decisions are sensitive to the price of the goods. Nonetheless, an analysis of high and low-end restaurants revealed that elasticities differ between categories. The demand for high-end restaurants is more price inelastic than the price for low-end restaurants indicating there is less price sensitivity for these restaurants.

Most businesses would find that trying to estimate their price demand function formally is not feasible if not almost impossible. We have shown, through our analysis of buyer responses to daily deals, those approximations of price demand relationships can be modelled and used to estimate price elasticities, particularly prices where unit elasticities occur. With this information, firms can identify where their pricing is positioned within a particular industry and consider how best to adjust their strategic positioning and pricing.

Our research has covered a broad spectrum of businesses as reported in the literature review, Table 2 and Figure 1. Our detailed analysis of restaurants and cafes, the largest group in our sample, provides a method for estimating demand function and price elasticities. This method can be used by daily deal suppliers operating in any category to estimate their price demand function, as long as they have a reasonable number of observations and the units are reasonably homogeneous.

The research is subject to several limitations. Firstly, given the small sample size, results may not be generalizable to other websites or other periods of time. The quantitative data is selected from a single website and collected for a short period of time (21 days). The questionnaires and interviews involved a limited sample of firms, meaning the results may not represent views of all suppliers. In addition, the results may not be generalizable to other countries given the data is gathered in New Zealand. Secondly, self-selection bias may be present. Firms that responded to the questionnaires may be those that find daily deals useful and have received positive impacts from them; businesses that incurred problems may not have responded. Finally, firms may have provided responses that reflect the expectations of the general public, leading to social desirability bias.

There are a number of areas that future studies can investigate. Firstly, future research could study the effectiveness of the terms and conditions imposed on daily deals in order to implement market segmentation. To benefit from market segmentation, businesses must have an effective sorting mechanism to manage the discounts allowed to specific sub-segments of customers. Suppliers can, for example, impose certain restrictions when they run their deals such as booking requirements or limits on the number of vouchers to be redeemed. Future research could analyze firm characteristics such as size, age and number of employees to identify those that most likely to benefit from revenue management practices. For example, some firms may have greater opportunity to improve their capacity utilization rate, develop customer loyalty, or up-sell additional products or services. A useful avenue for future research would be to consider the relationships among variables other than the ones addressed in this study. Furthermore, future research could examine the motivation for and marketing effectiveness of daily deal offerings across different cities or countries. Given the popularity of daily deals as an online marketing mechanism further investigations into this phenomenon would enhance our understanding of their effects.

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