

TRIZ Evolutionary Trends in E-commerce Business

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Abstract. In the e-commerce business, it's the most important to know unexpected events and trends. For long time, people are struggling to find some products and services that they really want to buy and sell. Though these transactions between buyers and sellers, we find that psychological inertia and contradictions are existed in the consumer's engagement and actual consumption. We need to analyze and see if there are any problems to do e-commerce business very well. With TRIZ methodology, it's possible to know not only the interaction between merchants and customers, but also evolutionary trends such as robots, drones, driverless vehicles. In this paper, we propose an approach to find TRIZ evolutionary trends in the e-commerce business. Finding the further future of e-commerce with TRIZ remains an important area of inquiry, worthy of continuous research and exploration.

Keywords: TRIZ, E-commerce, Trend of Evolution

1 Introduction

A few decades ago, e-commerce business created with web technology, internet access. However, it was not very fast and convenient way to sell and buy goods compared to offline market and retail store. As web and internet are growing very fast, e-commerce business is increasing the domain of different areas such as leisure, travel, fintech, advertisement, etc. Meanwhile, personal device like smartphone, tablet, PC are popular in the world and personal information and characteristic are diverse. It's possible to utilize large scaled data for personalization and advertisements. Continuously, some papers [1] [2] were predicted by innovative business model and technology. And [3] was introduced by attractiveness and prominence of TRIZ for the internet services. Especially, many TRIZ methodologies, long-term forecasting and trend of evolution are used as a key problem formulation. Also, Function Analysis, MST (Multi-Screen Thinking), Trimming, Feature Transfer, FOS (Function-Oriented Search) and Scientific Data Base Application are varied in the TRIZ methodology. It's good for researcher and engineer to predict their domain of technology and keep involving and considering their works. Because they are likely to improve their research and engineering by themselves. In this paper, we introduce that we find TRIZ evolutionary trends in the e-commerce business.

2 TRIZ Evolutionary Trends

2.1 Trend of S-Curve Evolution

As an engineering system evolves, the evolution of each main parameter of value (MPV) from Gen3 describes an S-shaped curve in time. This is related with S-Curve analysis. Technology grow like s-curve pattern. S-curve insist on indicators and recommendations [4]. The MPVs are usually at different points in their respective evolutionary development. S-curve analysis is an analytical tool based on the trend of S-curve evolution that determines where an engineering system is in its development and what steps should be taken to improve it. The S-curve is built for one or more MPVs. In the [5] papers, they insist that it's very important to utilize S-shaped curve with appropriate models and well-defined system. In our business, we apply for "connecting dot theory". We will only understand what happened to looking backward, if we try to predict our future, we will fail, because it never goes the way you want. Therefore, we can either trust, that all will work out ok, or we can worry our way through life. Due to many types of e-commerce business like customer to customer (C2C), business to customer (B2C), business to business (B2B) markets, it should be related to many types of MPVs. That's the reason why we have further prospective points like the brand, ecosystem such as point program, membership system, smart coupon for every service and cryptocurrency, loyalty program. It is necessary for us to propagate our services from tracking on the trend of S-shaped curve for e-commerce business.

2.2 Trend of Increasing Value

It's related to trend of S-curve evolution. It means that functionality increases and cost decreases. The trend of increasing value is the driving force behind the development of all technology. When some e-commerce services try to increase value for their system such as same day delivery, free shipping, etc, operating cost will increase depending on the infrastructure and maintenance resources. It's natural that increasing costs and resources are offered, but we should reduce costs for brilliant service and delightful customers. With e-commerce solution, we do the most valuable service without all the legwork and decrease costs for advertisements, operation, maintenance. In other words, it's no wonder that we should increase value and loyalty for our services. As for Fig.1, we are still investigating and researching when and how we will get it done because the portion of e-commerce business is much smaller than retail business. At the first of this year, we announced that we collaborate our business with Walmart to global e-commerce in Japan and the U.S. Customers using the new service will have great pleasure of being able to earn and use Rakuten Super Points, also allowing them to use their points on more than 70 services within the Rakuten ecosystem.

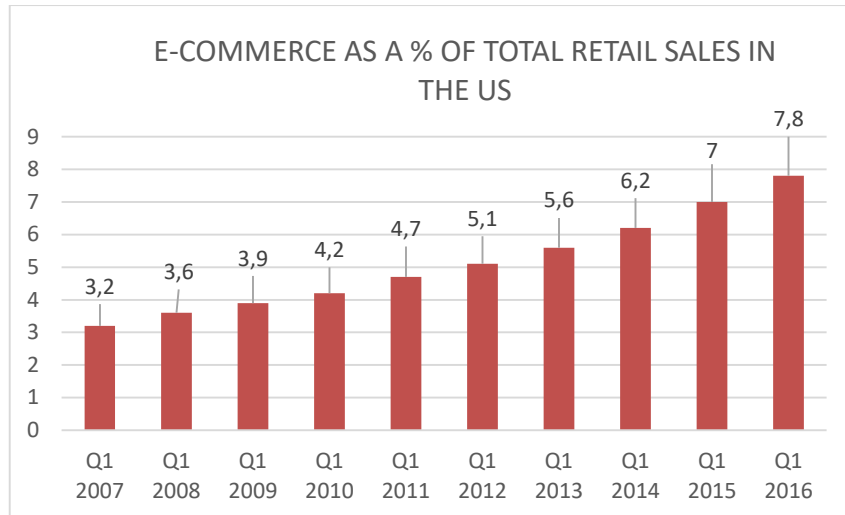


Fig. 1. E-commerce as small portions of total retail sales in the US (U.S Census Bureau Data)

2.3 Trend of Transition to Supersystem

As an engineering system evolves, it is integrated with Supersystem components. What function merge is parameters of the integrating systems become increasingly different from those of the engineering system, the main function of integrating systems become increasingly different from those of the engineering system, the level of integration between the engineering system and integrating systems becomes deeper and the number of systems that integrate with the engineering system increases.

At a glance, when the resources available within an engineering system become depleted, it needs new resources to continue evolving, increasing its value by increasing functionality and/or decrease cost. The engineering system integrates with supersystem components to gain resources, as supersystem elements provide an abundant set of resources. Feature Transfer is an analytical tool for one of the sub-trends of this trend. As we launched the Rakuten bank, card business, there were so many negative opinions and bad reputations. At this moment, it's very good momentum to sustain our e-commerce business with the following by Fig.2. With e-commerce platform, we can manage three engines. As we know, financing is very important to support e-commerce business. We expect that many e-commerce companies such as Amazon, E-bay, etc would like to transmit their e-commerce ecosystem with fintech, bank service as we've already done.

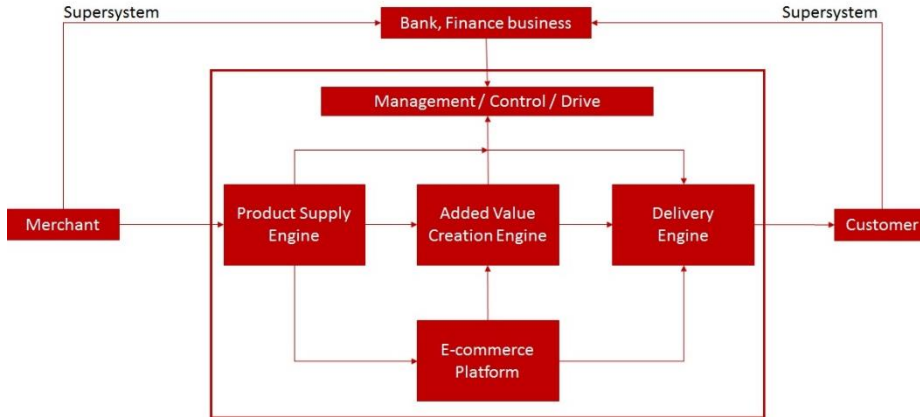


Fig. 2. Design e-commerce ecosystem with classical TRIZ engineering system

2.4 Trend of Increasing coordination

As an engineering system evolves, characteristics of the components of the engineering system become more coordinated with each other and with the super system. They are composed of shapes, rhythms, materials, actions for coordination. As Rakuten members engage with Rakuten group services across many facets of their lives, massive volumes of data are generated every day. We provide the mobile application with Android google play and Apple app store for our users. However, mobile apps are not matched with PC environment. Therefore, we provide the web service API (<http://webservice.rakuten.co.jp>) for developers and merchants. Through Rakuten API, it's possible to implement many shapes of mobile apps for our service. It's very important to be more coordinated with our services. To improve the online experience of all of our users, we are likely to increase coordination of our mobile services with Rakuten ecosystem.

2.5 Trend of Decreasing Human Involvement

As an engineering system evolves, the number of engineering system functions performed by human decreases. Humans gradually stop performing the functions of transmission, products/goods source, control system, delivery engine. Personalization through intelligent use of big data and AI represents the next level of empowerment. As we create tailored services that adapt to the varying needs and lifestyles of our diverse members, the future of shopping itself continues to evolve. Big data, AI and our passion for empowerment continue to drive the generation of innovative and competitive services. Before an engineering system emerges, humans perform the functions at all levels. Otherwise, the functions do not exist. Even if there are some automated process in the e-commerce business, it's impossible to operate on-line services without human. Nevertheless, we make some efforts on on-line service decreasing human resources. we apply for AI chatbot between e-commerce service and

our customers. This chatbot has an ability to provide delivery status of shipment that our customer purchased from Rakuten marketplace. Our customers will be able to get its advantages when accessing the status of delivery of purchased products from Rakuten service.

2.6 Trend of Increasing Controllability

As an engineering system evolves, they develop more ways in which they can be controlled. The trends of increasing controllability have 2 subtrends. They are followed by,

- a. As the engineering system evolves, the level of control within the engineering system increases. This trend can be applied to e-commerce system. In the e-commerce, it's very important to keep privacy, integrity of our system for customers and merchants. Therefore, we need to control the level of privacy, integrity for our customers.
- b. As the engineering system evolves, the number of controllable states increases. The examples are followed by,
 - Multiple states: multi-channel e-commerce can be business to various channels, namely, marketplaces, social media, messaging apps – where our target market already spends much time. Our messaging apps, Viber, that is using chat, voice and video call could be represented by our e-commerce. For example, we can use Viber apps to recommend gifts for friends and family with Rakuten Ichiba (EC) public account.
 - Externally controlled system: we will provide MNO (Mobile Network Operator) business for Rakuten users near future. It's very important to use mobile device for our services. With MNO business, we should provide controlled system externally for digital contents and communications among Rakuten users. We will have good reputations from our subscribers for a range of unique initiatives, including its fascinating price offerings, diverse device lineup, the expansion of its offline stores and the acceptance of Rakuten Super Points as a payment method.

3. Conclusion

The e-commerce business is growing the popularity in electronic business world in the upcoming years. The business revolution for e-commerce has fundamentally changed the business of transaction by giving new opportunities and breaking borders easily. When we create new services, and break the physical inertia for our customers, we can introduce TRIZ evolutionary trends. We are always innovating, evolving and experimenting to create a better future [7]. It's necessary for us to set up the new services that are creative, disruptive, innovative for our society and customers. All we want to do is empowering people, businesses and society through innovation and creativity. With TRIZ, it's useful to realize our works and predict the future of our business.



Fig. 3. Rakuten ecosystem of services with membership at the core [7]

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