Convergence of institutes of retail traditional and digital economy

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Abstract. The article gives consideration to the institutes of retail digital economy, basic trends of transformation thereof. It shows a changing role of institutes in trade not only as constraints, but as the catalysts of the consumers’ needs. The differences between traditional retail institutes and electronic commerce institutes have been reviewed, the convergence thereof with the present-day operators along the entire value chain has been demonstrated on the basis of examples of the current retail actors and implementing a fundamentally new strategy of communication between a seller and a buyer.

The organization of retail “around buyer” becomes the main convergence driver on the basis of acquisition, analysis and use of big data arrays. The elements of internal and external institutional environment have been presented, except that the identification thereof makes it possible to define the most significant institutes for trading business development as well as the “weakest links” in the system of institutional transformation.

1. Introduction

The efficiency of retail development is determined to a great extent at the recent stage of consumer’s market development by the buyer’s loyalty, which, in turn, depends on the combination of circumstances related to an impersonal appraisal of goods and services. Such sort of an appraisal is formed in the process of implementing the main retail functions on bringing goods to a consumer, connected to a considerable degree with the development of digital content.

The consumer’s demands get propelled to the fore alongside with the expansion of external and internal institutional environment, change of composition of elements thereof and determine the relevancy of considering the issues of institutional development of retail enterprises.

2. Setup

The institutes of retail digital and traditional economy, a convergence thereof providing for sustainable retail development are the targets of research.

Such category as an “institute” in lateral interpretation is used as basic definition of institutional investigation in the form of certain rules and regulations of development of business entities alongside with the mechanisms triggering off thereof [1].

The institutional investigation of the retail development processes is a prerequisite for successful retail development, at that, the foregoing investigation is based on structuring the institutional trading
environment, viz., environment differentiation to external and internal, as well as a characteristic of institutes determining the activity of business entities [2].

A digital transformation corresponding to the use of the latest technologies for drastic increase of productivity and the value of enterprises [3] denotes at the same time the qualitative changes in diverse business processes and principal reorganization of its models, which is accompanied by the enhancement of business activity of enterprises [4]. Actually, the enterprises make a part of the international “Industry 4.0” project [5] and are supported by the key development institutes. The results of digital economy affect the activity of not only individual enterprises, but they permeate all industries of the global economy [6], including trade.

3. Method
A large variety of distinctive features of the institutional retail development should not go unnoticed in this day and age. First of all, one may observe a simultaneous functioning of institutes of traditional and digital economy with the accelerated growth rate of the latter.

The institutional analysis of retail digital transformation includes identification of the most significant institutes, such as the institute of property, institute of income taxation, contracting institute, price formation institute, budgeting institute, etc. [7, 8].

The digital transformation introduces dramatic changes into the ownership relations: first of all, a composition of retail assets changes, which is characterized by the emergence of new elements, such as domains, bitcoins, sites, etc. Structural shifts take place in the assets side of the balance sheet, which is related to an increase in the share of intangible assets. It generates a need for change of order of using thereof. As a result the digital transformation entails an institutional transformation.

The so-called “weak links” appear in the chain of institutional reorganizations, in particular, an institute of income taxation due to indetermination of incomes from virtual activity and absence of record keeping thereof.

The qualitative changes take place regarding an exchange. The digital transformation shortens and simplifies a traditional chain of produce sales process [9]. So, the biggest operator of electronic commerce in the USA Amazon.com has declared about building a network of contactless trade shops. This fact inaugurated a shift in the philosophy of the world-biggest electronic commerce operator that had never before been involved in the traditional retail.

The practical convergence effects get unfolded in the course of analysis of the biggest projects and M&A (mergers and acquisitions) transactions both in digital and traditional retail:

− Amazon.com Inc. plans to launch 3,000 contactless Amazon.go shops before 2021. The first Amazon.go shop was launched in Seattle in 2016. Amazon.go is a fundamentally new retail format with no personnel, cash points and waiting lines, the buyers take the goods freely from the shelves and pay for the goods contact-free through mobile applications when crossing a pay-gate. The technical equipment of the first shop costs more than 1 mln. US dollars [10]. Before opening this format Amazon.go as the biggest electronic commerce operator has not functioned in the format of physical shops.

− Walmart, the biggest traditional retailer, entered in August 2017 an alliance with Google: Walmart offers goods through an electronic commerce and Google Express service, the voice assistant of Google also recommends the goods of Walmart network [11].

− In June 2016 Walmart declared about acquisition of Bonobos network for 310 mln $ [12]. Bonobos operates a network of shops in the largest cities of the USA, where a buyer is able to see, try on and select goods, while the physical purchase will be made on-line later and the company provides delivery.

− Adidas has started using an “omnichannel” strategy in its retail network in India: 750 shops are furnished with iPads, where the clients may look for and order the goods not available in the shop [13].

The development of the latest technologies is inseparably related to the changes in the retail institutional environment. Let us consider such technologies as the Internet of things (IoT) and “OmniChannel”. According to the research of Gartner company more than 70% of global retail networks
plan to use the IoT for communication with the buyers in the shops: so, if 34\% of big retailers used a procedure of “Client investigation in the shop” in 2016, 30\% used a procedure of “tracing evolutions in the shop”, 27\% used a procedure of “visit personalization”, these parameters increase more than two-fold by 2021 featuring 75\%, 74\% and 79\%, accordingly [14].

The Internet of things (IoT) is a new stage of Internet development, interaction of things in the Internet environment with a limited human involvement. A transition to this technology began in 2008–2009, when the number of connected things exceeded the number of connected people. IoT is a system of associated technologies, in which the objects can communicate with each other via wi-fi, Bluetooth, LPWAN, BLE, Ethernet, RFID, ZigBee and other types of wireless communication as well as M2M interaction.

The mechanisms of technology of the Internet of things may influence and shape the consumer needs and provide for opportunities of implementing thereof.

As for the “Omnichannel” technology, it is shown in figure 1.

Penetration of the IoT and “Omnichannel” practices into business is a vivid manifestation of convergence processes in retail.

Omni can be translated as “existing everywhere”. The term denotes an interaction with a buyer encompassing all communication channels, this is an approach aimed at the integrity and consistency of the consumer experience. The users easily switch over between a mobile phone, a laptop, a shop, both before and in the process of transaction.

Supporting such approach a company maintains a personalized approach to the client and is in the possession of versatile information on the client base, moreover, the client gets an access to the products and services of the company in the most suitable way, but it remains “in full view of the company”.

![Figure 1. Characteristics of “OmniChannel” institute.](image)

Let us make analysis of convergence of the channels of retailers in the framework of value chain structured on the basis of services shaping the external and internal institutional environment, which is shown in table 1.
### Table 1. Institutes of external and internal institutional environment and convergence thereof.

| Institutes of external and internal environment (value chain elements) | Traditional trade (brick and mortar retail) | Electronic commerce (e-commerce) | Convergence institutes (Modern/converged retail) |
|---|---|---|---|
| Revealing and informing | Advertisement in print media TV Leaflets | Wide use of Internet advertising E-mail shots, search systems Google, etc. | Predictive analysis of client’s profile Micro segmentation based on processing big data arrays |
| Comparison and selection | Displays POS materials Movement in shop Fitting-rooms | Rating system Review On-line comparison | Use of digital mass media in shops Navigation in the Internet of things inside the shop Virtual mirrors, virtual fitting-room Digital recommendation (voice/profile-based targeted mail shots) Push offers |
| Purchase and payment | Shop Cash, plastic cards | On-line ordering On-line purchase or purchase upon delivery On-line payment (card / electronic wallets) Payment upon delivery | Preorder and payment in shop Selection in shop, on-line payment and purchase Contactless shops (Amazon.go) Targeted personalized price-formation (taking into account profiling) |
| Loyalty and retention | Membership and cumulative cards | Personal account Electronic credits | Multichannel (blockchain) loyalty programs Subscribing and auto-replenishment Selecting shopping cart for client’s profile |
| Available product range planning and management | Experience-based Adhoc (“exceptional”) problem solutions Rigid product matrix | Data analysis on promotion and profitability Extended/flexible matrix or specialization | Flexible development of available range of products for client Active real-time predictive models |
| Purchase, suppliers management | Traditional / competitive system of suppliers management | Flexible system of cooperation with suppliers Reduction of changeover expenses | Cooperation with suppliers, joint planning Use of blockchain system for smart contracts and payments |
Institutes of external and internal environment (value chain elements)  

| Logistics                          | Personnel/Organization       |
|-----------------------------------|------------------------------|
| Traditional trade (brick and mortar retail) | Service-oriented organization                  |
| Traditional organization | Internal systems of personnel development |
| Linear logistic system |  |
| Labor-intensive management of storages |  |
| Exclusiveness of floor spaces, several steps/process stages |  |
| Reducing number of logistics legs |  |
| Delivery to client |  |
| High expenditures for transportation |  |
| Practice of sharing facilities (sharing economy making it possible to jointly use resources) |  |
| Digital networks (ecological systems) of supplies |  |
| Optional character (time rate, delivery methods) |  |
| Automation/robotic automation of storages |  |
| Scope of storage solutions combined with sharing |  |

The external institutional environment is represented in all types of trade by such major processes as:

- **Creating information awareness and contact.** The Internet advertisement began to play an essential role since traditional channels used TV, papers, and leaflets speaking about the actors of electronic commerce. The buyer's profile is being shaped in the present-day retail on the basis of data of history and social media, micro segmentation of clients and shaping a unique targeted proposal.

- **Comparison and selection.** The results of merchandising efforts in the shops, work of personnel and physical grounds (fitting-rooms, etc.) in traditional trade. The electronic commerce adds comparison of goods on the website, the presentation and comparison of goods, and data presentation are provided in a convenient way. The capabilities of traditional and digital channels are complemented in the current retail with new technologies, such as: navigation inside of the shop, virtual shelf, virtual fitting-room, virtual mirror, profiling inside of the shop, digital selection points inside of the shop, preorder and selection from mobile devices.

- **Purchase and payment.** The traditional points of purchase include a shop; digital channels add a possibility of transaction on the websites from computers and mobile devices. Further development of retail gives a chance to use virtual purchasing rooms, individual price offers based on profiling, combined deals – preorder in Internet and customer pickup, contactless shops.

- **Retention and loyalty.** The present-day retail offers additional loyalty systems, such as auto-replenishment, blockchain-based loyalty, subscription, discounting- and promo-policy based on profiling.

The changes of internal institutional environment impacts the following processes:

- **Available product range planning/management.** The big data arrays of the present-day retail help using the real-time algorithms of forecasting automatic planning of analysis and auto-replenishment.

- **Purchase/suppliers management.** Unlike the standard vertical competitive interaction between a supplier and a retailer, the present-day retail assumes development of deep vertical cooperation (interaction with the supplier for targeted consumer decisions). The incorporation of blockchain technologies offers opportunities of “smart contracts” and reduction of transaction expenses.

- **Logistics.** The present-day retail using convergence offers a multiplicity of innovative solutions based on informational technologies both for external and internal processes: same-day delivery, try-on
and return delivery possibility, use of drones (Amazon), preorder and customer pickup. Regarding internal processes (backend) one can mention robotic automation of storages, simplification of orders management (real-time order tracking) and joint utilization of storages. The current logistics retail system implies coexistence and supplementing various channels. So, in the framework of the same operator it is possible to effect delivery of an Internet order from a distribution center directly to a client, preorder from a mobile phone and customer pickup from the shop, selection of goods in the shop and delayed delivery from the shop or from the warehouse, or a traditional purchase. The present-day logistical platforms help support the multiplicity of decisions and complement each other in providing optimal service to a buyer.

- **Personnel.** The wide application of digital technologies makes it possible to optimize the structure of personnel (cashiers, warehouses and operators) and improve remuneration system, attaching it to the measurable and traceable KPI.

The current cycle of digital transformation brings about a convergence of traditional and digital trade channels, i.e., mutual penetration of channels and mixing different elements of value creation. In this case the new quality of economic growth appears.

A possibility of using such a phenomenon not only by big retailers, but by the economic entities of small and medium business is of special importance.

### 4. Results

Proceeding from an extended interpretation of the institutes and application of system approach to consideration of institutional environment in the course of its differentiation to external and internal ones, the distinctive features of institutional retail development have been revealed at the present stage consisting in a simultaneous functioning of institutes of the traditional and digital economics and the outrunning growth of the latter; specific features have been pointed out with respect to digital institutional transformation consisting, first of all, in changing the relations of exchange and simplification of a traditional chain of produce selling, as well as involvement of new actors into traditional retail: the biggest electronic commerce operators with simultaneous use of electronic commerce advantages by the traditional retailers; a convergence of business processes of the traditional and digital economy along the value chain has been shown. The main forms of convergence – the Internet of things (IoT) and “OmniChannel” have been presented, an exclusive efficiency of the convergence institutes and possibility of using these relations by the enterprises of all trading formats have been pointed out.

### 5. Conclusion

The development of the new order of interaction between a consumer and business and the new order of interaction of different enterprises inside of business testifies to the emergence of a new quality of institutional transformation, which is characterized as the convergence of the digital and traditional economy.

The development of issues of institutional investigation of processes of retail development establishes prerequisites for using the institutes of convergence of traditional and digital economy and forecasting new efficient institutes and can be taken as a basis for determining the strategy of trade business development.

### References

[1] Nort D 1989 *World Development* **17** (9) 1319–1332

[2] Pereverzeva T A 2010 *Institutional Trade Regulation: Scientific Publication* (Saint Petersburg: Saint-Petersburg Commercial and Economic University)

[3] Nine Fundamentals of Digital Transformation. [http://tops.ru/blog/9_osnov_digital_transformacii/](http://tops.ru/blog/9_osnov_digital_transformacii/)

[4] Ablyazov T, Asaturova J, Koscheev V 2018 *SHS Web of Conferences* **44** 00004
[5] World Economic Forum 2016 The Fourth Industrial Revolution: what it means, how to respond, https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

[6] DNA Sequencing Costs: Data from the NHGRI Genome Sequencing Program, www.genome.gov/sequencingcostsdata

[7] Kapustina I V, Pereverzeva T A and Stepanova T V Bulletin of National Academy of Tourism 1 (45) 9–11

[8] Kapustina I V, Pereverzeva T A and Stepanova T V 2018 Bulletin of National Academy of Tourism 2 (46) 32–36

[9] Galloway S 2017 The four. The Hidden DNA of Amazon, Apple, Facebook, and Google (New York: Penguin)

[10] Amazon Could Spend $3 Billion on ‘Go’ Stores, Analyst Says, https://www.bloomberg.com/news/articles/2018-09-20/amazon-could-spend-3-billion-on-go-stores-analyst-says

[11] Walmart And Google Partner For Sales To Fight Amazon, https://www.forbes.com/sites/walterloeb/2017/08/25/walmart-and-google-partner-for-sales-to-fight-amazon/#694786471d96

[12] Walmart is acquiring one of the hottest men’s retailers for $310 million, https://www.businessinsider.com/walmart-is-acquiring-bonobos-for-310-million-2017-6

[13] Adidas bets big on omni-channel play in India https://retail.economictimes.indiatimes.com/news/apparel-fashion/sportswear/adidas-bets-big-on-omni-channel-play-in-india/48845396

[14] Reinventing Retail: 2017 Retail Vision Study, 2017, Zebra Technologies, https://www.zebra.com/content/dam/zebra_new_ia/en-us/solutions-verticals/vertical-solutions/retail/vision-study/retail-vision-study-2017-en-gb.pdf