The Nature of Goods and Internet Commerce Benefit: A Preliminary Study

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Abstract

The conventional wisdom is that if a firm is offering products that can be delivered online will benefit more from Internet Commerce. However, there is limited evidence to prove if this is entirely true. This paper reports a preliminary study that examines whether the nature of goods has significant effect on Internet Commerce benefit. The result indicates that the nature of goods in isolation does not have a significant effect on Internet Commerce benefit. No significant difference in experience of Internet Commerce benefit is observed between those who offer physical goods and those who offer digital ones. Although the one-sided result may have been sampling bias, it implies that product characteristics alone may not be a strong predictor of Internet Commerce success.

1. Introduction

Prominent examples of success in Internet Commerce often describe firms offering products that are standardised and/or deliverable electronically (e.g., software companies, information service providers and bookshops). Among smaller firms, success stories seem to come from those who are selling products not necessarily digital or IT-related [2]. Although it is logical to expect products that can be purchased without the need to be physically examined are more suitable for online trading, there is insufficient empirical evidence to support this view.

In this paper, Zwass’s [23] definition of Electronic Commerce is adopted and modified for Internet Commerce:

Internet Commerce is the sharing of business information, maintaining business relationships, and conducting business transactions by means of Internet-based technology.

Product characteristics are important to the feasibility of Internet trading [13]. For example, products that can be digitised or are already in digital form can be sold and delivered online easily. Consequently, most software vendors are using the Internet to deliver software products and services (e.g., www.microsoft.com, www.corel.com). These companies might have obtained efficiency advantages and decrease in delivery costs [4].

Goods can be broadly classified as search goods or experience goods [13]. Search goods are those that can be evaluated based on descriptive information while experience goods need tangible examination. Extending from the search goods/experience goods concept, a framework addressing the effects of outlay/purchase frequency, value proposition and differential potential on Electronic Commerce is proposed [18]. Based on this framework, goods that are of smaller costs, intangible and highly differentiated are more likely to gain leverage from the Internet. The relationship between experience/search goods and tangibility is illustrated in Figure 1.

Studies on the design and development of information products suggest that such products need a new approach to produce and deliver. For instance, firms offering such products can take advantage of advanced information technology to leverage against competition [15]. The Internet can provide much leverage depending on the demand and supply of a product. As such, broadcasting the release announcement over the Internet can heighten the demand for a long-awaited product. Moreover, new markets (e.g., international market) can be created through the Internet by market customisation or global branding [21]. Indeed, even for a firm that produces traditional products, the Internet may be used to support the virtual value chain — an integrated information underlay that contains and transports information related to the physical value chain. The virtual value chain will introduce new economies of scale and scope and shrink transaction costs [22].

Despite the enormous potential the Internet has for firms offering digital products, there is limited objective evidence beyond anecdotal examples. Many of the speculated benefits (e.g., lower unit cost for products or elimination of intermediaries) which supposed to help
small companies to compete with larger firms have not yet been realised [20].

<table>
<thead>
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<th>Internet support</th>
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<td>- Search</td>
<td>- Search</td>
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<tr>
<td>- Order (after sampling)</td>
<td>- Order</td>
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<tr>
<td>- Delivery</td>
<td>- Delivery</td>
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<td>- Payment</td>
<td>- Payment</td>
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<tr>
<td>- Exchange (after sampling)</td>
<td>- Exchange</td>
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<tr>
<td>e.g., Advisory services</td>
<td>e.g., Stock market quotes</td>
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<th>Internet support</th>
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<td>- Search (preliminary)</td>
<td>- Search</td>
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<tr>
<td>- Order (after sampling)</td>
<td>- Order</td>
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<tr>
<td>- Delivery (physically)</td>
<td>- Delivery</td>
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<td>- Payment</td>
<td>- Payment</td>
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<td>- Exchange (physically)</td>
<td>- Exchange</td>
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<tr>
<td>e.g., Garments, Personal items</td>
<td>e.g., Music CDs, Books</td>
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<tr>
<th>Experience goods</th>
<th>Search goods</th>
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Figure 1 The relationship between search goods, experience goods and product tangibility

Research studies in Small Business and Entrepreneurship reveal that small firms face problems such as lack of resources, inability to market effectively and many organisational problems [7; 10; 17]. In the 1990s, additional competitive pressures such as continuous demand for improved product/service quality, working with narrower profit margins and globalisation means small firms have to transform in order to survive [9; 16]. It is not surprising that earlier studies on Internet Commerce show that a high percentage (up to 65%) of those involved in Internet Commerce are small businesses [1; 11; 14]. Among these studies, few have explored the relationship between product characteristics and Internet Commerce benefits. This is true even among those which focus on marketing and sales [3; 5; 6; 12].

2. The Research Model

A study into the effect of product characteristics and Internet Commerce benefit was carried out. Based on the findings from earlier studies on Internet Commerce [4], a model depicting the relationship between product characteristics and Internet Commerce benefit was constructed. Using this model, four hypotheses are formulated to test for Internet Commerce benefit using the following indicators (see, Figure 2).

The experience of Internet Commerce benefit is expressed using four indicators measured in Likert scales (5 – most positive experience, 1 – most negative experience). These indicators are:

Indicator a: Obtain competitive advantage over non-online competitors

Indicator b: Improved business performance

Indicator c: Improved business relationship with customers/suppliers

Indicator d: Continuation of current benefits

These Internet Commerce benefit indicators are synthesise based on the potential benefits of Internet Commerce suggested by earlier studies [8].
2.1 The Effect of Search Goods and Experience Goods

To examine the effect of search goods and experience goods on Internet Commerce benefit, the respondents were asked if it is common for a customer to finalise her purchase decision without physically trying out the goods. Normally experience goods require a customer to evaluate them physically before making a purchase decision. This means purchasing over the Internet may not be the best method to shop for such goods. Hypothesis 1 is formulated to test for the difference in Internet Commerce benefit as experienced by those who offer goods which a customer normally can finalise a purchase decision without physically examining them and those who do not offer such goods.

**Hypothesis 1:**
There is no difference in Internet Commerce benefit experience between those who offer goods that are often bought without physically examined and those who do not.

The expected outcome is that firms who offer goods which are normally purchased without physical examination will experience more Internet Commerce benefit because customers who cannot do so are more likely to make a purchase decision.

An alternative way to distinguish search and experience goods is how easy it is to use standard descriptors to describe a product.

In this case, respondents were asked if it is common that a customer can fully appreciate a product when described using standard descriptors only such as a 3½” computer floppy disk or a 90 minutes VHS videotape. In both cases, very rarely would such descriptions mean something else. Hypothesis 2 is formulated to test this.

**Hypothesis 2:**
There is no difference in Internet Commerce benefit experience between those who offer goods that are described using standard descriptors and those who do not.
2.2 The Effect of Tangibility

In addition to classifying a product as search good or experience good, a product can further be classified based on its ‘tangibility’. The ‘tangibility’ of a product can be viewed as the usability of a good if only a digital form is obtained. A high tangibility good is one that is only usable with a physical form is obtained. Based on this classification, a pair of shoes has high tangibility while software and information-based products have low tangibility. However, tangibility can be independent of whether an item is a search or experience good. For example, a search good can have high tangibility (e.g., a pair of sunglasses offered in a mail catalogue) while an experience good may have low tangibility (e.g., a sound track played over the Internet). Two hypotheses are formulated to examine the tangibility factor. Hypothesis 3 is to examine whether a product is usable in digital form.

Hypothesis 3:
There is no difference in the experience of Internet Commerce benefit between those who offer goods that are fully usable if all one obtained is a digital version and those whose goods are unusable in such situation.

In addition, we measure tangibility by comparing the worth of a digital form to the actual product. For example, when a customer purchase a piece of software, one is expected pay the full amount and given a digital copy. In this case, a physical copy is in fact unusable.

This is quite different if it is a painting. Although a painting can be appraised in the form of a digital picture, few, if any, would pay the full price of a renowned artwork if all one gets is a digital picture. Theoretically, the software vendor should have gained more benefit from Internet Commerce than the artwork auctioneer. Hypothesis 4 is formulated to examine this issue.

Hypothesis 4:
There is no difference in Internet Commerce benefit experience between those who offer goods that a customer is willing to pay-in-full for a digital version and those who do so.

3. Results and Discussion

3.1 The sample

The sample of this study was selected from a number of Internet directories (www.yahoo.com, www.softcom.com.au, www.austrade.gov.au). The criteria for a firm to become part of the sample are:

- It must have a physical presence (e.g., an office or key staff members) in Australia.
- It does not have more than 100 employees and preferably not more than twenty in the case of a non-manufacturing firm (a criterion widely used to define a small business within Australia).
- The owner(s) or business partner(s) of the firm have sole or key decision-making power in major strategic and financial decisions (i.e., not a public company).
- It must have an email address and a web page.

Based on this set of criteria, 238 questionnaires were sent using electronic mail. Each questionnaire was addressed to the owner/manager of the firm. We avoided sending the questionnaire to the email address of the webmaster but direct it to the owner’s email address. If this was not possible, the Customer Enquiry address or the Sales Department address was used instead. Fourteen questionnaires were returned due to delivery failure, making the effective number of questionnaires sent 224. Follow-up reminders were sent to those who did not reply within a two-week period. The final number of responses was 69 among which 67 were useable. This gave an effective response rate of 30%.

The average number of years online for this sample is two. The sample deliberately includes small firms from different industry sectors. We classify the firms using the industry classification method adopted by Poon and Swatman [19]. However, we exclude firms from the Internet and Related Industry sector because their business characteristics will bias the result. For they are most likely to benefit from Internet Commerce. The percentage breakdown of the sample into industry sectors is shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1 Percentage breakdown of the sample into industry sectors</th>
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<tbody>
<tr>
<td>Industry sector</td>
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<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Information Technology (non-Net)</td>
</tr>
<tr>
<td>Music, Media and Publishing</td>
</tr>
<tr>
<td>Business and Professional Services</td>
</tr>
<tr>
<td>Wholesale and Retail</td>
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<tr>
<td>Manufacturing</td>
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<td>Tourism</td>
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</table>

The distribution of firms across industry sectors is determined by the responses received. The largest group is the Business and Professional sector (30.4%), followed by the Retail and Wholesale sector (21.3%) and the IT (non-Net) sector (20.3%). The IT (non-Net) sector includes firms from the IT industry (e.g., software and hardware services) but excludes those who retail and manufacture hardware. There is only a low percentage of firms from the Tourism and Manufacturing sector.
Most of the firms have no more than twenty persons (82.6%) with 50.7% have less than six persons. The high percentage of micro-sized firms suggests that smaller size firms do see the feasibility of Internet Commerce – an assertion supported by other empirical evidence [14; 11].

Table 2 Firm size distribution for this sample

<table>
<thead>
<tr>
<th>Number of persons in the firm</th>
<th>% of firms</th>
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<tbody>
<tr>
<td>1 – 5</td>
<td>50.7</td>
</tr>
<tr>
<td>6 – 10</td>
<td>17.4</td>
</tr>
<tr>
<td>11 – 20</td>
<td>14.5</td>
</tr>
<tr>
<td>21 – 60</td>
<td>8.7</td>
</tr>
<tr>
<td>More than 100</td>
<td>2.9</td>
</tr>
<tr>
<td>Not answered</td>
<td>5.8</td>
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</table>

3.2 The effect of product characteristics on Internet Commerce benefit

The testing of the 4 hypotheses was performed through comparison of means (T-test). Firms were grouped according to their product offerings. The mean values for the four benefit indicators between groups were compared. The results are summarised in Table 3.

In this sample, 81% of the sample are offering goods that are often purchased without physical examination. This indicates that many small firms started Internet Commerce because their goods can be bought without the need for trying out. This is an important consideration if customers are expected to finalise their purchase decisions online. However, having such an advantage does not necessarily help a small firm to experience more benefit through Internet Commerce (i.e., not rejecting Hypothesis 1). In fact, small firms offering such goods in general have less positive experience on Internet Commerce benefit. One explanation could be those who offer non-experience goods are targeting a niche market and sell to customer groups with high demands. Although customers cannot examine the goods physically, they are willing to buy online due to unfilled demands.

Based on another way to classify the sample, 64% offer goods that are usually sold to a customer unseen using standard descriptors. Despite such advantage, firms who are offering such goods do not seem to have experienced significantly more benefit from Internet Commerce (i.e., not rejecting Hypothesis 2). Further research needs to examine why this is the case. One possibility is the lack of trust from potential customer.

Table 3 T-test results for the four hypotheses between the ‘Y - Yes’ and ‘N - No’ group with p-values in brackets (*p < .05, **p < .01)

<table>
<thead>
<tr>
<th>Benefit indicator</th>
<th>Hypothesis</th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td>Y = 3.2, N = 3.4 (.663)</td>
<td>Y = 2.9, N = 3.2 (.565)</td>
<td>Y = 2.8, N = 3.2 (.317)</td>
<td>Y = 4.1, N = 4.1 (.997)</td>
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<tr>
<td></td>
<td>2</td>
<td>Y = 3.5, N = 3.2 (.448)</td>
<td>Y = 3.0, N = 3.4 (.314)</td>
<td>Y = 3.1, N = 3.2 (.707)</td>
<td>Y = 4.0, N = 4.3 (.384)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Y = 3.5, N = 3.3 (.713)</td>
<td>Y = 3.3, N = 3.1 (.592)</td>
<td>Y = 3.3, N = 3.1 (.541)</td>
<td>Y = 4.1, N = 4.1 (.778)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Y = 3.6, N = 3.3 (.438)</td>
<td>Y = 3.3, N = 3.1 (.701)</td>
<td>Y = 3.3, N = 3.1 (.659)</td>
<td>Y = 4.3, N = 4.0 (.463)</td>
</tr>
</tbody>
</table>

The results in Table 3 provide insufficient evidence to reject Hypothesis 3 and 4. Firms offering goods that are fully usable in digital form have similar experiences of Internet Commerce as those whose products are not. Still, 66% of the sample are offering such goods, suggesting that this might have been a driver to engage in Internet Commerce in the beginning.

Whether a customer is willing to pay the full price for a digital version of a good was examined. The result again indicates that there is insignificant difference between the two groups. Although firms who offer goods which customers are willing to pay-in-full for a digital version express a slightly more positive view on Internet Commerce, in general whether the delivery process can be completed over the Internet do not make a difference in Internet Commerce benefit.

4. Conclusion

Surely sampling bias could have contributed to the one-sided results, the evidence suggests that success through Internet Commerce does not hinge solely on product characteristics. This provides a partial explanation why some firms who have gained leverage from Internet Commerce are not necessarily selling information or software. Although it is logical to believe
that firms who are selling search goods of low tangibility
have a natural advantage in Internet Commerce, it is
important to understand that all products have some
degree of tangibility and a mixture of search and
experience components. The only difference is the
relative ratio of such characteristics. For example, a pair
of jeans is an experience good with high tangibility, but
the size and fit can be easily described using standard
descriptions. Similarly, a piece of software is a search
good with low tangibility, but the functionality of a
software package cannot be fully appreciated without
‘test-driving’ a beta release. Consequently, firms need to
re-think what is the implication of the nature of goods
and how to maximise Internet Commerce benefit. For
example, how can a customer be attracted to buying an
experience good when the physical evaluation is not
possible. Would a “no question asked” refund policy be
helpful? Can one sell a ‘lifestyle’ or ‘feeling’ of owning a
good rather than the actual good? Can an innovative
marketing campaign be used to lead people buying goods
not based on needs.

The lesson from this study is that to be successful
through Internet Commerce, a firm needs to capitalise on
more than product characteristics. One may need to
consider other factors such as:
- Can the Internet help to better reach current and
  future markets?
- Is the Internet a useful support for the value system
  linking customers and suppliers?
- How to generate urges to use the Internet to access
  the product?
- A reliable delivery process in the case of high
tangibility goods, and;
- Last but not least, a genuine and trustworthy
customer relationship.

In conclusion, small firms should not be discouraged
from participating in Internet Commerce despite their
product characteristics. Based on the experiences of
those in this sample, product characteristics alone cannot
determine Internet Commerce benefit. A significant
number of firms in this study have experienced some
degree of benefit from Internet Commerce. Many have
indicated that they are more competitive and have
improved business performance.

The results from this study bring out the need to
explore factors beyond product characteristics for Internet
Commerce benefit. Our ongoing research has shown that
market characteristics, value system characteristics and
industry sector characteristics all have a positive
influence on Internet Commerce benefit.

5. References


