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Research on Value Evaluation of E-commerce Business Model

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Abstract

The study of business models is an important topic for entrepreneurship and organizational purpose because business models affect firms' possibilities for value creation and value capture. The present study leaves a gap to be bridged, and the gap reveals a critically important research problem to be resolved, that is, how to visualize these transaction activities and calculate revenue respectively. This paper, therefore, adopts e3 model for investigations of E-commerce enterprise value generating in the process, and can be used to select or optimize value activities that advance both research and practice in the field of E-commerce enterprises. The result indicates that: ① Profitability sheet is able to capture customers' behaviors, which gives them insights to better understanding online customers' experiences and expectations, and make reasonable decisions. ② This model illustrates the main activities of business model and exploits the ways to optimize value activities.③ This modeling approach provides pro-activities way to actually experiment with alternative business models, by making enterprise to simulate various possibilities before committing to specific investments in reality.

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Keywords: E-commerce; e3 value mode; business model; value evaluation; value creation;

1. Introduction

In the last decades science and technology have experienced an impressive and fundamental change, which provides many new business opportunities to establish E-commerce enterprises, e.g. Alibaba Group Holding Ltd,

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JD.com Inc and Suning Commerce Group Co Ltd in the mainland, and an ideal setting for studying business model development. Although the "what" question (i.e. business model's definition, function, classification) has been investigated in many studies, the "how" question (i.e. business model's representing method, evaluation) has yet to be explored.

Several scholars have recognized this problem and have attempted to represent value creation logic and process of business model through a mixture of textual, verbal, and ad graphic representations. Weill and Vitale (2001) have introduced three classes of objects — participants (firm of interest, customers, suppliers, and allies), relationships, and flows (money, information, product, or service flows) — intended to provide tools for the analysis and design of e-business initiatives. Chesbrough and Rosenbloom (2002) thought business model as input-output convert mechanism to be financed out of internal corporate resources. Osterwalder (2004) applies business model ontology (BMO) to conceptualization and formalization of the essential components into elements, relationships, vocabulary, and semantics. Based on a Penrosian view of firm, Demil and Lecocq (2010) build on the RCOV (R means resource, C means competences, O means organization, V means value) propositions framework to represent how value create and evolve. Casadesus-Masanell and Ricart (2010) represent business model by means of a causal loop diagram, where choices and consequences are linked by arrows based on causality theories. Li and Wang (2010) develop rules based on container model, systematically reveals fundamental components and building blocks, and explains function and value activities of business model. Teece (2010) defines a business model as the way in which the business enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit. Despite conceptual differences among current literature, there is widespread acknowledgement that business model is a new unit of analysis in addition to the product, firm, industry, or network levels, and value creation is the focus of business model. Thus, these studies leave a gap to be bridged and the gap reveals a critically important research problem to be resolved, that is, how to visualize these transaction activities and calculate actors revenue respectively? This paper, therefore, adopts e3 value model (i.e. economical, exchange, enabler), proposing by Gordijn and Akkermans (2001,2004), to investigations of E-commerce enterprise value generating in the process.The quantitative analysis of our study can help the actors involved to understand value creation and capture, and advance both research and practice in the field of E-commerce enterprises. Therefore, managers need to know the key attributes when designing E-commerce business model to increase efficiency and effectiveness.

This paper is structured as follows: Section 2 presents our method and tools. Section 3 is E-commerce modeling construction. Section 4 is devoted to the evaluation of results. Section 5 summarizes our main conclusions and indicates the suggestions.

2. Methodology and tools

2.1. The methodology of e3 value

The model of e3 value defines how economic value is created and exchanged within a transaction network by utilizing conceptual graphical model and scenario-based thinking. What's more, it can perform a financial sensitivity analysis. Through this model and subsequent profitability sheet, we can find enterprise sustainability depends on anticipating and reacting to dynamic environment while optimizing value activities. This modeling technique takes a value viewpoint unlike other traditional modeling tools that take either a business process viewpoint (typical of operation management) or a system architecture view (typical of information systems literature). Gordijn and Akkermans identified a number of generic concepts, relationships and rules in order to enhance and sharpen the understanding of business operations and requirements using scenario analysis and quantification. This modeling borrows concepts from business literature such as actor, value object, value port, value interface, market segment, composite actor, scenario path, start stimulus, end stimulus, and connection. The e3 value mode respect the rule of economical reciprocity and "give and take" methodology: for goods or services delivered to the transaction network, the transaction networks should provide goods or services of equal value in return.

Comparing with other methodologies, the e3 value model helps in building a conceptual model for E-commerce of both current and prospective business models, managers can quickly surmise many of the likely implications of making possible change. What's more, it can automatically generate revenue/profit calculations for each actor involved, and analyze E-commerce enterprises for its economic sustainability. It is worth noting that the e3 value model is a simplification of the real world, and the focus of the model is on what kind of value objects must

exchange to each other in order to cover customer needs.

2.2. Tools

Value transfer can be conceptualized by the following e3 value constructs (in italic). *Actors*, such as the buyer, seller are economically independent entities. Actors transfer *value objects* (goods, service, payment, or experience) by means of value transfers depicted by labeled arrows. By exchanging value objects they rather aim for profitability (in the case of supplier) or maximum their economic utility (in the case of customer). A *value interface* models the principle of economical reciprocity: Actors only willing to transfer a value in return for some other value of object, and consists of *value ports*, to depict outgoing-ingoing value activities. In the e3 value model, customers are considered as the starting points and the reason why a business model must be generated. How to satisfy customer need follows *dependency path,* which indicates the transfer of value objects. The dependency path shows how many value transfers are executed as a result of a consumer need. The dependency path is e.g. used to analyze the net cash flow for each actor involved. A *market segment* shows a set of actors that for one or more of their value interfaces, value objects from an economical perspective. The Table 1 shows e3 value mode how to present:

Table 1. Legend of e3 value tool

Legend	Description	Legend	Description
	Market Segment		Value Activity
	Actor		Value Interface
	Consumer Need		Boundary Element
	Value Transfer		Value Port
	AND element		OR element

3. Building the business model for E-commerce enterprise using e3 value model

The business model is a structural template that describes the organization of a focal firm's transactions with all of its external business partnerships. E-commerce enterprise, as a focus firm, is performing value activities to provide product or service which can be offered to customers, and demand resources from suppliers and other business partners. In order to understand these value transfers relationship in a more structured and rigorous way than would be possible through verbal theorizing, this paper applies e3 value model to the description of E-commerce enterprise that behaves in compliance with procedure and regulations. Initially, assuming this E-commerce business model that mainly involves eight actors below:

- *E-commerce enterprise* T. It adopts feedback system and cogitation system strictly to prevent committing fraud or making intentional errors, e.g. buyers have paid but sellers don't deliver the (right) goods or services, or buyers will not pay but sellers have delivered goods or services; or sellers will deliver counterfeits and bogus products. As a online platform, enterprise T must enhance e-service quality, including website design, reliability, securing and privacy for both buyers and sellers.
- Consumers. Online shopping has become popular in our daily life and T provides rich products portfolio, such as Heath & Beauty, Gifts, Sports & Toys, Mobile Phone & Accessories, Desktops, Laptops.

- B2C stores and C2C stores. They not only provide the wide variety of commodities, but also important revenue resource for company T. T gathers advertising expense (such as federal fees, bidding fee, key words ranking fee), membership fee (such as technical service fee, merchandise helving fee), value-added service charge (such as (the products in characteristics display, logistics charge).
- *Internet service provider(ISP)*. The core business of e-commerce enterprise T is to provide online shopping platform, and they are not so much interest in all technical activities, such as IP access provisioning. Therefore, they outsource these activities to the telecommunication enterprises.
- *Advertiser.* Advertising message could effectively increase customers' purchasing probability and enhance the image of product and service, then attract more stores to sell products.
- *Employee*. The salary of treating employees well is largely influencing innovation in the E-commerce enterprises.
- *Equipment seller*. E-commerce enterprise T outsources activities such as manufacture, update and maintain network equipment to the professional manufactures.

The Fig. 2 presents business model of E-commerce enterprise T adopting by the e3 value model:

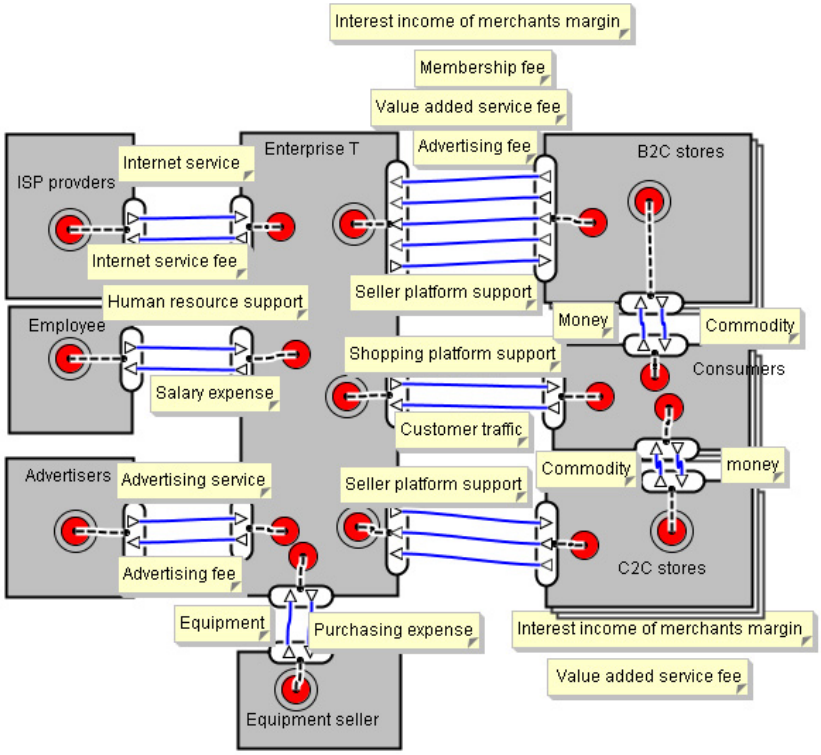

Fig. 1. The e3 value of E-commerce enterprise T

4. Simulation of the model

The E-commerce business model is correct after checking. Then, we could study the behavioral characteristic of the simulation from different angles based on the practical problems, such as increase and decrease of customers, increase and decrease of ISP, and so on. In this paper, we compare and analyze the output of E-commerce profitability sheet under different presumed circumstances, aiming to provide reference and consultancy for the decision-making of E-commerce.

4.1. Model parameters setting

In this section, our aim is to illustrate that e-commerce T captures sufficient value for itself, and then to identify managerial insight in such a environment. We assume value for parameters as summarize in Table 2, which are based on realistic empirical estimation.

Table 2. Model parameter

Actors	Parameter Value	
B2C stores	The number of stores	60,000
	Average monthly turnover	¥500,000
	Membership fee	average 0.3% of total turnover per year
	Adverting fee	¥ 10,000 per year
	Value-added service fee	¥ 50,000 per year
	Merchants margin	¥ 200,000 per year
C2C stores	The number of stores	3,000,000
	Average monthly turnover	¥ 10,000
	Membership fee	free
	Adverting fee	free
	Value-added service fee	¥ 10,000 per year
	Merchants margin	¥ 1,000 per year
Internet service provider	ISP service expense	¥80,000,000 per year
Advertiser	Advertising expense	¥ 70,000,000 per year
Employee	Salary expense	¥500,000,000 per year.
Equipment seller	purchasing expense	¥ 200,000,000 per year
Platform support	Expense forB2C stores	¥ 40,000,000 per year
	Expense forforC2C stores	¥200,000,000 per year
E-commerce	Interest rate	3.25% per year

4.2. Profitability sheet

Profitability sheets of e3 value model contain for each actor flowing into and out the actor as a result of scenario path execution. The objects flowing out the interface of an actor are added to the actor's profitability sheet in the column value object out, while the objects flowing into an actor are added to actor's profitability sheet in the column value object in. Table 3 shows a profitability sheet for e-commerce enterprise T, based on the above value model and financial parameters. These financial parameters of each actor involved can be changed, and the financial outcomes of the business model can be inspected or processed further.

Table 3. Profitability sheet of E-commerce enterprise T

Value Interface	Value Port	Value Transfer	Occurrences	Valuation	Economic Value
vi16：{Platform support，Customer traffic}			50000000		0
	Shopping platform support: out	(all transfers)	50000000	0	0
	Customer traffic: in	(all transfers)	50000000	0	0
vi559:{Purchasing expense,equipment service}			1		-200,000,000
	Purchsing expense: out	(all transfers)	1	0	0
	Purchsing expense: out	(EXPENSES)	1	200000000	-200,000,000

	Equipment: in	(all transfers)	1	0	0
vi10：{Platform support，Interest income，advertising income，membership income，value added service income}			60000		98,403,390,000,000
	Seller platform support: out	(all transfers)	60000	0	0
	Seller platform support: out	(EXPENSES)	60000	40000000	-2,400,000,000,000
	Value added service income: in	(all transfers)	60000	50000	3,000,000,000
	Advertising income: in	(all transfers)	60000	600000000	36,000,000,000,000
	Membership income: in	(all transfers)	60000	1080000000	64,800,000,000,000
	Interest income: in	(all transfers)	60000	6500	390,000,000
vi22：{Platform support，income interest，value added service income}			1500000		44,846,250,000,000,000
	Value added service income: in	(all transfers)	1500000	30000000000	45,000,000,000,000,000
	Interest income: in	(all transfers)	1500000	97500000	146,250,000,000,000
	Seller platform support: out	(all transfers)	1500000	0	0
	Seller platform support: out	(EXPENSES)	1500000	200000000	-300,000,000,000,000
vi86：{Advertising fee，Advertising service}:{unknown,unknown}			1		-70,000,000
	Advertising service: in	(all transfers)	1	0	0
	Advertising fee: out	(all transfers)	1	0	0
	Advertising fee: out	(EXPENSES)	1	70000000	-70,000,000
vi57:{Internet service expense，Internet service}			1		-80,000,000
	Internet service: in	(all transfers)	1	0	0
	Internet service fee: out	(all transfers)	1	0	0
	Internet service fee: out	(EXPENSES)	1	80000000	-80,000,000
vi41:{Salary expense,Human resource support}			1		-500,000,000
	Salary expense: out	(all transfers)	1	0	0
	Salary expense: out	(EXPENSES)	1	500000000	-500,000,000
	Human resource service: in	(all transfers)	1	0	0
INVESTMENT					4,000,000,000
EXPENSES					1,500,000,000
total value for actor					44,944,647,040,000,000

4.3. Sensitivity analysis

We first analyze total value for all actors based on Table 2. Then we change these parameters value to investigate how the relative influence of these parameters sensitivity. Table 4 shows our case performance fluctuation in the different parameters value, and this changed data is important decision to our managers.

Table 4. Total value change for 20% decrease

Actors	Parameters	Total value fluctuation for 20% decrease
B2C stores	The number of stores	-7.552%
	Average monthly turnover	-5.774%
	Membership fee	-5.774%
	Adverting fee	-0.267%
	Value-added service fee	-1.337%

	Merchants margin	-0.174%
C2C stores	The number of stores	-13.410%
	Value-added service fee	-13.367%
	Merchants margin	-0.043%
Internet service provider	ISP service expense	0.036%
Advertiser	Advertising expense	0.062%
Employee	Salary expense	0.446%
Equipment seller	purchasing expense	0.312%
Platform support	Expense for B2C stores	0.018%
	Expense for C2C stores	0.089%

5. Main conclusions and suggestions

The case we discussed can be recovered that the e3 value model can give us an overview of a complex business questions " who is offering what of value to whom and expects what of value in return ". In this section, we have argued that main conclusions for the exploration of an E-commerce business model, and have provided some suggestions to overcome the threat of obsolescence from unforeseen external changes.

5.1. Main conclusions

Conclusion 1: *Exploring the main influencing factors on E-commerce enterprise's profitability*

As we can see from Table 3 and Table 4, this model is able to capture customers' behaviors, which gives them insights to better understanding online customers' experiences and expectations, and make reasonable decision. Table 3 means that the profit from C2C online stores is 5 times from B2C online stores. Table 4 signifies that C2C stores have more profit influence on E-commerce enterprise than B2C stores. This underlying logic is compliant with long tail proposed by Chris Anderson, that is, some distributions of numbers is the portion of the distribution having a large number of occurrences far from the head or central part of the distribution. This means E-commerce enterprise should not neglect small and micro businesses, and make arduous efforts to improve the platform service quality and efficiency continually in order to attract more online stores, including C2C stores, B2C stores and customers. Furthermore, E-commerce T should cover wide range of assistance, such as frequently asked questions, order tracking, and complaint management. Not providing effective support may lead to customers and sale loss. What's more, the whole shopping process including pre-shopping, shopping, after-shopping should give customers enjoyable experience, which not only motivates stores and customers' participation, but also encourages their repeat visit and shopping. Advertising should also be concerned. Advertisements help potential online stores and consumers, and hence lower customer search costs. The increased customer awareness and reduced search costs spill over to other online stores.

Conclusion 2*: Exploiting new ways to optimize value activities*

Fig. 1 illustrates the main activities of E-commerce T business model. As argued in section 2, value ports mean abstract away from these value activities and value interfaces. Deconstruction and reconstruction these value activities, as a way to discover new activities which can be successfully assigned to alternative commercial actors. And four ways are indentified that optimize value activities: thickening (reinforcement of existing value activities), patching (creation of new value activities and its reinforcement), coasting (no further emphasis on new value activities), and trimming (deletion of outdated value activities). In order to optimize the creating value activities, several considerations can be advanced. First, E-commerce enterprise T needs to devise a sound transaction

activities, in which customers should be placed at the center. Second, if transaction activities of various types of customers conflict with each other, E-commerce should analyze circumstances under which specific principles should be followed. Furthermore, a balance must be found between value activities, value objects, value ports, etc. Second, Deconstruction and reconstruction value activities should abide by the principle rule that new activities are profitable.

Conclusion 3: *Providing pro-activities way to E-commerce innovative ideas*

Innovative E-commerce ideas tend to formulated vaguely initially. Such ideas are hypothesis about of an innovative customer value proposition utilizing new technology, but it often lacks a precise description. Fig. 1 also shows that E-commerce enterprise adopting e3 value model enables managers to map, test and iterate innovative ideas, and trace their evolution over time. This modeling approach provides pro-activities way to actually experiment with alternative business models, by making enterprise to simulate various possibilities before committing to specific investments in reality. And whereas the early business models approaches seldom present value activities visually, this approach of an experiential 'trial – and – error' lets us acknowledge that the initial value activities of business model are frequently revised and adopted.

5.2. Suggestions

5.2.1. Keep abreast of new dominant logic

This current model construction bases on ideal environment, but new communications and computing technology, and the reasonably open global trading regimes have changed the traditional balance between customers and sellers. So business model must morph and re-evaluate over time as changing markets, technologies and legal structure. A business model reflects manager's dominant logic about what customers want, how they want it and what they want it and what they pay, and how an enterprise can organize to best meet customer needs, get paid well for doing so. However, the big challenge for managers to reframing this dominant logic is that they likely rose to their position via the current business model, which is now deeply familiar. Managers must adopt an effectual attitude toward new dominant logic. The best way to ensure that the dominant logic stays popular is to start thinking the new dominant logic as soon as the current one is implemented.

5.2.2. Keep abreast of new technology

E-commerce enterprise should monitor new technology that can reduce the fundamental change of business model, e.g. cloud computing will serve as the engine in the new economic era empowering all businesses to better serve consumers and improve productivity. New technology will remodel features, functions and capabilities in order to enhance and simplify the shopping experience of the customers who use it. To a E-commerce enterprise, another threat that is harder to monitor but nevertheless important to keep on the radar screen, is that of technologies that could make E-commerce enterprise's product or service outdated. Participating alliance with the technology providers may be the feasible way to preempt this threat. It is their job to think about future possibilities without too much reference to the existing technology.

5.2.3. Keep abreast of new customers trends

Customer trends track more than simply what people buy and how much they spend. Data collected on trends may also include information such as how consumers use a product, how they communicate about a brand with their social network , and what drive customers' utility function change. Doing so will help influence customer attitudes and interaction with and loyalty towards E-commerce, and determine how to possibly revenues , profits and competitive advantages in the future. So E-commerce enterprise should put forth their best effort to collect valuable customer information, and anticipate their needs and respond instantaneously.

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