

CHALLENGES IN DELIVERY FULFILMENT OF ONLINE SHOPPING

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ABSTRACT

Purpose: Online shopping has grown rapidly with the pervasive use of the Internet, advancements in Information and Communication Technologies and availability of online payment options. This paper investigates the importance of delivery fulfilment for online shopping and the challenges faced by online retailers as well as the effectiveness of delivery fulfilment models from the Singapore perspective.

Design/methodology/approach: Qualitative and quantitative data were collected through self-completion questionnaires. A business survey was targeted at online retailers to provide insight into the delivery fulfilment processes offered, issues encountered and criteria considered important when choosing a delivery service provider. A consumer survey targeted at online shoppers was conducted to find out perceptions of online shoppers towards delivery fulfilment.

Findings: Online retailers relied heavily on outsourcing for delivery fulfilment usually by means of registered mail and courier services. They had different perceptions of service performance towards different service providers. Online retailers and shoppers reported that they were most concerned with late delivery issues in delivery fulfilment. Online retailers considered lead time as the most important factor when choosing a delivery service provider. They attributed the reasons for late delivery to delivery service providers, expectations of shoppers and limited delivery options. Online shoppers felt that they could cope with longer delivery times if there was an online tracking system in place to provide up-to-date delivery information.

Research limitations/implications: This study focuses on the perceptions of online retailers and shoppers in the fashion apparel industry.

Originality/value: The study provides insight into opportunities for online retailers and delivery service providers to improve their service offerings and bring about a better online shopping experience.

Keywords: delivery fulfilment, online shopping, retailer perceptions, customer perceptions

Introduction

E-commerce has become one of the fastest growing sectors in today's digital 21st economy. According to A.T. Kearney (2013), global e-commerce has grown 13% annually over the past five years from 2006 to 2011. Both retailers and consumers have entered the online space with increasing Internet accessibility, advances in Information and Communication Technologies and availability of online payment options. E-retailing, defined as the selling of goods and services via the Internet or other electronic channels for personal or household use by consumers (Dennis *et al.*, 2004), has become important as businesses understand the need to maintain a strong online presence.

The online shopping model presents opportunities for alternative delivery modes unlike conventional shopping where the product is purchased and often collected by the consumer at the shop. With online shopping, the buyer places a certain element of trust in the retailer's ability to deliver the ordered product in a timely fashion. Hence, an efficient distribution channel becomes a critical success factor in online shopping where online retailers are expected to deliver the products to customers when and where they want it. This is an exploratory study to investigate the logistics challenges of online retailing in the area of delivery fulfilment in Singapore. This paper examines the perceptions of online retailers and shoppers as well as the effectiveness of delivery fulfilment methods.

Literature Review

Online shopping is increasingly getting popular in tech-savvy Singapore. In 2011, Paypal commissioned a study that sampled 407 Singapore shoppers for their online and mobile transactions over the past 12 months (MediaBUZZ, 2013). The study showed that the size of the online shopping market in Singapore reached S\$1.1 billion in the year 2010 and is forecast to reach S\$4.4 billion in

2015. A significant portion of online retail purchases were domestic with nearly 40% spending (about S\$420 million) on local websites. Six shopping categories accounted for 80% of the total online spend:

- Travel (S\$307 million or 28%)
- Fashion/beauty (S\$146 million or 13%)
- Entertainment/lifestyle (S\$143 million or 13%)
- IT/electronics (S\$117 million or 11%)
- General insurance (S\$83 million or 8%)
- Gifts/collectibles (S\$75 million or 7%)

Ricker and Kalakota (1999) noted that while all companies wanted a piece of the e-commerce action, not all have laid the necessary groundwork for success. They mentioned one frequently overlooked activity was order fulfilment. Bayles (2002) pointed out that fulfilment differs from delivery in that delivery relates to the physical unloading of goods at a specific location. Fulfilment refers to the integration of people, processes and technology to meet customer expectations which involves a provider serving the last-mile between vendor and customer. According to a Bain/Mainspring survey of online buyers, accurate delivery was one of the critical customer concerns related to order fulfilment (Rigby *et al.*, 2001). Tsiriktsis and Keller-Birrer (2010) stated that customers have high expectations of delivery, flexibility and accuracy in delivering the goods, particularly in the online grocery market.

Collier and Bienstock (2006) examined how customers evaluated quality with online retailing by surveying customers who had engaged in an online retail transaction. Respondents were asked to respond to questions related to the interactivity of the customer with the online retailer's website, evaluate online retailers based on delivery of the product purchased, respond to questions on failures that occurred during online transactions, and address overall customer satisfaction with the online retailer. Their findings showed that customers' perceptions of quality and satisfaction with online purchases depended on interaction with the website, delivery of the product and how prepared retailers are to address problems when they occur. Of the three factors, they found that the delivery of the online transaction had the strongest impact on satisfaction.

Cao and Zhao (2008) studied how business buyers evaluated the delivery performance of online retailer and identified four key attributes, namely logistics/inventory system, online retailer's structure, product price and order-tracking system. They found that price and order-tracking system had a significant impact on the buyers' evaluation of an online retailer's delivery fulfilment. Interestingly, low price was so effective that buyers were willing to tolerate long delivery times, even longer than what was promised. In addition, a positive inventory policy and an integrated hybrid online retailer received significantly more positive evaluations from buyers. However, the study considered delivery fulfilment from the business buyer's perspective may not be generalised to individual consumers.

These studies have shown that delivery performance had a strong influence on customer satisfaction levels and their perceived quality of the online shopping experience. For the case of Singapore, the infrastructure and policies necessary to support e-commerce and delivery are in place. However, there are few studies done to uncover the challenges faced by online retailers in terms of delivery fulfilment.

Methodology

This study looked at the perceptions and views of delivery fulfilment of online shopping from the perspective of both the retailer and customer in Singapore. As mentioned earlier, there is a wide range of goods sold online and delivery requests may depend on the type of products purchased. Within the resources available, the scope of this study focussed on fashion apparel products which contribute to the top six major categories of online purchases in Singapore. Products within this category include clothing, footwear, sporting goods and accessories. Order fulfilment for these goods would require the delivery of small to medium-sized packages which would bring about challenges for delivery fulfilment.

Qualitative and quantitative data were collected through self-completion questionnaires. The surveys were administered through online survey tools (SurveyMonkey.com and FreeOnlineSurveys.com). The online surveys were opened for a 1.5-month period from mid-February to end-March 2013 for data collection.

Online retailer survey

A survey was designed for online retailers to provide insight into the delivery fulfilment processes offered, issues encountered and criteria considered important when choosing a delivery service provider. The questionnaire covered the following areas:

- Respondent profile: gender and age group
- Business profile: pure online business or online business with physical shop; types of products sold
- Delivery fulfilment: own delivery, outsourced, self-collection, others; if outsourced, the delivery company that is engaged
- Level of satisfaction with delivery fulfilment (Likert scale): 1 = very dissatisfied; 5 = extremely satisfied
- Frequency of delivery issues encountered (Likert scale): 1 = never; 5 = always
- Causes of delivery issues
- Perceptions on delivery service providers (Likert scale): 1 = very poor; 5 = very good
- Perceived importance of attributes when choosing delivery service providers (Likert scale): 1 = unimportant; 5 = very important
- Preferred delivery option: standard delivery (letterbox), collection point delivery (registered), time-slot delivery (pre-arranged), convenient delivery (using neighbouring stores), others
- Attitudes towards delivery process

The email addresses or contact details of online retailers were obtained from the www.emall.sg online shopping directory as well as from blog shops. The invitation to participate in the survey was sent out to around 150 selected online retailers via email, of which 30 responded.

Online shopper survey

A survey was conducted for online shoppers to find out perceptions of online shoppers towards delivery fulfilment. The questionnaire covered the following areas:

- Respondent profile: gender, age group, annual income range
- Online shopping frequency (Likert scale): 1 = never, 5 = always
- Average spend per item
- Types of products purchased
- Reasons for purchasing online
- Perceived importance of attributes associated with quality of online retailing (Likert scale): 1 = unimportant; 5 = very important
- Perceived importance of attributes associated with delivery performance (Likert scale): 1 = unimportant; 5 = very important
- Delivery locations: letterbox, self-collection, self-designated location, courier, registered mail
- Frequency of delivery issues encountered (Likert scale): 1 = never; 5 = always
- Perceived satisfaction on delivery of product (Likert scale): 1 = very dissatisfied; 5 = extremely satisfied
- Preferred delivery option: standard delivery (letterbox), collection point delivery (registered), time-slot delivery (pre-arranged), convenient delivery (using neighbouring stores), others
- Attitudes towards delivery process
- Overall purchasing experience online retailers (Likert scale): 1 = very dissatisfied; 5 = extremely satisfied

For online shoppers, the social media platform and email was used to send the invitation to participate in the survey. At the close of the survey window, 124 individuals responded to the invitation, of which five responses were deemed not usable. The final sample was 119 respondents.

Results and Discussion

Respondent profiles

Table 1 shows the demographic profile of respondents who participated in the surveys. The respondents from the online retailer survey were mainly aged between 21 to 30 years. The vast majority of the respondents were female; the male/female split was 17%/83%. Over 90% reported that they operated their business purely online without a physical shop space. Anecdotal evidence suggests that many online businesses operate from home to save on the cost of renting commercial space. About half of the respondents indicated that they sold more than one item online which included clothing, shoes, bags and accessories.

Age Group (years)	Online Retailers		Online Shoppers	
	Frequency	%	Frequency	%
Under 21	1	3.3%	2	1.7%
21 - 30	22	73.3%	76	63.9%
31 - 40	6	20.0%	37	31.1%
41 - 50	0	0.0%	4	3.4%
Over 50	1	3.3%	0	0.0%
Total	30	100.0%	119	100.0%

Table 1: Demographic profile of respondents

The respondents from the online shopper survey were also mainly aged between 21 to 30 years old. The male/female split was 31%/69%. Most of respondents indicated they shopped online fairly often. Slightly more than half of the respondents (55%) spent between S\$21 to S\$50 on average per item. Male respondents indicated they spent more compared to female respondents, which is in line with MasterCard Worldwide (2010) that reported that men were bigger spenders when it came to online shopping in Singapore.

Delivery fulfilment methods

Table 2 summarises the various delivery fulfilment methods and their combinations reported by the respondents from the online retailer survey. The majority of respondents (53%) indicated they used a combination of own delivery, outsourced delivery and self-collection for the delivery fulfilment of the goods. About 17% of respondents mentioned they only outsourced the delivery to a third-party, usually by means of registered mail and courier services. Another 10% indicated they delivered the goods themselves.

Delivery Fulfilment Method	Frequency	%
Own Delivery + Outsourced + Self-collection	16	53.3%
Outsourced Only	5	16.7%
Own Delivery Only	3	10.0%
Own Delivery + Outsourced	3	10.0%
Outsourced +Self-collection	2	6.7%
Own Delivery + Self-collection	1	3.3%
Total	30	100.0%

Table 2: Delivery fulfilment methods

Figure 1 shows the satisfaction level of online retailers with their delivery fulfilment methods. Generally, the respondents felt that they were positive with own delivery for delivery fulfilment (39% satisfied, 13% very satisfied). 50% remained neutral towards outsourcing the delivery. The majority felt dissatisfied with self-collection (37%).

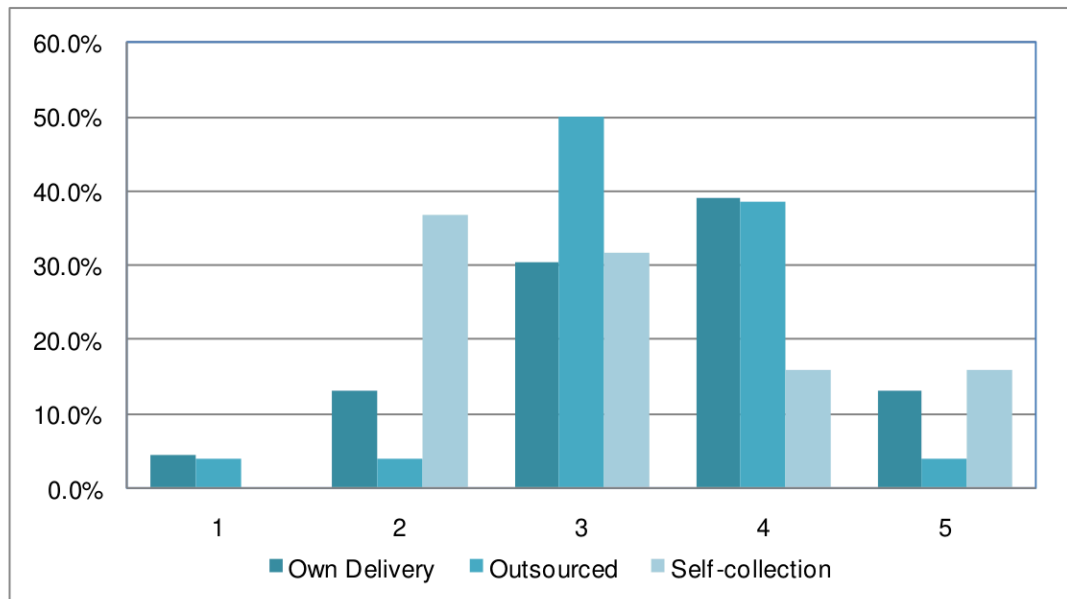


Figure 1: Satisfaction level of online retailers with delivery fulfilment methods
(Note: 1 = Very dissatisfied, 2 = Dissatisfied, 3 = Neutral, 4 = Satisfied, 5 = Very satisfied)

Delivery issues encountered

Table 3 compares the frequency of delivery issues encountered from the viewpoint of online retailers and shoppers. Online shoppers indicated a higher frequency of delivery issues encountered compared to online retailers, which is understandable as customers are more demanding and have higher expectations. Both groups of online retailers and shoppers reported that late delivery was the issue that was encountered most often compared to the other issues.

Delivery Issue	Online Retailers (N = 30)	Online Shoppers (N = 119)	Gap (Shoppers - Retailers)
Failed delivery	1.80	2.05	0.25
Late delivery	2.57	3.12	0.55
Wrong items received	2.00	2.24	0.24
Damaged items delivered	1.57	1.74	0.17
Distorted package	2.13	2.24	0.11
Inferior goods	1.77	2.32	0.55
Items different from what is shown online	2.03	2.67	0.64

Table 3: Mean frequency of delivery issues encountered
(Note: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Very Often, 5 = Always)

Importance of attributes affecting choice of delivery service providers and online retailers

The online retailer survey revealed that online retailers considered lead time (or speed of delivery) as the most important factor (mean rating = 4.53) when choosing a delivery service provider. This was followed closely by price (mean rating = 4.47). Reputation of the provider was a distant third (mean rating = 3.17).

The online shopper survey also showed that online shoppers considered delivery as the most important factor (mean rating = 4.53) when deciding whether to patronise the online retailer for future purchases. This was followed by privacy (mean rating = 4.45), and compensation and apologies (4.00). This emphasises the need for delivery to be a top priority for both online retailers and shoppers.

Hypotheses tests

The perceptions and attitudes of online retailers and shoppers as measured by the Likert scale ratings were tested further using hypothesis testing. Table 4 summarises the main results. One result that emerges from this analysis is that the effect of price, free shipping, promised delivery window and more delivery options may not entice customers to accept longer delivery times or return to the same online retailer for future purchases. However, an effective online tracking system may have the potential to attract customers to repeat their purchases from the same online retailer.

Null Hypothesis H₀	Statistical Test	Test Result
(1) There is no significant difference between the mean evaluations of different delivery service providers.	ANOVA $\alpha = 0.05$	$F > F_{crit}$ Reject H ₀
(2) There is no significant difference between the mean evaluations of likely causes of delivery issues.	ANOVA $\alpha = 0.05$	$F < F_{crit}$ Accept H ₀
(3) There is no significant difference between the mean evaluations of attributes of delivery performance factors.	ANOVA $\alpha = 0.05$	$F > F_{crit}$ Reject H ₀
(4) Having low prices for customer to accept longer delivery lead time is not important.	t-test $\alpha = 0.05$	$t < t_{crit}$ Accept H ₀
(5) Providing free shipping for customer to accept longer delivery lead time is not important.	t-test $\alpha = 0.05$	$t < t_{crit}$ Accept H ₀
(6) Having promised delivery window for customer to accept longer actual delivery lead time is not important.	t-test $\alpha = 0.05$	$t < t_{crit}$ Accept H ₀
(7) Having an accurate online tracking system for customer to repeat purchase from the same online retailer is not important.	t-test $\alpha = 0.05$	$t < t_{crit}$ Accept H ₀
	t-test $\alpha = 0.10$	$t > t_{crit}$ Reject H ₀
(8) Having more delivery options for customer to repeat purchase from the same online retailer is not important.	t-test $\alpha = 0.05$	$t < t_{crit}$ Accept H ₀

Table 4: Statistical tests on perceptions of online retailers and shoppers

Conclusions and Recommendations

This study examined the importance of delivery fulfilment for online shopping by taking into account the perspectives of online retailers and shoppers in the fashion apparel industry in Singapore. The majority of the online retailers surveyed reported that they used a combination of own delivery, outsourced delivery and self-collection for the delivery fulfilment of the goods. Both online retailers and shoppers surveyed reported that late delivery was the issue that was encountered most often compared to the other issues. Online retailers attributed the reasons for late delivery to delivery service providers, expectations of shoppers and limited delivery options.

Online retailers had different perceptions of service performance towards different service providers. They considered lead time as the most important factor when choosing a delivery service provider. Online shoppers considered delivery as the most important factor when deciding whether to patronise the online retailer for future purchases. This emphasises the need for delivery to be a top priority for both online retailers and shoppers.

The effect of price, free shipping, promised delivery window and more delivery options may not entice online shoppers to accept longer delivery times or return to the same online retailer for future purchases. However, it may be worthwhile for online retailers to consider having an online tracking system to help shoppers cope with longer delivery times and possibly retain them for future purchases.

To stay competitive, online retailers need to pay attention to delivery fulfilment where a strong foundation of the delivery process can translate into high levels of customer satisfaction and repeat business. Online retailers must continually improve and develop solutions to take the role of delivery fulfilment to next level. Further work can evaluate the factors that prevent reliable delivery and returns. The study of reverse logistics in the e-commerce environment can also be explored as the lack of good return channels may be one reason customers feel dissatisfied in order flexibility. This study is limited to the fashion apparel industry and future research should consider examining different product categories across different industries.

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