

DOES ONLINE MARKETING TRULY REPLACE TRADITIONAL MARKETING?

by:

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ABSTRACT

This review explains the way how online marketing has been replacing traditional marketing in terms of marketing mix. This replacement might happen, because online marketing can give advantages, *i.e.*, offering on-time delivery, increasing effectiveness of two way interactions between buyer and seller, and creating online communities (Szmigin, et al, 2005). The transition of atoms to bits format reflects that tangible products in traditional marketing is being digitalized. The marketing strategies also move from multi level product concept to customer customization. In online marketing, buyers can control over prices, hence pricing trend has been moving from fixed price to dynamic price. In terms of promotion, online marketing becomes a complementary of traditional communication tools, where the strategy has a tendency to move from personnel selling to direct marketing. However, there are some debates whether online marketing will replace the position of traditional marketing. This review applies Indonesia as a measurement of this transition. It could be argued that in short run, commonly, the customers in Indonesia still remains in traditional marketing, because it dominates the business systems and cultures. There are some factors impeding the shift, *i.e.*, lack in infrastructure and capital investment. However, in long run, online marketing is supposed to replace traditional marketing but incompletely.

Keywords: *traditional marketing, online marketing, marketing mix*

INTRODUCTION

Many companies face saturation points in their existing markets, which often challenges them to reach markets across global network. When the companies deal with the international presences, they might encounter logistical problems, *i.e.*, delivery process. If companies could implement effective delivery process, they will be able to avoid products' obsolescence, offer technological advances, and give rapid response to customers (Harris & Cohen, 2003). In recent decades, technology development, *i.e.*, internet has reduced the boundaries geographically, driving the companies to create new marketing strategies. This review explains the way how online marketing has been replacing traditional marketing in terms of marketing mix. This replacement might happen, because online marketing can give advantages, *i.e.*, offering on-time delivery, increasing effectiveness of two way interactions between buyer and seller, and creating online communities (Szmigin, et al, 2005). The replacement also will drive the companies to create marketing strategies that can fit with online environment. However, there are some debates whether online marketing will replace the position of traditional marketing. Thus, this review also discusses the debate focusing in Indonesia, which has high disparity level, in terms of income distribution, infrastructure development, literacy condition, and capital allocation.

LITERATURE REVIEW

According to Strauss, *et al*, (2006), online marketing is replacing traditional marketing in essential ways, for example, the movement of power from sellers to buyers, because buyers can get the information about sellers easily through internet network which trigger the buyers to be more demanding than before. In order to influence products' demand, companies can apply marketing mix concept, which consists of product, price, place, and promotion (Kotler and Armstrong, 2010). This concept has a great impact on the move from online marketing to traditional marketing leading to the shift of companies' strategies (*See Table 1 and Table 2*).

Table 1. The Move from Traditional to Online Marketing based on Marketing Mix

Marketing Mix	MOVE	
	Traditional Marketing	Online Marketing
Product	Products are tangible (atoms) and standardized	Digitalizing the tangible (bits) and customizing the products. ¹
Price	Negotiation between sellers and buyers; has higher prices. ²	Sellers can control buyers' movement and buyers can access price comparisons immediately leading to cheaper prices. ²
Promotion	Advertising through magazine, newspaper, television, radio, brochure, and pamphlet. ³	Online advertising over website, email, and wireless content sponsorship. ¹
Place	Conducting in a marketplace and has limitation to access. ⁴	Conducting in an e-marketplace and has timeless and no boundary. ⁴

Source: ¹Strauss, *et al.* (2006); ²Kotler, *et al.* (2010); ³Kerin, *et al.* (2006); ⁴Harris & Cohen (2003)

Products in traditional marketing are tangible, and in online marketing, the tangible products can be digitalized, *i.e.*, library community has been implementing the use of e-products, leading to the switch from printed to electronic form (Ashcroft & Hoey, 2001). This situation forces companies to change product strategy from choosing strategy based on multilevel product concept, where company can choose the strategy based on core benefit, basic, expected, augmented, or potential product (Kotler, *et al.*, 2009); to customer design, in which the company collaborates with customers and allows them to customize the products (Strauss, *et al.*, 2006).

Therefore, it is important for online marketers to define which products that can be digitalized. If those products cannot be digitalized, *i.e.*, clothes and computers, the companies should adopt customization strategy, because the standardizations in consumers' products are relatively high. In online marketing, buyers can customize the products by giving the detail customization to sellers (Etzel, *et al.*, 2004). For example, Dell Computer Corporation offers the products over its website, where they put the products' pictures and features and allow the buyers to choose various options of computers' design and PC (Bearden, *et al.*, 2007; Kotler & Armstrong, 2010). In service industry, the buyers only can experience the products through descriptions; therefore online marketers can differentiate the intangible products by showing the products' image, providing trial downloads, and offering virtual tours (Strauss, *et al.*, 2006).

In traditional marketing, most *prices* are determined by negotiation made by buyers and sellers. The pricing strategy is fixed price strategy, where the company determines one price for all customers (Kotler & Keller, 2006, Strauss, *et al.*, 2006). In online marketing, in certain extent swaps the pricing trend, because sellers can control buyers' movement through the web by using software and let them to offer and access the prices. At the same time, buyers also can compare the prices immediately from many companies leading to price transparency. In this case, buyers can differentiate the price from one seller to another easily (Kotler, *et al.*, 2009), resulting buyers have controls over products' prices in certain situations, *i.e.*, "online product bidding" (Strauss, *et al.*, 2006). This reverse auction recently becomes more popular than before leading to fewer fixed prices because buyers can determine what they needs and wants, and seller create the offerings, hence bidding price downwards (Etzel, *et al.*, 2004; Hackney and Griffiths, 2002).

Thus, in that situation pricing strategies become important, online marketers can implement dynamic pricing strategy (Xing, *et al.*, 2004) by setting different price to different buyers, *i.e.*, airline industries offering different classes with different ticket prices (Strauss, *et al.*, 2006). In most cases, price of online products are cheaper than traditional ones, due to internet can reduce the use of intermediaries' services, labor forces (*i.e.*, customer services) as well as the distance between customers and sellers (Day & Bens, 2005; Szmigin, 2005;

Yu, 2006), for example, Amazon's direct sales, offering books over its website to its customers without having inventories in retail stores (Bearden, *et al.*, 2007).

Generally, the information flow in traditional marketing controlled by sellers, in which they determine how, when, and where to *promote* the products. Currently, the interaction of information flow is shifting. The information tend to be controlled by buyers, because they can decide which website and pages that they need and want to browse and neglect (Etzel, *et al.*, 2004; Kotler, *et al.*, 2009). The marketers should be able to choose the best alternative of channel strategies in order to attract and communicate with the buyers. The right choice of channel strategies can lead the companies to achieve its competitive advantage (Srisuwan & Barnes, 2008). This opportunity can be captured by many companies through online marketing, where it has direct communication and immediate capability to response buyers' needs and wants (March, 2004).

The promotion tools in traditional marketing are in printed magazines, brochures, pamphlet, newspapers, and television advertisings (Kerin, *et al.*, 2006). The transition of marketers' way of promotion in online marketing can be seen from the expansion of communication tools, which can be done through e-mail, website, and wireless content sponsorships, thus buyers can choose the channel based on their preferences (Strauss, *et al.*, 2006). Such situation allows internet to give added value to communication tools, because it assists to shift from advertising requiring labors to be automatic ones. For example, American Airlines gives promotional messages to its registered users through email without using papers, envelopes, and postages, thus online marketers just need to click "Send Message" then the advertising accomplished (Strauss, *et al.*, 2006). Moreover, some roles of personal selling in traditional marketing can be replaced by online marketing, for example, in terms of receiving orders from customers. This condition can assist the company to improve the communication effectiveness with potential or existing customers (March, 2004).

To support the performance of company in online marketing, the company creates official website. Therefore the marketer should make good strategy in creating website containing attractiveness, good content, and easiness to use (Lii, *et al.*, 2004). It requires online marketers to be creative and able to convey product and brand messages that can attract the customers' intention (Strauss, *et al.*, 2006). Nowadays, many websites create online community from different geographic locations in order to facilitate dialogue and bonding among participants in online communication, *i.e.*, the communication between customer and supplier or customer with customer. The advantage of online community is both company and participants get mutual benefits through sharing information (Szmigin, *et al.*, 2005).

In context of traditional marketing, *place* has physical connotation of direct transaction between sellers and consumers. The strategies are to choose the right place and distribution channels. The purposes are to attract more buyers, make the products available in the market, and access them easily. In online marketing, transactions happen in electronic marketplace, which are more convenience (Harris & Cohen, 2003). The unlimited distance and time of using internet drive buyers to access and buy products everywhere and every time they want. Place is no longer hamper the business allowing sellers and buyers to sidestep the intermediaries and time (Strauss, *et al.*, 2006). This leads the transition from online to traditional marketing that normally uses channel distribution (intermediaries) to disintermediaries, in which sellers can sell products directly to buyers without intermediaries (Yu, 2006).

The debate about whether internet can create dis-intermediate is growing. Kimiloğlu (2004) states that in short term, due to direct transaction between sellers and buyers, internet is supposed to dis-intermediate the mediators, but in long run, the "hyper-mediation" can occur swiftly, because companies start to invest more capital in inter-mediation. However, some researchers argue that online marketing can reduce and even eliminate the intermediaries (Yu, 2006), this can be seen from the example of successful companies running the business without mediators, which are Amazon.com and Dell Computer Corporation (Bearden, *et al.*, 2007). The factor affecting consumptions in market place and e-marketplaces is the changes in consumers' behavior toward the products. These changes give impact to online marketing either negatively or positively, for example, file-sharing services of internet digital music (*i.e.*, mp3.com and audiogalaxy.com) permitting service users to exchange MP3 files that exempt them from giving royalties to authorized recording companies, hence the users tend to download the music rather than buy it (Walsh, *et al.*, 2003). Another example is bank provides online channel to meet customers' needs and make them more convenient, as a result currently the numbers of retail bank branches are decreasing (Srisuwan & Barnes, 2008), and therefore, banks can reduce the costs of establishing and renting the building. Furthermore, if online buyers have positive behavior toward online

marketing, then they have tendency to be a repeated buyers of online products, because they feel that this way makes buying process easier (Strauss, et al., 2006).

Online marketing can be a mean to establish and increase marketing relationships between sellers and buyers through a personalization of communication, a link of customer contacts (Day & Bens, 2005), and a two-way dialogue because it allows customers to send and receive email to and from companies, or otherwise (Dixon & Marston, 2005; Kotler & Keller, 2006), hence their communications become more effective and efficient due to less time consumption and costs. This customer relationship management (CRM) can be used by company as its differentiation strategy, because price differentiation strategy is easier to be followed by competitors, while non-pricing differentiation is long lasting (Strauss, *et al.*, 2006). Moreover, besides having good relationship with the customers, many companies have been developing extranets relations with their agents, distributors, and suppliers in order to complete the tasks effectively and efficiently. Between company and its extranets can exchange the information, improve ordering process, and having reliable payments (Kotler & Keller, 2006).

Table 2. The Move from Traditional to Online Marketing based on Marketing Mix' Strategy and Approach

Marketing Mix	MOVE	
	Traditional Marketing	Online Marketing
Product	Multi level product concept. ^{1,2,6}	Customer co-design. ³
Price	Fixed pricing. ²	Dynamic pricing. ³
Promotion	Personal selling. ⁴	Direct Marketing. ³
Place	Place Location and Distribution Channel. ²	Disintermediaries. ³

Source: ¹Dann & Dann (2004); ²Kotler & Keller (2006); ³Strauss (2006); ⁴March (2004); ⁵Harris & Cohen (2003); ⁶Kotler, *et al.* (2009)

DISCUSSION

The Transition from Online to Traditional Marketing in Indonesia

The debate about whether online marketing will change the position of traditional marketing is flourishing. According to Etzel, *et al.* (2004), online marketing will not switch traditional marketing existence, because at most, internet sellers only can gain 15% of total world retail markets. This argument also supported by March (2004), which states that online marketing does not likely have chance to replace traditional marketing, because online marketing only can be used as a complementary tool of traditional marketing. However, other scholars argue that traditional marketing is gradually being dispersed and conformed into online marketing based on internet network (Ranchhod, 2004; Strauss, *et al.*, 2006, Luo & Donthu, 2007).

Nowadays, internet has drawn a significant attention for business environment because of its growth in business to business and consumer to business marketing (Luo & Donthu, 2007), which can be seen through data provided by Internet World Statistics (2011), there is increasing numbers in the world internet users by 480.4 % from 360,985,492 users in 2000 to 2,095,006,005 users in 2011. This data implies the higher the number of internet users, the higher the probability of sellers and buyers to use online marketing.

Although in the future online marketing will take the position of traditional marketing, however it does not necessarily mean that traditional marketing will vanish. Traditional marketing still exists, even the user numbers are decreasing. Developing countries also experience the growth of online marketing users, including in Indonesia, even the percentage of internet users are still less, only covered 16.1% of total population, however the internet users increased by 1,880% from 2 million users in 2000 to 39.6 million users in 2011 (Internet World Statistics, 2011). This data implies that there is a considerable increasing in the internet users in Indonesia; hence it could be argued that in the future these numbers will become bigger than ever. Indeed, this development should be supported by good infrastructures.

On the other hand, there are some factors that hamper the shift from online to traditional marketing, because Indonesia is a big country and has huge population, where the disparity level of life style and standard of living among cities are very high. In rural areas, problems related to poor telecommunications infrastructure still hamper the internet growth. Moreover, some Indonesians' mindset, especially for baby boomer generations, refuse the change to adapt with current technology advances, due to lack of knowledge, being satisfied and comfortable with current situation, domination of traditional marketing, and reluctance to accept new challenge. Additionally, when doing online marketing, normally the payment uses credit card, this payment system is still not familiar to Indonesia's buyers (especially for rural areas), due to their culture and habit to pay everything in cash (Kusumaputra, 2008). This condition can be hurdles for online marketing when doing the transactions with buyers.

Although, currently, Indonesian Government has been trying to increase the education level by implementing "Compulsory 9 years of Basic Education Program", started from elementary school to high school (Sekolah Rakyat, 2008). But literacy rate in Indonesia is still lower than some of other South East Asian countries. Based on education index, mean years of schooling in Indonesia is 5.8 years, Malaysia is 9.5 years, Thailand is 6.6 years, and Phillipines is 8.9 years (UNDP, 2011). This happens, because there are many Indonesians who stay in rural areas having low income and they cannot afford to pay school fees. The school facilities and the number of teachers also become issues in implementing the program of 9 years schooling. Moreover, Many Indonesian living in rural areas has lack capabilities in English; hence they might face difficulties when exploring the internet.

Although telephone lines distribution in Indonesia are still unequal (Business Monitor International, 2008). However, Indonesian government has been trying to improve the telecommunication systems, including implementing projects related to telephone and internet installation in countryside areas, which are expected to increase information and technological transfer in Indonesia. Government budget for the development of Information Technology across Indonesia increased by 75% compared to last year. In 2007 the budget was Rp. 4 trillion and in 2008 was Rp. 7 trillion. This fund will also be allocated to buy bandwidth and establish internet infrastructure sharing (Wahono, 2008).

Instead of all many problems obstructing the internet growth, Indonesia is considered as a country that has a big potential to access online market (M2 Presswire, 2006), because according to Business Monitor International (2008), although in 2007 there were only 42% of Indonesians' internet users who bought the products over internet (online marketing), but there are tendency to be a considerable growth in internet users numbers due to Indonesia has huge population.

In big cities, *i.e.*, Jakarta, Surabaya, Medan, Makassar, and Bali, internet can be easily found. Some companies running the business have adopted online marketing, *i.e.*, Aston International Hotels, Resorts & Residences; the online rooms' orders are increasing considerably and becoming the biggest revenue for the company (Kusumaputra, 2008). It signifies the readiness of companies in adopting online marketing can be considered as a big chance.

Although the number of broadband users in 2007 was below 1 million, which was represented 0.4% of internet penetration rate in Indonesia (Business Monitor International, 2008). However, currently, Indonesian Government has been trying to make a new penetration in internet through making 241,000 "broadband internet connections" (Internet World Statistics, 2011). Moreover, a small group of elite people and companies in Indonesia have a quick adoption of broadband, which are able to spend their costs in purchasing video conferencing and security (Business Monitor International, 2008).

In addition, the possessions of computers in Indonesia are still uneven, but it does not necessarily mean that there are no growths in computer sales, because at the end of 2008, Business Monitor Indonesia (2008) predicts that the computer sales, *i.e.*, peripherals and notebooks will be increased by 12% compared to last year; and recently, notebook' demands in Indonesia are growing rapidly due to the price tends to decrease; many sizes are available, and interesting additional feature *i.e.*, wireless technology. Such situation becomes an opportunity for online marketing to gain potential buyers, because the higher the possession of computers, the higher the opportunity for Indonesian to access online marketing. In short run, approximately 30 years, online marketing might encounter difficulties to change traditional marketing due to the existence and role of traditional marketing in Indonesia are stronger and more acceptable in societies than online marketing. Other reasons are Indonesia still has lack of the availability of internet infrastructure, educated people, and government's source of

capital. However, in long run, it is expected that online marketing can play greater roles in Indonesian market, due to the unavoidable and rapid changes in information technology as well as the adaptation of global forces in online marketing. If Indonesia could not be able to adapt with the changes, it will face difficulties in competing with other countries. Where, other countries can develop fast due to having good information and technology distribution. Therefore, in long run, online marketing has tendency to replace traditional marketing, but it will not completely replace, because online marketing might be considered by Indonesian as a complementary tool of traditional marketing.

CONCLUSIONS

Online environment has progressively switched traditional marketing, which can be analyzed in the context of marketing mix. The transition of atoms to bits format reflects that tangible products in traditional marketing is being digitalized. The marketing strategies also move from multi level product concept to customer customization. In online marketing, buyers can control over prices, hence pricing trend has been moving from fixed price to dynamic price. In terms of promotion, online marketing becomes a complementary of traditional communication tools, here the strategy has a tendency to move from personnel selling to direct marketing. There is also a movement in the customers' life style; they tend to have a simple life. For example, they prefer to buy the products conveniently, in which less time consumed and no boundaries. Therefore, online marketing can assist the companies to fulfill this need.

In the future, on-line marketing has opportunity to replace traditional marketing, but it will not fully replace traditional marketing, due to many hurdles, *i.e.*, literacy level, infrastructure, culture, internet and technology development. These hurdles hamper the transition process, especially in developing and less developed countries. This review applies Indonesia as a measurement of this transition. It could be argued that in short run, commonly, the customers in Indonesia still remains in traditional marketing, because it dominates the business systems and cultures. Moreover, there are some factors impeding the shift, *i.e.*, lack in infrastructure, and capital investment. However, in long run, online marketing is supposed to replace traditional marketing but incompletely.

REFERENCES

- Ashcroft, L. & Hoey, C. 2001. PR, Marketing and the Internet: Implications for Information professionals. *Journal of Library Management*, 22 (1/2): 68-74. www.emeraldinsight.com/10.1108/01435120110358952.
- Bearden, W. O., Ingram, T. N., & LaForge, R. W. 2006. *Marketing: Principles and Perspectives*. 5th ed, McGraw Hill, New York.
- Business Monitor International. 2008. *The Indonesia Information Technology Report 2008*. <http://www.businessmonitor.com/it/indonesia.html>
- Dann, S. & Dann, S. 2004. *Introduction to Marketing*. C. Kyodo Printing, Singapore.
- Day, G. S. & Bens, K. F. 2005. Capitalizing on the Internet Opportunity. *Journal of Business & Industrial Marketing*, 20 (4/5): 160–168, www.emeraldinsight.com/10.1108/08858620510603837.
- Dixon, T. & Marston, A. 2005. Taking the Shopping Centre Online: New Models in E-Commerce. *Journal of Property Management*, 23 (2): 97-109. www.emeraldinsight.com/10.1108/02637470510589977.
- Etzel, M. J., Walker, B. J., & Stanton, W. J. 2004. *Marketing*. 13th edn, McGraw Hill, New York.
- Hackney, R. & Griffiths, G. 2002. Towards an E-Commerce Business Strategy. *International Journal of Services Technology and Management*, 3 (1): 39-53.
- Harris, L. & Cohen, G. 2003. Marketing in the Internet Age: What can We Learn from the Past?. *Journal of Management Decision*, 41 (9): 944-956. www.emeraldinsight.com/10.1108/00251740310495054.

- Internet World Statistics. 2011. *Internet Usage Statistics: The Internet Big Picture*. www.internetworldstats.com.
- Kerin, R. A., Hartley, S. W., Berkowitz, E. N., Rudelius, W. 2006. *Marketing*. 8th ed., McGraw Hill, New York.
- Kotler, P. & Armstrong, G. 2010. *Principles of Marketing*. 13th ed. Pearson: Prentice Hall, New Jersey.
- Kotler, P. & Keller, K. L. 2006. *Marketing Management*. 12th ed. Pearson: Prentice Hall, New Jersey.
- Kotler, P., Keller K. L., Ang, S. H., Leong, S. M., Tan, C. T. 2009. *Marketing Management: An Asian Perspectives*. 5th ed. Pearson: Prentice Hall, New Jersey.
- Kusumaputra, R. A. 2008. *Aston International Kembangkan Pemasaran Via Internet*. Kompas, 25th June, www.kompas.com.
- Lii, Y.S., Lim,H.J., & Tseng, L. P. D. 2004. The Effects of Web Operational Factors on Marketing Performance. *Journal of American Academy of Business*, 5(1/2): 486, 9pgs. <http://proquest.umi.com/pqdweb?did=65886471&sid=2&Fmt=4&clientId=63584RQT=309&VName=PQD>
- Luo, X. & Donthu, N. 2007. The Role of Cyber-Intermediaries: a Framework based on Transaction Cost Analysis, Agency, Relationship Marketing and Social Exchange Theories. *Journal of Business & Industrial Marketing*, 22 (7): 452-458. www.emeraldinsight.com/10.1108/08858620710828836.
- March, H., S. 2004. Electronic Marketing, the New Kid on the Block. *Journal of Marketing Intelligence & Planning*, 22 (3): 297-309, www.emeraldinsight.com/10.1108/02634500410536885.
- M2 Presswire. 2006. *Research and Markets: Indonesia Had an Estimated 16 Million Internet Users by the End of 2005; Learn More with This New Report*. 8th September, <http://proquest.umi.com/pqdweb?did=1125512051&sid=3&Fmt=3&clientId=63584&RQT=309&VName=PQD>.
- Ranchhod, A. 2004. The Changing Nature of Cyber-Marketing Strategies. *Business Process Management Journal*, 10 (3): 262-276, www.emeraldinsight.com/10.1108/14637150410539678.
- Sekolah Rakyat. 2008. *Perjalanan Pendidikan di Indonesia (Penuntasan Wajardikdas 9 Tahun)*. March 2008, www.sekolahrakyat.org/index.php?option=com_content&task=view&id=38&Itemid=50.
- Srisuwan, P. & Barnes, S. J. 2008. Predicting Online Channel Use for an Online and Print Magazine: a Case Study. *Journal of Internet Research*, 18 (3):266-285. www.emeraldinsight.com/10.1108/10662240810883317.
- Strauss, J., Ansary, E. A., & Frost R. 2006. *E-Marketing*. 4th ed. Pearson: Prentice Hall, New Jersey.
- Szmigin, I., Canning, L. & Reppel, A. E. 2005. Online Community: Enhancing the Relationship Marketing Concept through Customer Bonding. *International Journal of Service Industry Management*, 16 (5): 480-496. www.emeraldinsight.com/10.1108/09564230510625778.
- UNDP. 2011. *International Human Development Indicators*. http://hdr.undp.org/en/media/HDR_2011
- Wahono, T. 2008. *Anggaran Belanja IT Pemerintah Mencapai Rp 7 Triliun*. Kompas Newspaper, May 27th,<http://tekno.kompas.com/read/xml/2008/05/27/22303115/anggaran.belanja.it>. Pemerintah. mencapai.rp.7.triliun.
- Walsh, G., Mitchell, V. W., Frenzel, T., & Wiedmann, K.P. 2003. Internet-Induced Changes in Consumer Music Procurement Behavior: a German Perspective. *Journal of Marketing Intelligence & Planning*, 21 (5): 305-317. www.emeraldinsight.com/10.1108/02634500310490256.
- Xing, X., Tang, F. F, Yang, Z. 2004. Pricing Dynamics in the Online Consumer Electronics Market. *Journal of Product & Brand Management*, 13 (6): 429-441, www.emeraldinsight.com/10.1108/10610420410560316.
- Yu, J. 2006. Marketing to Chinese consumers on the internet. *Journal: Marketing Intelligence & Planning*, 24(4): 380-392, www.emeraldinsight.com/10.1108/02634500610672116.