Dilemma in Online Shopping How to Select Online Shopping Platform

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Abstract
Although many scholars had proposed lots research results about online shopping, they are quite vague and hard for enterprisers to practice it. Hence, this research observes the online store policies, services, functions, and activities among 17 online shopping platforms in Taiwan, China, and Hong Kong. And, this research (1) finds online stores assessment items by literature review; (2) establishes “online shopping platform for selecting decision table”; (3) applies Fuzzy Delphi and Multiple Attribute Decision Making to decide the priority of selecting decision categories. This research result can translate vague concept into physical principle, and even assist enterprisers to select online shopping platform.

Keywords: Online shopping platform, Qualitative interview method, Multiple Attribute Decision Making (MADM)

Introduction
Internet shopping is the most famous and popular issue in the world, which drives the online shopping platforms massively boosting. However, the issue of selecting suitable platform, that raise online stores exposures, benefits, performances, is gradually crucial recently. Despite scholars proposed various research results for assisting enterprisers to select platform, but as they are quite vague, enterprisers are confusing to apply it. Hence this research: (1) introduces the rules, services, functions, promotion activity about 17 shopping platforms; (2) realizes selection criteria and condition by reviewing literature; (3) summarizes customers purchase process from each perspective, that build the basement of decision process; (4) collects criteria to assess platform, then build foundation for prioritizing decision categories; (5) introduces qualitative method and its value; (6) obtains consensus significance value by conducting Fuzzy Delphi method; (7) setts technique for order performance by similarity to ideal solution (TOPSIS) as alternative method to achieve weight of decision category; (8) calculates decision value of each category; and (9) introduces research result and management implication.

Literature Review
Online Shopping Platform Characteristic
To establish research foundation, this research has investigated 17 online shopping
platforms, including: (1) Yahoo super mall; (2) Phome online shopping mall; (3) Savesafe shopping mall; (4) Rakuten ichiba; (5) 7net shopping mall; (6) Momo shopping mall; (7) PayEasy; (8) Ruten auction; (9) ihergo; (10) Taobao shopping; (11) 1688 shopping mall; (12) Tmall shopping mall; (13) JD shopping mall; (14) HK eBay; (15) HK Yahoo auctions; (16) QQ buy; and (17) 138 discount platform.

In auction wise, 17 platforms could be classified into auction and non-auction. Furthermore, to clearly identify and compare their differences, this research had divided non-auction into (1) high responsibility; (2) middle responsibility; (3) low responsibility. So, this research had acquired 4 types of online shopping platform.

In comprehensive perspective, this research had find 5 characteristics among the 4 types of online shopping platform:

(1) The 4 types featuring similar attributes, they are the foundational requirement, including transaction security, privacy policy, operation guide, website design style, member service, price strategy, website function, promotion and marketing activity, product information, diverse payment, and service.

(2) The 7 Auction shopping platforms were concerning on providing brilliant interaction (bidding or haggling) between sellers and buyers, which include following platforms: Ruten auction, Taobao shopping, 1688 shopping mall, HK eBay, HK Yahoo auctions, QQ buy, and 138 discount platform.

(3) The 5 online shopping platforms were focusing on shops establishment policy, information session, consultation, test, guideline lecture and product information. Hence, this research recognizes the 5 platforms as “high responsibility store”, including Phome online shopping mall, Savesafe shopping mall, 7net shopping mall, Momo shopping mall, and PayEasy.

(4) The 4 online shopping platforms were concerning on selecting reliable sellers, but no limited in enterprises, so customers may bear some risks. Therefore, this research regards the 4 platforms as “middle responsibility store”, which include Yahoo super mall, Rakuten ichiba, Tmall shopping mall, and JD shopping mall.

(5) Finally, only ihergo shopping platform is considered as low responsibility platform. This platform just provides place for communicating between customers, they should purchase product until a certain price / amount, then achieve discount. The low responsibility platform don’t handle any issue between sellers and customers and they should negotiate themselves.

Criteria to Select Online Shopping Platform

Close and Kukar-Kinney (2010) considers that shopping cart; shopping wish list; and shopping cart history may accelerate customers purchasing. Ganesh, Reynolds, Luckett and Pomirleau (2010) recognized shopping convenience; online bidding/haggling; and website security certification are critical factors for customers. Hsu, Yang, Chen and Chen (2010) regarded shop fee; annual fee; transaction cost; publication cost; shop constraints; security as important issues. Abbasi, Bigham and Sarencheh (2011) indicate high transaction times and revenue may increase reliability among customers. Liao, Chu, Chen and Chang (2011) summarized following 3 factors as important issues: celebrity promotion; TV advertisement; discount or marketing activity. Aghekyan-Simonian, Forsythe, Suk Kwon and Chattaraman (2012) considered product brand image may impact purchase intention.
Kim, Galliers, Shin, Ryoo and Kim (2012) suggested refreshing website content; returning guideline; and returning guarantee are critical factors while customers purchasing products. Chiu, Hsu, Lai and Chang (2012) suggested enterprise should reveal product satisfaction, and then enhance purchase intention. Hongjun and Yajia (2012) collected following 4 factors for enterprises to improve operating performance: human resource management; accurately recruiting; training and education; evaluating performance. Liao, Chen and Hsieh (2012) indicated payment method; cumulative consumption offset cash or expense offset by bonus points; after-sales service; and customer service hotlines may enhance purchase intention. Song, Baker, Lee and Wetherbe (2012) considered 3 factors as critical factors for enhancing purchase intention: product information; free delivery fee and free gift; and system website.

Spillinger and Parush (2012) indicated customers may concern following 4 factors: website introduction; product list; product advertisement; product information. Cebi (2013) proposed 6 factors which may influence purchase intention: system reliability; search function; privacy policy; user interface; reply mechanism; service improvement. Filipović, Jovanović and Kostić (2013) indicated website special function; atmosphere; discount; coupon can attract customers purchasing. Kim, Hong and Rho (2013) considered social network linking; order tracking and searching function are important for customers. Vincent and Webster (2013) suggested that enterprisers should pay attention on member bonus; benefit; trust, then maintaining customer relationship. Wang, Wang, Fang and Chau (2013) proposed 3 factors for influencing purchase intention, including discussion forum; product quality assurance; online word-of-mouth. Wu (2013) considered following 5 factors are crucial for establishing customers trust: transaction process; transaction rules; transparent policies; purchase notice; and online complaint channel.

**Customers Shopping Process**

Strong (1925) had proposed AIDA mode, which clearly reveals 4 stages during purchasing: attention; interest; desire; action. Rogers (1995) applied innovation diffusion theory (IDT) to define “purchasing process”: knowledge; persuasion; decision; implementation; confirmation. Bulter and Peppard (1998) explained customers purchasing processes are including: problem recognition; information search; evaluation of alternatives; choice/purchase; post-purchase behavior. Miniard, Engel and Blackwell (2011) based the EKB model to redefine purchase decision processes: need recognition; search; pre-purchase evaluation of alternatives; purchase and consumption; post-consumption evaluation; and divestment.

**Assessment Principle for Selecting Online Shopping Platform**

Sun and Lin (2009) assessed 4 online shopping website by 3 categories, 12 items, and TOPSIS method: technology acceptance factor: efficiency, practicality, ease of use, time-saving; website service quality: communication, confident, security, trusts; specific hold-up cost: familiarity, past experience, proficiency, and knowledge. Yoon and Kim (2009) indicated following 3 factors may seriously impact online stores: operation; efficiency; resource. Hsu, Yang, Chen and Chen (2010) regarded shop fee; annual fee; transaction costs; publication costs; shop constraints; and security are crucial for online shop. Bharathi, Vaidya and Parikh (2012) proposed costs; resource; time is key factors to implement at
online shop project. Chien and Cheng (2014) consider 3 factors are critical assessment principles for making decision: resource; efficiency and benefit; and necessity.

**Qualitative Method**

- **KJ method**
  
  Kuo and Chen (2011) indicated KJ method can assist users to translate vague concept into physical relationship and categories. Furthermore, KJ can figure out confused idea into systemized opinion and suggestion, even find the resolution. Cheng and Leu (2011) proposed following 5 steps to implement KJ method: establishing topic; collecting data; classifying and prioritizing data; naming each group; and drawing final diagram.

- **Focus Group Interviews (FGIs)**
  
  Sutton and Arnold (2011) considered the FGI method may assist interviewees to share its point of view, opinions, experiences, and motivation in specific topic. Stewart, Shamdasani and Rook (2007) propose 8 steps to implement FGI: establishing topic; building inviting list; selecting host; designing interview agenda; inviting experts; conducting group interview; (7) analysis and explanation; and making conclusion.

- **Delphi Methods (DM)**
  
  Delphi method can find the consistency among experts’ opinion by frequent questionnaire survey. Geist (2010) indicated Delphi method featuring following 4 characteristics: anonymity; iteration; controlled feedback; and statistical group response. van Zolingen and Klaassen (2003) suggested 11 steps to introduce FGI: define problem; determine experts’ requirement; select experts; prepare and distribute first questionnaire; analyze first questionnaire; determine the stability of responses are reached; if lacking stability, then control feedback, distribute second questionnaire; prepare second questionnaire; analyze second questionnaire; one stability is poor, then repeat the preceding 3 steps; and if reached stable requirement, then reproduce the data in final report.

  To make experts opinions consistent, this research apply Likert 7 scale to measure its consistency (Likert, 1932): (1) reserves opinions which mean value > 3.5, standard deviation < 0.8, or mode $\geq$ 6.0; (2) deletes opinions which mean value< 3.0, standard deviation < 0.8, furthermore, this research applies quartile deviation to judge the consistency of experts opinions by Q value: (1) $Q<0.6$ imply high consistency; (2) $0.6 \leq Q \leq 1.0$ imply middle consistency; (3) $Q>1.0$ imply poor consistency. At the same time, Murry and Hammons (1995) proposed “consistency rate > 70%” as a criterion to assess consistency.

**Fuzzy Delphi Method**

Because original Delphi method didn’t consider fuzzy and related issue, so scholars are combined Delphi method and Fuzzy set theory, to develop fuzzy Delphi method. Lee, Wang and Lin (2010) indicate Delphi method can) obtain most pessimistic value and most optimistic value by questionnaire survey; define the triangular fuzzy numbers of most pessimistic value and most optimistic value; examine the consistency of experts’ opinions , then calculate the consensus significance value of each assessment items; decide threshold value by considering the consensus mean value of each item; filter appropriate items; and acquire consensus significance value by using gray zone method in two triangular fuzzy
Multiple Criteria Decision-Making

TOPSIS is Multiple Attribute Decision-making (MADM) method, which can assist users to make decision from diverse alternatives and perspectives, the processes contain: translate decision problem into original decision matrix, then establish normalization decision matrix; build principle weight; find optimized project: establish weighted normalization decision matrix, build positive/negative ideal number, calculate distance between positive and negative ideal number (Hwang & Yoon, 1981). Furthermore, this research applies entropy method to assess each criterion, then establish overall objective weight of each principle. The implementation processes are: calculate weight of each project by normalization decision matrix; figure out value of all principles; establish entropy weight of all principles.

Online shopping platform selecting decision table

Define Online Shopping Platform Shopping Process

This research had summarized 20 purchase processes and concepts in previous chapter, but theirs implication are quite similar. Hence, this research invites a professional online shop consultants to conduct KJ method, then summarize 20 processes into (1) requirement recognition; (2) preference interest; (3) information collection; (4) project assessment; (5) make purchase decision (6) post-purchase evaluation.

To confirm the rationality of KJ method result, this research invites 6 experts (1 experienced online shop consultant, 2 online store supervisors, 2 internet marketing scholars, 1 online shopping platform supervisor) for participating focus group interview. This result reveals (1) the 6 purchase processes may combine into “attract interest”, “satisfy requirement”, “purchasing assessment”, “cumulative loyalty”; (2) add “platform capability” and “platform operation”, then assist enterprise to find customers’ purchase behavior. Hence, this research had redefined “online shopping platform shopping process”, which is the foundation of online shopping platform for selecting decision table.

Categories and Factors to Select Online Shopping Platform

To integrate previous research results and the 17 online shopping platforms practical for operating situation, this research (1) listed all services provided by shopping platforms; (2) classified services to each category; (3) confirmed the reliability of above result by KJ method.

Hence, this research had confirmed 6 steps, 29 categories, 98 items through above method. But, some items featuring similar implication. So this research conducts the twice KJ method, then (1) refine categories and items by eliminating, combining, rearranging, and simplifying (ECRS) method; (2) place each category to new dimension, then present the attribute of categories. Finally, this research had established “online shopping platform for selecting decision table draft”, which contained 6 steps, 13 dimensions, 28 categories, and 84 items.

Decision Table to Select Online Shopping Platform

To confirm that decision table is reliable, this research invites 6 experts to participate in
Dilemma in Online Shopping How to Select Online Shopping Platform

focus group interview. During this deeply interviewing and communicating, experts (1) ensure that the decision table is rational and reliable; (2) make the definition of each dimension, category, and item accurate; (3) delete and correct items.

Hence, experts suggest (1) combine “network identification certification” and “Secure Sockets Layer(SSL)” into “web security/certification”; (2) integrate “classification by brand” and “classification by product” into “classification by product”; (3) group “website operating Instructions” and “website guide(map)” into “website operating Instructions”; (4) add “Corporate Social Responsibility(CSR)” category, and 3 items: “charitable contributions”, “social care”, “environmental Protection”; (5) add “smartphone read version” item in “background maintenance function” category; (6) add “product video introductions” item in “advertising techniques used” category; (7) add “sponsorship of television to publicity” in “common propaganda tool” category; (8) add “Stores track list” in “check shopping results” category; (9) add “product shipping notification” in “Order Inquiry System” category; (10) add “goods appreciation deadline” in “appreciation guarantee” category; (11) add “customer feedback” in “Unidirectional Feedback” category.

And, experts aim to delete following similar items: (1) website Features; (2) special dynamic to attract customers; (3) formulate shop contract; (4) shopping cash; (5) customer interaction; (6) sellers forum. Furthermore, this research had correct some items more readable and logical. Hence, this research had confirmed the “decision table to select online shopping platform”, which contains 6 steps, 13 dimensions, 29 categories, and 85 items.

Establish Online Shopping Platform Selecting Decision Table

To confirm the focus group interview results, this research conducted twice Delphi questionnaire survey with 12 experts, including: 3 experienced online store consultants; 2 online store supervisors; 4 internet marketing professors; 3 online store platform managers.

The first Delphi survey has collected 12 valid questionnaires; conducted reliability analysis with quartile deviation method; and showed that 65 items are highly consistent, 12 items are fairly consistent, 8 items are poorly consistent. Overall consistency rate are 90.5% (=65+12)/85, which is better than 70% criteria (Murry & Hammons, 1995). To double check the result, this research invites 12 experts for completing second Delphi questionnaire, it indicates 66 items are highly consistent; 14 items are fairly consistent; 5 items are poorly consistent; overall consistency rate is 94.0% (=66+14)/85.

Furthermore, this research ensures the rationality and reliability by calculating the average value of each item (Likert 7 scale), and remains items whose score is higher than 5, then establishes “online shopping platform for selecting decision table”. Apparently, this result not only approved by experts, but examined by questionnaire survey.

Decision table priority to select online shopping platform

Constructing the Measurement Criterion of Online Shopping Platform Decision Categories

In order to construct the measurement criterion of online shopping platform decision categories, this research invites 1 consultant for conducting KJ method, aims to classify 21 measurement criterions. The result had deleted 8 measurement criterions which can’t examine each category, and 13 other criterions, were integrate into 7 principles: (1) cost; (2) efficiency; (3) resource; (4) time; (5) quality; (6) necessity; (7) benefit. Finally, this
research applies ECRS method to (1) combine “time” and “cost”; (2) integrate “quality” and “benefit”, then achieved 5 measurement principles.

This research confirms the rationality and reliability of this result with Delphi questionnaire and Likert 7 scale. The Delphi questionnaire survey invites 12 experts, and it shows: (1) 3 items are highly consistent; (2) 2 items are fairly consistent; (3) overall consistency rate is 100% (= (3+2)/5).

Furthermore, this research implemented Delphi questionnaire survey in next week, which showed that its overall consistency rate is 100.0% (= (3+2)/5). However, this research applied average score > 5.0 to measure the reliability, and find “efficiency” and “resource” are less than 5.0. Hence, this research deleted “efficiency” and “resource” items then “cost”, “necessity”, and “benefit” were just remained. So, this research had acquired a highly steady and reliable measurement principle, which is the foundation to measure each items in online shopping platform for selecting decision table.

**Prioritizing the Decision Categories of Online Shopping Platform**

This research aims to calculate the important difference of each category and items in online shopping platform for selecting decision table. Hence, this research will apply TOPSIS in follow up analysis.

This research implemented questionnaire with 14 experts (3 consultants, 2 online store managers, 6 scholars, and 3 online store platform managers). This research (1) calculated the decision value of 29 decision categories by 3 measurement principles (total 87 (=29*3) value), and confirm the consistency by Two Triangular Fuzzy Number. Hence it had established original decision matrix, which contains 29 decision categories and 3 measurement principles; (2) constructed “normalization decision matrix”, and analyzed the matrix by Entropy method, then calculated weight of measurement principles; achieved weighted decision value by multiplying normalization decision matrix and principle weight; calculated positive ideal number and negative ideal number of each project by TOPSIS; and measured the distance between 85 decision categories and positive/negative ideal number. Through above processes, this research had acquired priority of decision category to select online shopping platform (Table 1).

<table>
<thead>
<tr>
<th>Online Shopping Platform Selecting Decision Table</th>
<th>TOPSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purchase process</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Platform ability</strong></td>
<td></td>
</tr>
<tr>
<td>System capability</td>
<td></td>
</tr>
<tr>
<td>System security/certification</td>
<td>0.526</td>
</tr>
<tr>
<td>Reliable system</td>
<td>0.544</td>
</tr>
<tr>
<td>Website function</td>
<td></td>
</tr>
<tr>
<td>Background maintenance Function</td>
<td>0.592</td>
</tr>
<tr>
<td>Search function</td>
<td>0.403</td>
</tr>
<tr>
<td><strong>Platform operating</strong></td>
<td></td>
</tr>
<tr>
<td>Platform image</td>
<td></td>
</tr>
<tr>
<td>Platform attributes image</td>
<td>0.474</td>
</tr>
<tr>
<td>Corporate social responsibility</td>
<td>0.465</td>
</tr>
<tr>
<td>Cooperative mechanism</td>
<td></td>
</tr>
<tr>
<td>Cooperative rule and contract</td>
<td>0.443</td>
</tr>
<tr>
<td>Commission</td>
<td>0.444</td>
</tr>
<tr>
<td>Consult and assistant</td>
<td>0.588</td>
</tr>
<tr>
<td>Feedback operation information</td>
<td>0.312</td>
</tr>
</tbody>
</table>
Online Shopping Platform Selecting Decision Table

<table>
<thead>
<tr>
<th>Purchase process</th>
<th>Dimension</th>
<th>Category</th>
<th>TOPSIS</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attract interest</td>
<td>Purchase process</td>
<td>Shopping process</td>
<td>0.565</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transaction policies</td>
<td>0.482</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Advertisement</td>
<td>Promotional advertisement</td>
<td>0.678</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>Marketing tool</td>
<td>0.286</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Marketing activity</td>
<td>Limited on sale</td>
<td>0.612</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
<td>Product recommendation</td>
<td>0.457</td>
<td>22</td>
</tr>
<tr>
<td>Satisfy requirement</td>
<td>Product information</td>
<td>Product sales information</td>
<td>0.644</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Best-sell information</td>
<td>0.582</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Member benefit</td>
<td>Members bonus</td>
<td>0.516</td>
<td>6</td>
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<tr>
<td></td>
<td></td>
<td>Discounts</td>
<td>0.615</td>
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<tr>
<td>Purchasing assessment</td>
<td>Purchase mechanism</td>
<td>Confirm order bill</td>
<td>0.495</td>
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<tr>
<td></td>
<td></td>
<td>Competitive bidding</td>
<td>0.569</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Diverse payment</td>
<td>0.603</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Delivery</td>
<td>Order delivery</td>
<td>0.464</td>
<td>21</td>
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<td></td>
<td></td>
<td>Order Inquiry System</td>
<td>0.481</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Product guarantee</td>
<td>Trial period guarantee</td>
<td>0.481</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Return and refund</td>
<td>0.607</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Suggestion and opinions</td>
<td>One-way opinions feedback</td>
<td>0.393</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Two-ways opinions communication</td>
<td>0.198</td>
<td>29</td>
</tr>
</tbody>
</table>

**Conclusion**

This research had proposed 2 results by reviewing literature and conducting qualitative interview: (1) online shopping platform selecting decision table; (2) prioritized decision categories table to select online shopping platform. These 2 results (1) integrate academic suggestion and practical duties; (2) point out insufficiency in internal enterprise, and suggest a direction to adjust resource allocation; (3) provide enterprise a useful and reliable reference to select online shopping platform; (4) establish strategy foundation to develop online shopping platform.

Hence, this research result had 3 management implications: (1) in management application dimension: (a) provide a check list for each department; (b) suggest online shopping platform to design new function; (c) recommend enterprise to improve online store. (2) in management mechanism dimension: (a) enterprise can configure resource effectively and accurately; (b) enhance present management mechanism. (3) in management decision dimension: (a) provide strategy reference to select online shopping platform; (b) guide direction for online shopping platform to develop platform.

**References**


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