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e-Service-dominant logic

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Abstract

In this paper we analyze digital services, called e-services, which we expect to dominate the market of services in the not-to-distant future. Beyond the classic scenario of service provision, three scenarios of e-service provision are considered. First, "actor – e-service – actor", where actors are humans, but e-service is provided remotely through a software platform, e.g., through social media. Second, a scenario, where an e-service is provided by software instead of a human: "software – e-service – actor". An example of such a scenario is an e-banking website. In this case, the software remains under consumer control. Finally, a scenario where an e-service is provided by a software agent instead of a human or software. A software agent is a program that autonomously performs tasks in a given time and place according to predefined instructions of its owner; hence: "software agent – e-service – actor". An example of such scenario is a software agent that selects ads in search engines. Such an agent can continuously operate in the background on the consumer's behalf, without the consumer's direct control. In concluding, the consequences of a shift from classical services to digital e-services on the education marketplace are discussed.

Keywords: e-Service; Digital service; Programmers; Program agents; Digital market; T-shape education

1. Introduction

The starting point of this paper is the book "Service-Dominant Logic, Premises, Perspectives, Possibilities" by Robert F. Lusch and Stephen L. Vargo [8]. In this book, a consistent and elegant theory of economics and marketing called "Service-Dominant Logic" is presented and contrasted with the classical theory, which the authors refer to as "Goods-Dominant Logic". The generic scenario of service provision considered in this book is: "actor – service –

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actor", where actors are humans and service provision requires unity of time and place. They develop the argument that Service-Dominant Logic best describes our modern service economy. Their argument is convincing. However, in their book, Lusch and Vargo devote only marginal attention to digital services, called e-services, which are now becoming a rapidly growing sector of the service economy.

The aim of this paper is to complement Lusch and Vargo's Service-Dominant Logic by some considerations concerning e-services. Three scenarios of e-service provision are considered. First, "actor – e-service – actor", where actors are humans, but e-service is provided remotely through a software platform, e.g., through social media. Second, a scenario, where an e-service is provided by software instead of a human. An example of such scenario is an e-banking website. In this scenario, the software remains under consumer control. Finally, a scenario where an e-service is provided by a software agent instead of a human or software. A software agent is a program that autonomously performs tasks in a given time and place according to predefined instructions of its owner. An example of such scenario is a software agent that selects ads in search engines. Such an agent can initiate itself independently, and operates without direct control by the consumer. In the conclusions, consequences of a shift from classical services to digital e-services on education are pointed-out.

2. Classic service scenario

As a starting point, the classic scenario of service exchange is presented in Fig. 1. In [8], service is defined as the application of resources by an actor for the benefit of another actor or oneself. Both actors are humans, who by definition, must be at the same physical place, at the same moment in time for the service provision to occur – referred to in the figure as "unity of time and place".

According to Service-Dominant Logic, it is the specific activities of both actors that are the objects of market exchange. This is in contrast to Goods-Dominant Logic, where the focus is on the exchange of the result of the activities. To illustrate, in [8], an example is presented of a fisherman and a farmer who meet at a market. According to Goods-Dominant Logic, they exchange fish for grain (e.g. the results of their activities). However, from the perspective of the Service-Dominant Logic, they are really exchanging services to each other: fishing for farming, where the fish and the grain are just vehicles for exchanging those specific activities.

The advantage of the Service-Dominant Logic may be even better perceived if we consider services which do not produce any material goods. For example, consider service exchange between a capital investment adviser and an IT system security expert. This is indeed exchange of non-material, knowledge-based services.

In practice, this kind of exchange if rarely directly mutual. Thus, as illustrated in Fig. 2, we may distinguish a service person, who is a domain expert, and a customer, remembering that the customer in some future will play a role of a service person for somebody else, and so on until the loop will eventually close, i.e. initial service person will become a customer.

Fig. 1. Classic scenario of service exchange.

Fig. 2. Classic scenario of service provision.

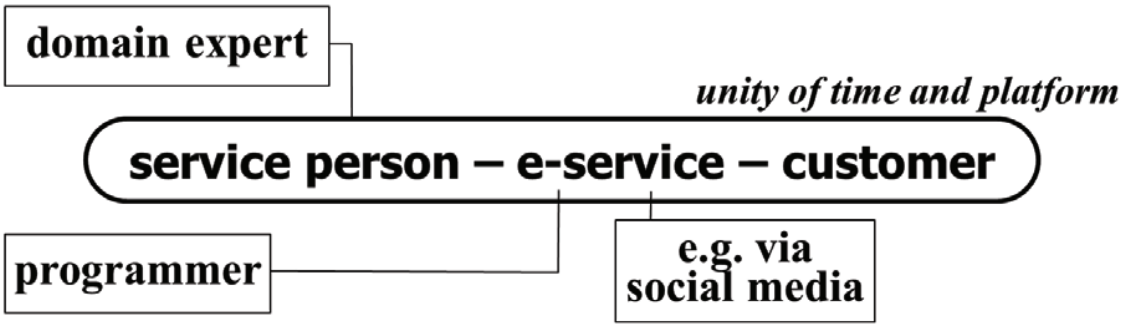

Fig. 3. e-Service scenario with a human as a service person.

3. e-Service scenario with a human as a service person

In Fig. 3, the first of three e-service scenarios is presented. In this configuration, service is again provided by a service person, a human, as was in the case of the classic service system scenario discussed above. However now, the unity of place for both actors – service person and customer – is not required anymore. Instead of both actors needing to be in the same physical place, they must only be unified through a software platform. An e-service can then be provided remotely through this platform.

On the customer side, the recipient of an e-service may be a human or a device owned by a human. For example, an e-service may be provided remotely by a human capital investment adviser (mentioned in Section 2) to a human investor via Skype. Such e-service may be a conversation enriched by diagrams, tables, on-line data, etc. presented on screen. Or, the customer may not be human at all, such as when a smart building is remotely managed over the internet by a human service person. Of course, in many practical situations, e-services must be complemented by classic services requiring unity of place. For example, if a pipe is broken in a smart building, an e-service person may cut off water remotely, but a classic service person has to fix the pipe in place.

In general, there is a clear shift from in-place classic services to remote e-services, because they are less costly and because they are more and more widely accepted by customers. Facilitators of e-service provision according to this scenario are interface designers and software platform programmers, who play hidden but important roles.

4. e-Service scenario with a software as a service person

In Fig. 4, a scenario is described where an e-service is provided by software instead of a human service person. An example of such scenario is an e-banking website. This website remains under the customer's control in the sense that he or she explicitly selects the functions it is to perform, e.g., checking a balance of a particular account or transferring money from a specified account to another specified account. The service capability is enabled by software lying behind the bank's website, which is the result of co-creation by domain experts (from such domains as: banking, finances, marketing, psychology, art, etc.) and programmers.

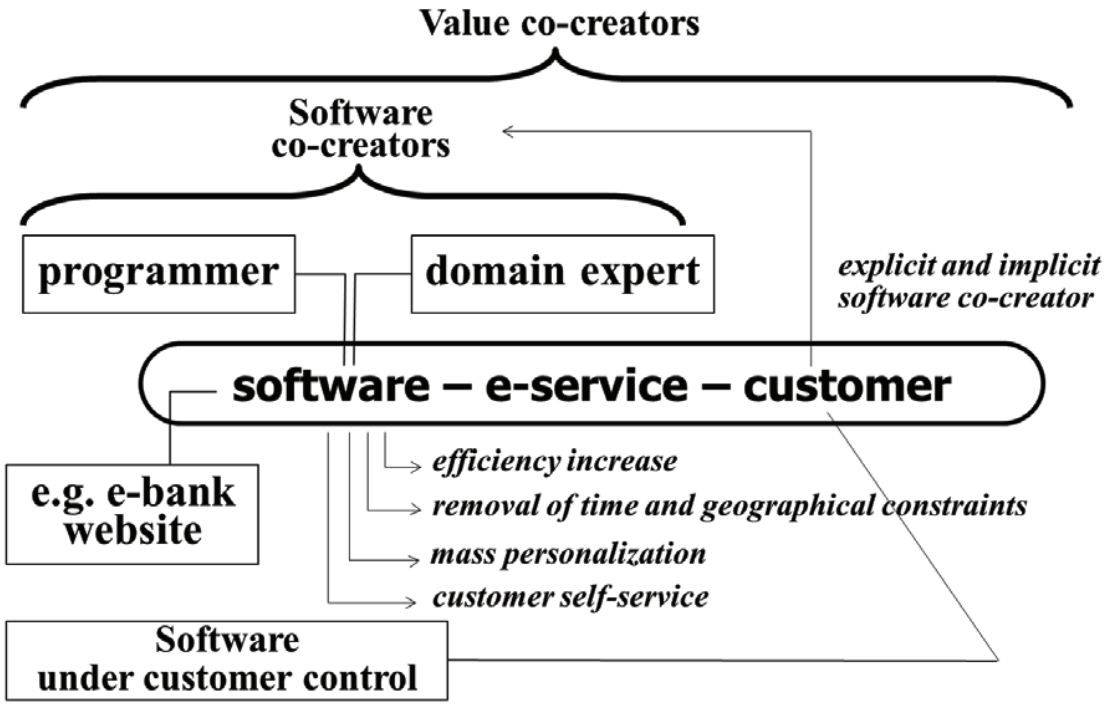

Fig. 4. e-Service scenario with a software as a service person.

The essence of this e-service provision scenario is customer self-service in interaction with software. e-Service is free of both time and geographical constraints. In this scenario, e-Services may be constantly, massively, automatically personalized, while in the classic scenario personalization is reserved to very important customers only. All the above features improve customer satisfaction, so e-services gain customer acceptance. On the other hand, companies providing e-services can and have experienced significant cost reductions and increases in efficiency.

In this scenario, a customer is an explicit and implicit software co-creator. He or she is an explicit software co-creator due to a possibility of configuration and customization of the general software to best fit to his or her needs. He or she is an implicit software co-creator, because his or her behavior when using the software is analyzed, as well he or she is asked for opinions about functionality and features of the software. The conclusions are passed to programmers who improve the software.

5. e-Service scenario with a program agent as a service person

In Fig. 5, a scenario is presented where an e-service is provided by a “software agent” instead of a human service person. Theory and practice of software agents is developed since mid-nineties of twentieth century [3,10]. A software agent is a program that autonomously performs tasks in a given time and place according to predefined instructions of its owner. An example of such scenario is a software agent that selects ads in a search engine. Such an agent operates independently of the direct control of its customer.

This e-service provision scenario is based on business intelligence [6] and data mining [1,7] techniques applied to big data [2] collected automatically during e-service provision. The better the past of a particular customer is known, and his or her similarity to other customers who were in his or her situation in the past (i.e., have similar profile), the smaller is the business risk of rejection of the customer’s presented business transaction or proposal. And, the smaller the risk, the higher are the revenues of a company.

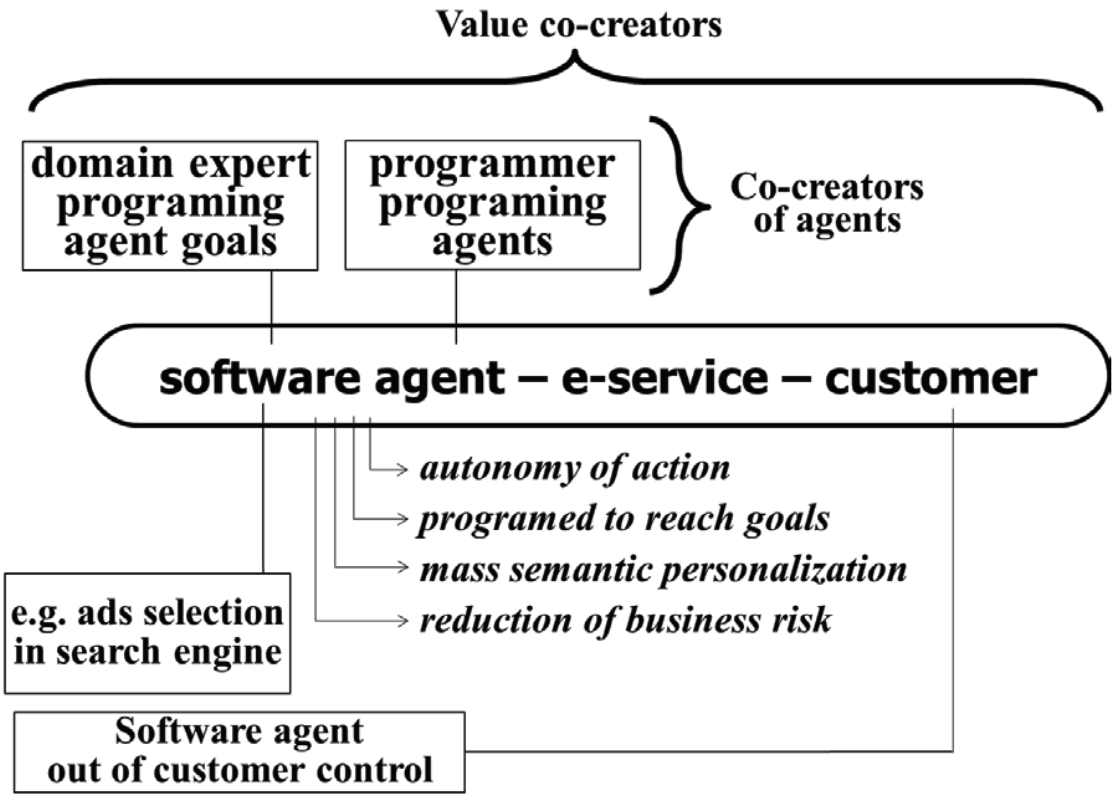

Fig. 5. e-Service scenario with a software agent as a service person.

In the software agent scenario, a customer deals with mass semantic personalization provided by autonomous software agents programmed to achieve goals "on their own", instead of functions on customer demand. Today's typical computer user is generally served night and day by many such agents. As a rule, customers are generally satisfied by e-services provided by these continuously active software agents. Customers may even have the comfortable impression that the software agents are guessing their wishes and benefiting them by, for example, saving time, aiming relevant information to them, or protecting them from unwanted intrusions on their screens.

Unfortunately, more nefarious agent based e-services can also be founded on violations of customer privacy, e.g., they can be based on compounded information to learn or surmise features of a customer's health record, financial situation, professional situation, family situation, entertainment preferred, locations visited, communications, relationships, needs, and intentions. Usually, people share this kind of information only with persons or systems they trust and are in some type of relationship with e.g. close relatives and friends, or systems which they have joined and have approved for specific access rights. But, software agents can also be deployed by individuals and businesses for unapproved purposes, which need not be related to their service to us as their customer. Software agents can collect data about us from the virtual on line trails and databases which we routinely interact with. Here, the e-service agents are deployed not to serve us as its customer, but to potentially dis-serve us, as the customer of an agent or business that we have not approved to collect information from us in any form or manner.

In general, hypothetically, a company collecting and exploring big personal data of customers may directly or indirectly use them to harm customers. It is likely in cases when there is a non-marginal interval between service provision and payment or vice versa. In such business cases risk is involved: for companies of not being paid although service has been rendered, and for customers of not to be served, although payment has been made. However, it is worth to note that in both cases companies have access to customer's private data but not vice versa.

So, to reduce risk of not to be paid after long time after service provision, a company having access to big customers' private data may elaborate a special profile, associate risk to its business with each profile, rank potential customers and refuse to provide a service to customers who have "bad" profile below a certain threshold.

Consider as an example a credit bank and a potential customer who wants to get a long term loan. It so happens the bank also does business with the employer of this potential customer. Violating the privacy of this potential customer's employer data base, the bank may discover that this potential customer will likely be laid off from his current job a year from now and use additional profiling tools to evaluate probability that he or she will remain unemployed, and thus be unable to manage the loan payments. The problem is that this potential customer will have no idea as to why his or her loan application was refused.

Consider now another example of an insurance company. Violating privacy of a potential customer and his or her ancestors, such a company may discover through mining their private health data or just emails among them about their health that the probability that this customer will get cancer over 50 years of age is quite high. Then, to maximize profit, this insurance company may offer attractive insurance to this customer, which, however, expires before he or she ends 50 years of age. If he or she agrees, statistically, he or she will pay in vain.

An even worse potential situation to consider is the possible deployment of software agents to violate privacy so as to identify vulnerable but promising future victims for criminal attacks, e.g. old persons living alone and possessing valuable objects of art.

In the e-service scenario, discussed in this section, with a software agent as a service person, a customer is an implicit and passive software agent co-creator, because he or she is treated as an object of analysis. Software agents and underlying techniques are co-created by domain experts and programmers trying to discover under which conditions customers are ready to spend their money and how to reduce business risk associated with service provision.

6. Conclusions

In this paper we have presented three e-service provision scenarios which expand the classic service provision scenario of Service-Dominant Logic. We claim that e-services will co-exist with classic services, but that they will expand. On the one hand, every service that may be provided remotely via Internet will be provided as an e-service to still growing population of customers. On the other hand, e-services will expand from purely digital space to cyber-physical space due to Internet of Things [4,5]. e-Services will strongly influence labor market, as more and more services will be provided by software and software agents instead of humans. A growing labor market will be for software and software agents co-creators. This is a challenge for educational system. A good approach seems to be T-shape education [9], where domain expertise is combined with programming skills.

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