



HAL
open science

USERS' INVOLVEMENT IN VALUE CO-CREATION: THE MORE THE BETTER?

Benoît Desmarchelier, Faridah Djellal, Faïz Gallouj

► **To cite this version:**

Benoît Desmarchelier, Faridah Djellal, Faïz Gallouj. USERS' INVOLVEMENT IN VALUE CO-CREATION: THE MORE THE BETTER?. The 28th International RESER Conference, Services in the Age of Contested Globalization, Sep 2018, Gothenburg, Sweden. halshs-03270383

HAL Id: halshs-03270383

<https://shs.hal.science/halshs-03270383>

Submitted on 24 Jun 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

XXVIII. International RESER Conference:

USERS' INVOLVEMENT IN VALUE CO-CREATION: THE MORE THE BETTER?¹

Benoît Desmarchelier, Faridah Djellal, Faïz Gallouj

The University of Lille, CLERSE CNRS, France

Literature on value co-creation often postulates that a greater degree of co-production increases the potential of value co-creation. To test this hypothesis, we build a computational model of value proposition inspired by March's model of organizational learning (1991[16]). The model allows to represent various cases of co-creation: (i) without co-production, (ii) with downstream co-production, and (iii) with upstream co-production. Repeated simulations are partly supporting the literature. On one hand, we find that deeper involvement of consumers into the value offering process increases the potential for value co-creation. However, on the other hand we find that when information emanating from the organization and the consumers are in contradiction - value co-creation potential is higher when employees follow existing organizational routines.

Keywords: *Value co-creation, organizational learning, modelling*

¹ This paper draws on a research carried out within the EU-funded COVAL project: "Understanding value co-creation in public services for transforming European public administrations", H2020 project 2017-2020

Introduction

All adaptive systems include performance measures used by microeconomic agents to make decisions (Holland and Miller, 1991[9]; Holland, 1975[8]). Economic systems have nonetheless the specificity that their agents are using a wide and evolving variety of such measures (profit, sales, market share, return on equity...). A new one that is being advocated by scholars of service science is value co-creation, that is the satisfaction experienced by consumers while they are using the goods or services they bought (Vargo and Lusch, 2004[21]). Vargo et al. (2008[22]) argue that previous performance indicators were based on prices, thus fundamentally on a criterion of "exchange value", while the co-creation approach focuses on the idea of "use-value". In this sense, value is necessarily co-created: suppliers are producing a "value offering" (Lanning and Michaels, 1988[11]), which is effectively transformed into value by users/consumers.

Interestingly, co-production - i.e. the explicit intervention of users into the production process of the value offering - is not compulsory for value cocreation. Co-production and co-creation are in fact complementary, and a growing number of typologies are distinguishing modes of co-creation depending on the extend of co-production. For instance, Ballantyne et al. (2011[3]) propose a typology that distinguishes modes of value offering that goes from "unidirected communicating of value" to "reciprocal promises of value" (p. 203). It includes 5 categories: (i) "supplier crafted value proposition", (ii) "supplier crafted generic strategies" - in which the company differentiates its offering based on a prior segmentation of the clients, (iii) "value proposition for stakeholders other than customers" - again the offering is crafted exclusively by the company, (iv) "value proposition co-produced by suppliers and consumers" - mainly through "knowledge collaboration" (p. 204), and (v) "reciprocal value proposition" through a communication between producers and users of "their own sense of what is value" (p. 204). Similarly, Osborne and Strokosch (2013[18]) distinguish three modes of value co-creation through co-production in public services: (i) "consumer co-production" when consumers engage in the "operational stage of the service production process" (p. S37), (ii) "participative co-production" when there is "participative mechanisms at the strategic planning and design stage" (p. S37), and (iii) "enhanced co-production" when the organization achieves "user-led innovation" (p. S37).

A common point among these typologies is the assumption that higher degrees of co-production lead to higher levels of value co-creation. In our view, this assumption has yet to be tested, especially because the actual process of value co-creation still remains a black-

box. An issue that reflects insufficient characterization of value co-creation is that most authors conceptualize it as a one-direction process in which users are influencing producers without retro-action on their own needs. An exception to this dominant view is the conceptual framework proposed by Payne et al. (2008[19]), in which value co-creation is the product of three nested processes: consumer learning, organizational learning, and a series of encounters between consumers and the supplier. This framework has also the advantage of bringing together organizational learning and value co-creation, which have been - so far - separate strands of literature.

The co-creation lense is increasing the number of actors involved in organizational learning, their variety as well as the frequency and intensity of interactions - making it a more complex process. As complex systems often produce counter-intuitive outcomes (Rosser, 2009[20]; Arthur, 2015[2]; Holland and Miller, 1991[9]), we can say that the assumption of higher value co-creation through deeper consumers involvement has to be further investigated. We propose to tackle this question by building-on a simulation model of value co-creation under various configurations of co-production.

Repeated simulations show that deeper intertwining between organizational and consumers' learnings increases the potential for value co-creation, which supports the hypothesis found in the co-creation literature. However, it seems that - once consumers are taking an active role in the organizational learning system - higher performance is achieved when consumers are the one who primarily adapt to the organization's proposition of value instead of the opposite.

The rest of the paper is organized in four parts. In Section 2, we review models of organizational learning and choose the one proposed by March (1991[16]). In Section 3, we adapt this model to the context of value cocreation. In Section 4, we augment the model with two modes of co-production and we run repeated simulations for testing the hypothesis of higher value cocreation when co-production deepens. Section 5 concludes the paper.

Existing Models of Organizational Learning

There is an extensive literature on computational modelling of organizational learning - i.e. the process of routines adaptation and codification through experience (Levitt and March, 1988[14]; Argote, 2011[1]). In this context, learning is often represented as a search for the best routine over a space of possibilities, each possible routine being assigned a "performance" or "fitness" value.

Models differ by their concept of performance, the more or less regular shape of the space of alternatives, and the level of aggregation of the decision unit. Hence, Levinthal (1997[13]) is using an exogenous series of random numbers for defining a landscape of "fitness" values over an irregular space of organizational "attributes". Organizations are then aiming to maximize this fitness through local and distant searches. The objective is to study the interplay between searches and the diversity of organizational forms in a market. Lant and Mezias(1992[12]) are proposing a model which succeeds at reproducing stylized facts of organizational learning, in particular the fact that organizational change tends to decrease in presence of environmental stability. Their model is formed by a regular space of 16 organizational forms, chosen by firms with different search heuristics. The merits of the organizational forms are measured through an abstract "performance" indicator.

A model with a performance measure grounded in economic theory is built by Chang and Harrington (2000[5]) for investigating the virtues of decision decentralization. The model represents a retail chain composed by several stores and a headquarter. Each of these decision units is facing a regular space of possible practices, on top of which are computed landscapes of profit values.

All these models involve decision units which are too aggregated for being used as a baseline for a model of value co-creation. Value is indeed co-created by individual consumers, and co-production frameworks are often even more micro-founded. For instance, the one developed by Gallouj and Weinstein (1997[7]) - and extended by De Vries (2006[6]) - decomposes the co-production process into vectors of characteristics for the product, the supplier and the client. In terms of micro-foundations, the model of organizational learning proposed by March (1991[16]) seems a suitable baseline for formalizing value co-creation, as it is micro-founded at the individual level. The model is composed of four elements:

- A vector of m binary characteristics (i.e. 1 or -1) standing as the "reality".
- An organizational code, itself composed of m dimensions, initially set-up with null values.
- The organization is employing n individuals, each with his/her vector of beliefs regarding the reality.
- A process of mutual learning in which every employee is adapting his/her beliefs to non-null dimensions of the code with a probability $p1$. At the same time, the organization is adapting its code to the beliefs of the employees which are matching more

closely the reality than does the code. For a given dimension, the code is modified in accordance with the belief of the majority k of the well-informed employees with a probability $(1 - p_2)^k$.

March (1991[16]) then augments this model to take into account employee's heterogeneity and turn-over, as well as instability of the environment - via random changes in the vector of reality. One of the main results is the importance of faster learning rate of the organization (i.e. high p_2) compared with the one of its employees (i.e. low p_1). Indeed, if employees are fast to get socialized to the code, then the organization cannot learn anymore from them. This relationship between p_1 , p_2 and the knowledge level of the organizational code in March's model is exemplified in Figure 1.² More recently, this model has been modified by Kane and Alavi (2007[10]) to explore the consequences for organizational learning of the adoption of IT related information systems.

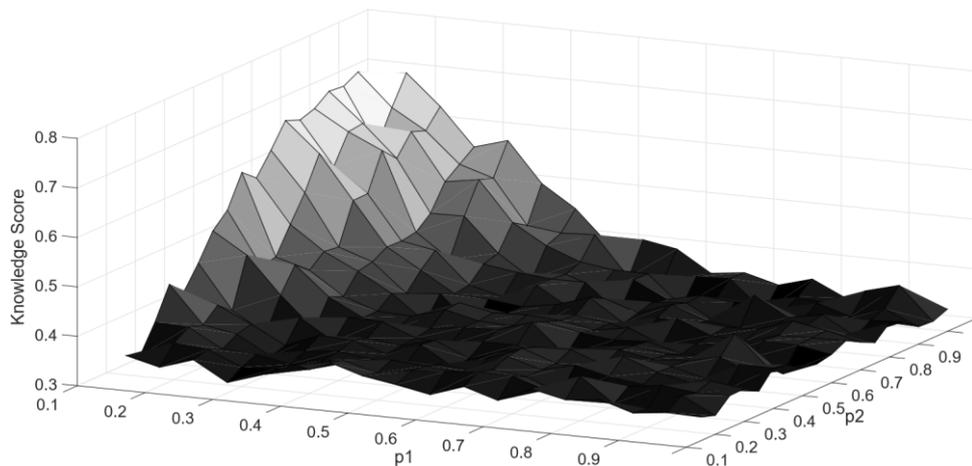


Figure 1: Relationship between employees' learning rate (p_1), the organization's learning rate (p_2) and its equilibrium knowledge score - i.e. the degree of correspondence between the organizational code and the reality - in March (1991[16]). Authors' calculations, averages over 30 simulations.

Value co-creation and Organizational Learning

Value co-creation starts with a proposition of value, or value offering. Compared with a goods-dominant logic (Vargo et al., 2008[22]) in which a firm focuses on producing and selling a material product, a value (or service dominant) perspective imposes to "adopt a very sophisticated eye on the customer" (Levitt, 2004[15] p.139). The

² All models presented in this paper have been programmed in C + +. Source codes can be obtained from the authors upon request.

objective is to propose a "clear, simple statement of the benefits, both tangible and intangible, that the company will provide" (Lanning and Michaels, 1988[11] p. 53).

Arguably, such statement would be more easily understood by consumers if the organization's code is compatible with their aspirations. We thus propose to use the organizational code in March's model (1991[16]) as a proxy for value offering. We also replace the vector of reality by a population of individual consumers, each with his/her own vector of aspirations of m dimensions. The learning process is not affected by these modifications: employees still adopt non-null dimensions of the code with a probability p_1 , and the code adopts the majority opinion among the better informed employees with a probability $(1 - p_2)^k$, with k the share of this opinion among the considered employees. Correspondance between employees' beliefs and consumers' aspirations is assessed relatively to majority's aspirations for each dimension m . Differences with March's framework are highlighted in Figure 2: in a value co-creation perspective, the reality has been replaced by a population of individual consumers, each with his/her own aspirations.

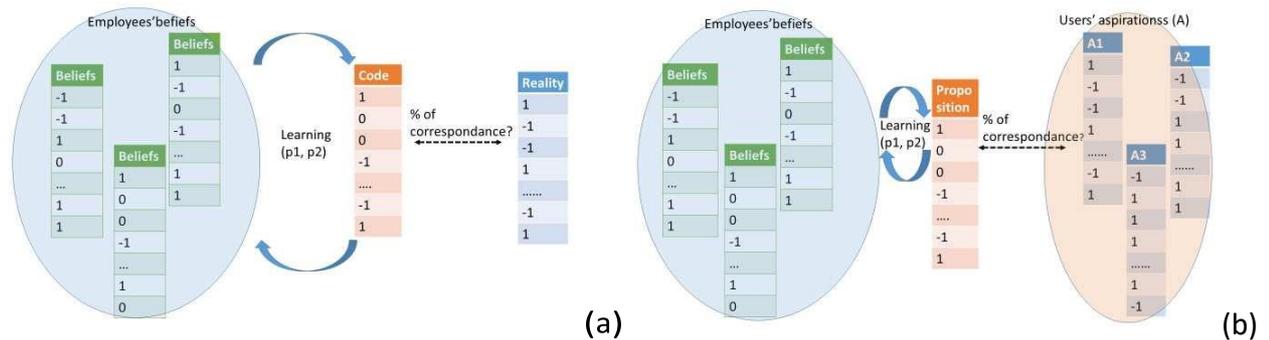


Figure 2: (a) Overview of March's model of organizational learning (1991[16]); (b) value co-creation framework.

Results of the model remain the same as in March (1991[16]) with regards to the influence of parameters p_1 and p_2 on the organization's performance, understood as the degree of matching between the value offering and a vector formed by the aspirations of the majority of consumers (labelled as "value offering score" in the rest of the paper). To illustrate this, we run the model 5000 times with random values for p_1 and p_2 , and we compute a regression of the value offering score over these two parameters.³ Results are presented in Table 1. Without organizational learning, the value offering matches average

³ Each simulation lasts 50 time steps and includes 30 employees and 30 consumers. We ensured that 50 steps are sufficient to generate an equilibrium level of the value offering score. Also, we compute 5000 simulation runs because regression results were found to be unaffected by the number of simulations above 3000 runs.

aspirations at 37.4%, then increasing p_1 - i.e. employees' learning rate - reduces the appeal of the value offering for consumers, whereas increasing p_2 i.e. the speed of the organization's learning - increases the value offering score (cf. Table 1). These results are consistent with March (1991[16]).

Regressors	Dependent Variable Value Offering Score
Const.	0.374(0.001) ***
p_1	-0.057(0.002) ***
p_2	0.047(0.002) ***
R_2	0.18
$F(2,4997)$	268.82

Table 1:

Robust regression estimates of the influence of parameters on the equilibrium value offering score of the organization.

Standard deviation of the estimates are in parentheses.

*** statistically significant at 1%

The model constitutes a baseline for representing value co-creation. It highlights the proximity between this concept and the process of organizational learning, and it vehiculates the idea that co-creation is merely a shift of perspective in which a unique reality is replaced by individual consumers' aspirations. So far, the organization in the model is not using this new diversity on the demand side for adapting its value offering. A finer knowledge of these aspirations could be gained - and used - through co-production, that we include in the model in the next Section.

Co-production of the value offering

As exemplified in existing typologies, value offerings can be co-produced in different manners. A first one consists in involving consumers at the operational stage, mainly for getting information about their needs and aspirations. A second manner consists in engaging consumers in the making of the value offering through reciprocal negotiations (Ballantyne et al., 2011[3]; Osborne and Strokosch, 2013[18]; Osborne et al., 2016[17]). Both types of co-production can have consequences on learning processes. Indeed, consumers' implication in the operational stage could modify employees' beliefs, while reciprocal negotiation could also trigger a learning process among consumers and affect their own aspirations -

making them more or less able to understand value propositions made by the organization. We represent these two cases in the following subsections.

1.1 Downstream co-production

In this case, each employee has a probability p_3 of questioning a proportion δ of the consumers about their aspirations. Then, the employee builds a vector of m dimensions representing the majority opinions among the surveyed sample. For each dimension, he/she adopts the majority view with a probability p_4 . The model is summarized in Figure 3.

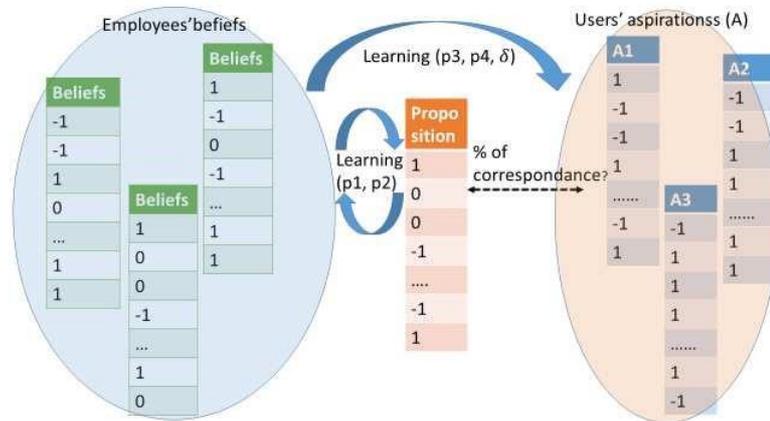


Figure 3: Value co-creation with co-production at the downstream level.

Figure 3 highlights that employees have now two sources of knowledge: the users/consumers, and the organization's value offering practices. Since the two sources can bring contradictory signals, we coded two variants of the model as follows:

- **Conservative case:** In this variant, employees give priority to their socialization within the organization. Thus, if a new belief obtained through consumers survey is in contradiction with the organization's offering, then the employee will opt for the organization's view with the probability p_1 .
- **Progressive case:** Priority is given to consumers' opinions. Hence, an employee does not take the organization's practices into account at time t if he/she has already adapted some of his/her beliefs to those of consumers during the period.

We now have a set of five parameters - ($p_1, p_2, p_3, p_4, \delta$) - that can influence the organization's value offering score. Like in the previous section, we ran the model 5000 times with random values defined in

[0.1,0.9] for each parameter. Simulations last 50 periods and comprise 30 employees and 30 consumers. Equilibrium levels of the value offering score are then regressed over (p_1 , p_2 , p_3 , p_4 , δ). Results are reported in Table 2.

	Value Offering Score	
	Conservative Case	Progressive Case
Const.	0.541(0.001) ***	0.539(0.001) ***
p_1	-0.010(0.001) ***	0.002(0.001) ***
p_2	-0.006(0.001) ***	0.008(0.001) ***
p_3	0.006(0.001) ***	0.008(0.001) ***
p_4	0.026(0.001) ***	0.014(0.001) ***
δ	0.016(0.001) ***	0.012(0.001) ***
R_2	0.29	0.24
$F(2,4994)$	413.29	271.01

Table 2:

Robust regression estimates of the influence of parameters on the equilibrium value offering score of the organization in the downstream co-production cases.

Standard deviation of the estimates are in parentheses.

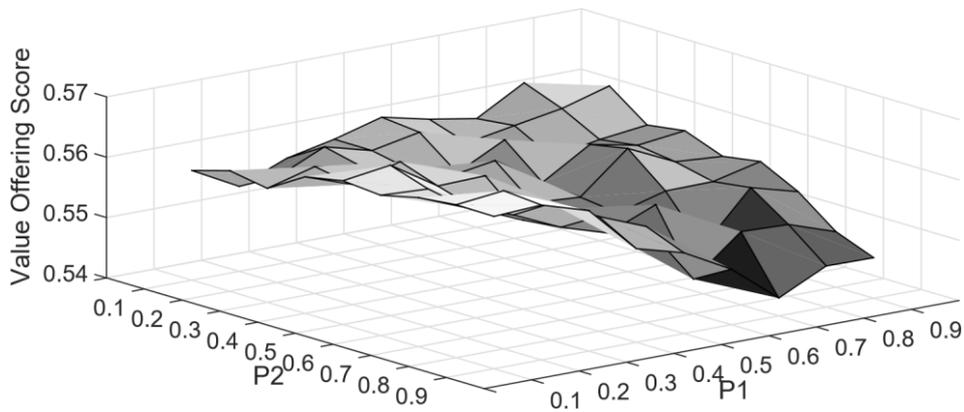
*** statistically significant at 1%

The first result to be noted is that the constant term is much higher in both cases of downstream co-production (i.e. around 54%, see Table 2) than in the baseline framework without co-production (i.e. 37% in that case, see Table 1). The value offering is thus more appealing for consumers, which increases the potential for value co-creation. Also, we recall that in the baseline case - like in March (1991[16]) - higher scores were achieved for slow employees socialization to the organizational code (i.e. low p_1) and fast learning of the organization (i.e. high p_2). Downstream co-production is affecting these relationships.

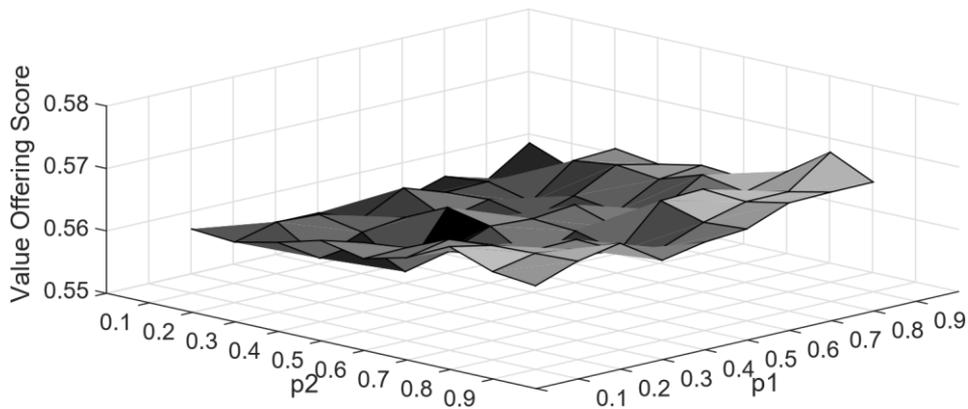
In the conservative case, employees' learning from interactions with consumers (i.e. δ , p_3 and p_4) is beneficial to the value offering score, whereas p_1 and p_2 are both reducing it (cf. Table 2). The negative role of p_1 can be explained by its priority over δ , p_3 and p_4 . Indeed, in the conservative setting, p_1 is preventing the organization to learn from the outside world. In this context, high p_2 increases the speed at which the offering becomes consistent with employees' beliefs, which reduces learning opportunities. This relationship

between p_1 , p_2 and the value offering score is mapped in Figure 4(a). It appears more ambiguous than in the original model from March (1991[16], see also Figure 1). At first, we note that both parameters have a much lower influence on the organization's performance since the amplitude of the value offering score is low (i.e. it goes from 0.54 to 0.57). Then, p_1 keeps its negative impact, and p_2 has a positive influence only for the lowest values of p_1 , thus when employees can learn from consumers.

Access to external sources of knowledge through δ , p_3 and p_4 is also beneficial for the organization in the progressive case, but internal sources become positive as well (cf. Table 2). This is because p_1 is now complementary to external sources of knowledge as it intervenes only when employees' learning from consumers does not happen. The positive relationship between p_1 , p_2 and the value offering score is mapped in Figure 4(b). Since high p_1 values do not hamper external learning, they are compatible with high organization performance. We note however that the range of values of the value offering score is similar to the range observed in the conservative case (Figure 4(a)). An average match of around 57% between the offering and consumers' aspirations is thus probably the maximum attainable with downstream co-production in this model.



(a)



(b)

Figure 4: Influence of p_1 and p_2 on the equilibrium value offering score of the organization, (a) in the conservative downstream co-production case; (b) in the progressive downstream co-production case.

1.2 Upstream co-production

In this variant of the model, employees of the organization still survey a share δ of randomly chosen consumers and learn from them through the mechanism triggered by parameters p_3 and p_4 . However, consumers are not anymore just sharing information about their aspirations. They now engage in a knowledge exchange process in which they get to know employees' beliefs. Access to such knowledge initiates a learning process among consumers. More particularly, at each time step of the model, each consumer constitutes a vector of m dimensions that summarizes the majority belief among the employees with whom he/she has been in contact during the period. If the majority belief for a given dimension is different than the consumer's aspiration, then he/she adopts this belief with a probability p_5 .

Because of this learning process, consumers are now taking an active part into the organization's learning system, which takes the form of two retroactive loops (see Figure 5): the first loop is the one found in March's model (1991[16]) between the organization and its employees, the second loop of

learning is between employees and consumers. These loops are simultaneous, but with an order of priority since consumers and the organization can send conflicting messages to employees.

In the conservative case, employees give priority to their learning from the organization, which could hamper this latter from adapting to the external world. However, consumers are now learning from the employees via the probability p_5 . It follows that, if employees are quick learners (i.e. high p_1), then fast consumers learning (i.e. high p_5) should generate high value offering scores. Indeed, their aspirations would quickly become compatible with the organization's value offering under this configuration.

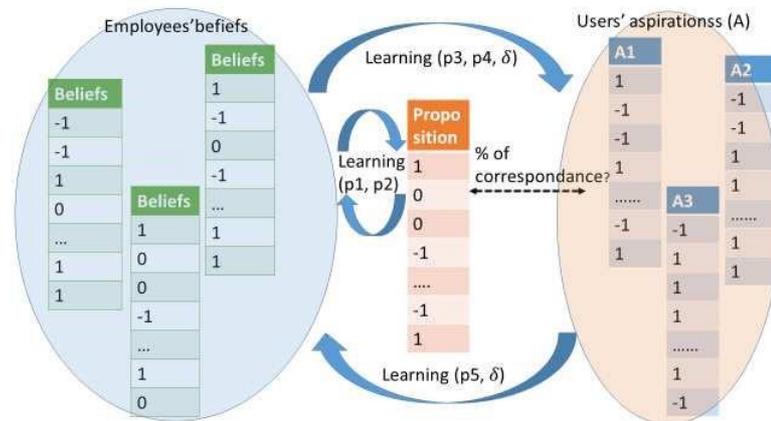


Figure 5: Value co-creation with co-production at the upstream level.

Like previously, we ran the model 5000 times, with random values drawn into $[0.1;0.9]$ for all parameters. We then regress the equilibrium levels of the value offering score over the parameters set. Results are reported in Table 3. They are partly consistent with the intuition that high performance can be achieved through conservative learning. Indeed, the constant term shows that the organization's value offering is matching consumers' aspirations at 91.8% on average. Hence, regardless of parameters values, integrating consumers into the organization's learning system is improving significantly the potential for value co-creation (to recall, the coefficient of the constant term in Table 2 was 54.1% for the conservative case). This performance is however lowered by the priority given to internal learning since both p_1 and p_2 are associated with negative coefficients. Indeed, the higher these parameters, the more self-centered becomes the organization. Positive coefficients for p_3 , p_4 and δ suggest that priority should be given to external sources of learning. Such positive influence of external knowledge is also at play in the progressive case.

In the progressive case, employees primarily learn from consumers while the organization learns from its employees. Hence it is now the organization that (indirectly) adapts to consumers. Results are reported in the column "progressive case" in Table 3. Paradoxically, the constant term (i.e. 82.9%) is clearly lower than in the conservative case. This surprising result can be explained by the simultaneity of employees' and consumers' learning. For instance, in a simple situation with only two agents, no agreement could be reached if they both adopt the views of the other at the same time. Such complete lock-in is avoided in the model because learnings are driven by probabilistic operations, but the simultaneity is surely reducing the organization's equilibrium score. Another element that can explain lower performance in the progressive case is that employees' learning is more difficult when the reality to consider is composed by several

vectors of consumers' aspirations instead of one single vector of organizational practices (or offering). This remark may explain the negative role of δ (i.e. the share of consumers that employees are interacting with), as higher δ means higher complexity for employees.

We note that p_2 is now fostering the performance of the organization. This result was expected since, in the progressive case, higher p_2 means faster adaptation of the value offering to consumers' aspirations. p_3 and p_4 are having a positive influence as expected, while p_1 - i.e. the parameter that closes the loop of internal learning - is still lowering the organization's performance.

Finally, we can note the positive influence of p_5 , the speed of consumers learning - in both the conservative and the progressive cases.

	Value Offering Score	
	Conservative Case	Progressive Case
Const.	0.918(0.006) ***	0.829(0.006) ***
p_1	-0.149(0.004) ***	-0.032(0.004) ***
p_2	-0.055(0.005) ***	0.026(0.004) ***
p_3	0.020(0.005) ***	0.078(0.004) ***
p_4	0.076(0.005) ***	0.127(0.004) ***
p_5	0.017(0.005) ***	0.050(0.004) ***
δ	0.016(0.005) ***	-0.006(0.004) ***
R_2	0.19	0.25
$F(6,4993)$	269.76	262.53

Table 3:

Robust regression estimates of the influence of parameters on the equilibrium value offering score of the organization in the upstream co-production cases.

Standard deviation of the estimates are in parentheses.

*** statistically significant at 1%

Conclusion

Literature on value co-creation often postulates that in-depth co-production increases the potential of value co-creation. To test this hypothesis, we build a computational model of value proposition inspired by March's model of organizational learning (1991[16]). This

allows to represent various cases of co-creation: (i) without co-production, (ii) with downstream co-production, and (iii) with upstream co-production. Each case is complexifying further the organization's learning system.

Overall, simulation results are supporting the hypothesis as we observe higher value offering scores when consumers are more involved into organizational learning. Simulations are also suggesting ways in which co-production could affect the overall learning system. Indeed, consumers' involvement into value offering is susceptible of bringing new informations that are contradicting existing organizational routines, which poses a dilemma to employees. Prioritizing existing routines is having important consequence for the organization's performance. In particular, we find that - in a downstream coproduction setting - it is clearly beneficial for the organization when employees prioritize existing rules over engaging in mutual learning with consumers. To put it another way, the organization should strenghten the corporate culture for its employees, while at the same time promoting consumers' learning. This could be achieved for instance through the building of living labs (BergvallKareborn et al., 2009[4]).

Finally, we want to stress that these conclusions would need further theoretical and empirical investigations, as the model we propose remains a highly stylized representation of the processes of value offering and co-creation.

References

- [1] L. Argote. Organizational learning research: Past, present and future. *Management Learning*, 42:439–446, 2011.
- [2] W.B. Arthur. *Complexity and the Economy*. Oxford University Press, 2015.
- [3] D. Ballantyne, P. Frow, R.J. Varey, and A. Payne. Value propositions as communication practice: Taking a wider view. *Industrial Marketing Management*, 40:202–210, 2011.
- [4] B. Bergvall-Kareborn, M. Holst, and A. Stahlbrost. Concept design with a living lab approach. In *Proceedings of the 42nd Hawaii International Conference on system Sciences*, pages 1–10, 2009.
- [5] M-H Chang and J.E. Harrington. Centralization vs. decentralization in a multi-unit organization: A computational model of a retail chain as a multi-agent adaptive system. *Management Science*, 46:1427–1440, 2000.

- [6] E.J. DeVries. Innovation in services in networks of organizations and in the distribution of services. *Research Policy*, 35:1037–1051, 2006.
- [7] F. Gallouj and O. Weinstein. Innovation in services. *Research Policy*, 26:537–556, 1997.
- [8] J.H. Holland. *Adaptation in Natural and Artificial Systems*. The University of Michigan, 1975.
- [9] J.H. Holland and J.H. Miller. Artificial adaptive agents in economic theory. *The American Economic Review*, 81:365–370, 1991.
- [10] G.C. Kane and M. Alavi. Information technology and organizational learning: an investigation of exploration and exploitation processes. *Organization Science*, 18:796–812, 2007.
- [11] M.J. Lanning and E.G. Michaels. A business is a value delivery system. *McKinsey Staff Paper*, 41, 1988.
- [12] T.K. Lant and S.J. Mezias. An organizational learning model of convergence and reorientation. *Organizational Science*, 3:47–71, 1992.
- [13] D.A. Levinthal. Adaptation on rugged landscapes. *Management Science*, 43:934–950, 1997.
- [14] B. Levitt and J.G. March. Organizational learning. *Annual Review of Sociology*, 14:319–340, 1988.
- [15] T. Levitt. Marketing myopia. *Harvard Business Review*, 82:138–149, 2004.
- [16] J.G. March. Exploration and exploitation in organizational learning. *Organization Science*, 2:71–87, 1991.
- [17] S.P. Osborne, Z. Radnor, and K. Strokosch. Co-production and the cocreation of value in public services. *Public Management Review*, 18:639–653, 2016.
- [18] S.P. Osborne and K. Strokosch. It takes two to tango? understanding the co-production of public services by integrating the services management and public administration perspectives. *British Journal of Management*, 24:S31–S47, 2013.
- [19] A.F. Payne, K. Storbacka, and P. Frow. Managing the co-creation of value. *Journal of the Academy of Marketing Science*, 36:83–96, 2008.
- [20] J.B. Rosser. *Handbook of Research on Complexity*. Edward Elgar, 2009.
- [21] S.L. Vargo and R.F. Lusch. Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68:1–17, 2004.

- [22] S.L. Vargo, P.P. Maglio, and M.A. Akaka. On value and value co-creation: A service systems and service logic perspective. *European Management Journal*, 26:145–152, 2008.

Authors:

Benoît Desmarchelier, Associate Professor
University of Lille, Clersé-CNRS
Faculty of Economics and Sociology
Cité Scientifique, 59 655 Villeneuve d'Ascq Cedex (France)
Benoit.Desmarchelier@univ-Lille.fr

Faridah Djellal, Professor
University of Lille, Clersé-CNRS
Faculty of Economics and Sociology
Cité Scientifique, 59 655 Villeneuve d'Ascq Cedex (France)
Faridah.Djellal@univ-Lille.fr

Faïz Gallouj, Professor
University of Lille, Clersé-CNRS
Faculty of Economics and Sociology
Cité Scientifique, 59 655 Villeneuve d'Ascq Cedex (France)
Faiz.Gallouj@univ-Lille.fr