Introducing the Work-Enterprise Canvas as a tool to evaluate job quality

Samuel Desguin[1], Julien Charles[2], Isabelle Ferreras[3], Wim Laurier[4]

[1] PhD Candidate, Université Saint-Louis Bruxelles (USL-B), TED research group.
[2] Visiting professor, researcher at CESEP & UCLouvain-CriDIS, TED research group.
[3] Full professor, FNRS senior researcher at UCLouvain-CriDIS, TED research group.
[4] Full professor, Université Saint-Louis Bruxelles (USL-B), NODES research center

Abstract. The surge of non-standard forms of employment and the concerns they raise about job quality challenge researchers to find better methods to evaluate job quality across radically different ways to organize work and employment. Current analysis methods can come short when it comes to tackling this diversity. To fill that gap, we introduce an enterprise architecture, model-based, approach to improve the analysis of job quality: the Work-Enterprise Canvas. We show how it can be used in the case of Service Voucher Work, a form of employment specific to the domestic help industry in Belgium. Using this model will enable researchers to get more detailed and comparable results across industries and organizations, opening opportunities for richer assessment of the job quality. However, for best results, this approach still needs to be combined with the two traditional approaches to job quality: the evaluation at the subjective and at the objective levels.

Keywords: Job Quality, Non-standard forms of employment, Enterprise architecture, ArchiMate, Model-based analysis technique

This paper has benefitted from a grant from Louvain4Cities program awarded by UCLouvain. We thank Zaib Una Nisa Khosa and Prof. Geert Poels (UGent) for their discussion, participation & feedback.

1 Introduction & research question

Non-standard forms of employment – that deviate from standard wage work, such as freelancing, platform work, autonomous employment or worker cooperatives – are on the rise around the world, and previous studies have alerted on the harm that some of these forms of employment can cause to job quality [1]–[8]: some non-standard forms of work can leave workers worse-off in terms of wages, income stability, job security, access to social rights (unemployment benefit, paid holidays, representation rights) or simply the possibility to express their interests and needs to their employer or client. In this context, different actors push for various views about the type of forms of employment that should be promoted [4] : worker unions would typically see standard

wage work statuses as “good jobs” to preserve, while others, such as cooperatives of freelancers, attempt to create a status in which workers have the autonomy of independent contractors while benefitting from the security enjoyed by wage workers; others, such as private companies in the platform economy, plead for a fully flexible and individualized organization of the workforce. To substantiate, and assess these positions with facts, effective ways to measure job quality are crucial. Therefore, this paper introduces an innovative, *enterprise architecture model-based* approach, that could contribute to improving the analysis of the impact of the form of employment on job quality. In this current early stage version, the model mostly help the researcher organize and orient his research, but more advanced versions could bring about more value.

The parameters proposed to evaluate job quality fall in two main categories: **autonomy**, i.e. “the degree of control and influence employees have over their jobs” [9, p. 444] and **security,** i.e. “how secure a person feels in a job” [9, p. 444]. This simple framework comprising of two main indicators has been used, in various forms, to assess and compare job quality, either at country-levels (See. [9]), or at a sector-level (see [10]–[12]). The literature on job quality also includes other factors, such as training and competence [10], prestige and status [13], relatedness of the worker towards his or her organization and colleagues [14], work pressure [11] or ergonomics [15]. However, in this paper, we focus on a simple framework organized around autonomy and security as goals for workers, for four reasons: (1) because these two goals refer to the two ideals underpinning the historical terms of the “Fordist compromise” [4] between worker’s unions, employers and the State, in which employees agreed to relinquish their *autonomy* to the employer, in exchange for the latter caring for their (financial and physical) *security*; (2) to keep our approach easy to grasp and to use; (3) because a broad understanding of autonomy and security encompasses any other parameter of job quality. For instance, security includes a reliable access to wage, but also any kind of protection from injury, pressure or unhealthy environment provided by the larger legal system of basic social and labor rights. Autonomy refers to the control over one’s job, which includes the possibility to access the skills and the machines (capital) needed to execute the job, as well as the freedom to define the meaning of that job. Illustratively, in a comprehensive review of job quality indicators [15], we were able to map every single indicator to either to autonomy or security (see annex 1). (4) Lastly, including only two parameters of job quality makes our approach more open and flexible towards non-standard forms of job, and thereby more future-proof. For instance, former studies on job quality use parameters such as career prospects [15], which is ill-adapted to some forms of work such as freelancing.

Approaches to collect data and evaluate parameters of job quality traditionally follow two perspectives [15]. First, the *subjective perspective* which is based on self-reported data about the appreciation of one’s job, but is prone to biases due to the subjectivity of workers and does not enable objective cross-sector or cross-country comparisons [11]. Second, the *objective approach* which is based on quantitative data about actual behaviors such as absenteeism and turnover [16] or wage, but does not inform the observer about the meaning of the data (for instance, a level of salary does not inform on whether it is high enough from the point of view of the worker) and

cannot link the data to a cause (e.g. high turnover does not inform on which aspect of job quality is responsible, if at all). To overcome these weaknesses, it is best to combine both perspectives [11].

While the two traditional approaches focus on the outcomes of job quality, this paper proposes a third approach, as a complement the two others, based on the analysis of the intrinsic aspects of the form of employment under which the worker operates. This new approach aims at identifying the determinants of job quality as a result of the way work relationships are organized within an organization. In other words, our perspective aims at "opening the black box" of job quality, by effectively comparing the essence of various employment models.

In practice, we propose to build a framework that is able to describe any form of work, from the point of view of the worker, by identifying the key elements that typically influence the way in which the work is conducted, such as the legal work status, the presence (or not) of an employer, the clients and suppliers. This framework needs to be able to describe any form of employment, such as wage employment, independent work, platform work, freelancing or undeclared work, so as to identify within these forms of employment the inherent characteristics that lead to better or worse job quality.

We believe that this approach, when combined with the two existing approaches – subjective and objective measures, will enable researchers to get more detailed and comparable results across industries and organizations that they seek to evaluate. This leads to the following **research question** for this paper: *how can the key determinants of job quality, in the forms of employment, be identified and represented by means of an enterprise modelling technique?*

2 Design and implementation

We developed a canvas capable of describing any type of work relationship, from the point of view of the worker, called the *Work-Enterprise Canvas* (WEC) which highlights all actors that contribute to determining the quality of work (i.e., autonomy and security). This framework was developed with an *enterprise architecture* approach, using the *ArchiMate* language and the *Archi* tool. Enterprise architecture refers to a "*framework or 'blueprint' for how the organization achieves the current and future business objectives*" , as well as the "*models, documents, and reusable items (as components, frameworks, objects, and so on) that reflect the actual architecture*" [17, p. 1367]. It is used to support the "*communication between the different stakeholders, and the alignment and consistency between the development artifacts and other products*" [18, p. 361]. ArchiMate is a modelling language that was developed by The Open Group to create enterprise architecture models; it is used to provide views of underlying domains along with their relationships and dependencies in organization architectural frameworks [19]. *ArchiMate* is specializes in supporting alignment between business and IT in support of the realization of business strategy, and its versatility enables it to describe a very wide array of organizations from the point of view of multiple stakeholders with varying concerns [18]. Since we

do not account for IT aspects, our model maps in the *Business Layer* and the *Motivation Layer*. Further, ArchiMate is designed to depict organizations, which is also what this paper focuses on. We adopt a very wide understanding of what organizations are, not as legal or accounting entities with precise boundaries, but rather as political entities, in the sense proposed by Ferreras [23]. In this sense, an organization is defined as *the ensemble of power relationships that determines, and bears on the worker's ability to conduct her work*. This definition comprises actors such as the employer (if there is one), customers, suppliers, the public authority, supporting, worker-friendly, business structures, and other type of actors. In this view, *every worker* operates within an organizational context, including freelancers. The mapping of a business canvas onto *ArchiMate* is not a new endeavor (see [20]), and has for instance been done for the *Business Model Canvas* (BMC) [21], which is a canvas built upon the *Business Model Ontology* [22]. Mapping the BMC to ArchiMate "provides a sound formal basis for modeling business models in ArchiMate" [20, p. 1694]. Similarly, our objective by mapping the *WEC* onto ArchiMate is to formalize the analysis of job quality and facilitate subsequent comparisons.

2.1 The Work-Enterprise Canvas

In an organization, from the point of view of the worker, we identified *4 internal concepts* that constitute the work environment and *5 external actors of work.* These concepts were established in an iterative model by applying our model to real-life organizations and refining it on the go. The *4 internal concepts* are:

1. **The worker**: physical person who invests time and skills to create value for the organization.
2. **The institutional framework**: legal person that makes the work legally possible. It is the entity recognized by the public authority to perform any commercial legal act. In case of wage work, the institutional framework is the employing company; in case of independent work, it the legal status of the worker.
3. **The support functions**: functions that make the work concretely possible. These are based on the *support activities* of Porter's [24] *Value Chain*, and include the firm infrastructure, the Human Resource Management, the Technology and Procurement.
4. **The production entity**: the place (in a broad sense, not only topographic) where work is organized and concretely takes place. It is the public face towards the beneficiaries, clients or suppliers.

The internal concepts were determined by using two axes: core concepts (directly linked with the work activity – the worker in the production entity) vs. support concepts (the institutional framework and the support functions; and actors (institutional framework and worker) vs. places and functions (support and production entity).

Next, ***5 external actors of work*** are*:*

1. **The clients**: actors who buy or benefit from the goods and services produced by the organization.
2. **The suppliers**: actors who provide the organization with goods and services.
3. **The investors**: actors who bring capital in cash or kind to the organization.
4. **The public authorities**: actors who determine the conditions of access to the status under which the worker operates, as well as the rights and obligation it entails, and collect the various social security contributions and taxes.
5. **The social dialogue actors**: actors who represent and defend the interests of the workers at the company-, sector- or national-level, and the instances in which they can represent the worker's interests.

2.2 Mapping the concepts of the WEC into ArchiMate

In this section, we give for each WEC the corresponding ArchiMate concept type and most relevant relationships, from the point of view of the worker.

WEC Concept	ArchiMate concept type	Relationships
Worker	*Business Actors*	*Serving* the production entity and the institutional framework
Institutional Framework	*Business Actors*	*Serving* the worker
Support Functions	*Business Functions*	*Serving* the worker
Production Entity	*Location*	*Serving* the client
Clients	*Business Actor*	*Served by* the production entity
Suppliers	*Business Actor*	*Serves* the work organization
Investors	*Business Actor*	*Influence* the work organization
Public authorities	*Business Actor*	*Influence* the work organization *Serves* the worker
Social dialogue	*Business Actor*	*Influence* the work organization *Serves* the worker

Lastly, we introduce the **autonomy** and **security** are influenced directly by the work organization grouping. The following depicts all concepts of the WEC mapped in ArchiMate and thereby constitutes a reference model of the WEC:

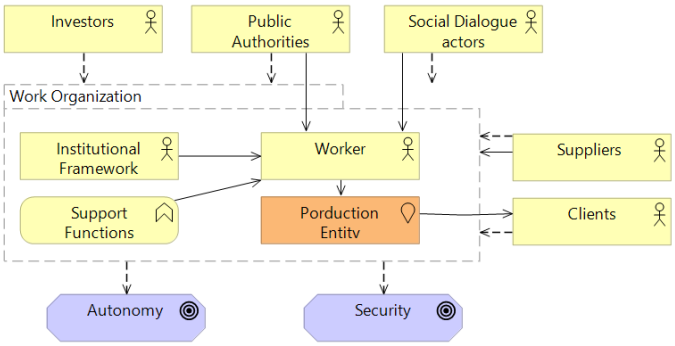

Fig. 1. Reference model of the WEC

2.3 3-step utilization guidelines

The guidelines we can provide at this stage are still broad and will be further developed as this model is applied to more cases.

Step 1 – customization of the model. The WEC can be applied either to an individual organization or to generalize organizations in a sector, in which case it should be representative of a generic organization of that sector. When applying it to a case, any deviation from the standard reference model can be made, as long as it can be effectively justified. In the case below, for instance, the production entity belongs to the work organization, but also to the client. Besides, the "investors" and "suppliers" are not displayed because they do not seem to substantially impact the work organization.

Step 2 – identifying key relationships. From there, the researcher should describe the relationships that impact job quality via autonomy or security. For instance, in the case below, job autonomy is mostly determined by the employer, as well as the client.

Step 3 – analysis. Lastly, the relationships in the case at hand are compared to other organization of works such as typical employment or independent work. For instance, the client has little supervision over the worker in typical employment, whereas in the case below, work happens at the client's site, giving the latter more influence over autonomy of work.

2.4 Example of use of the model: the Service Voucher case

To illustrate the use of our model, we briefly introduce the case of domestic help workers in Belgium, based on several studies on the topic [25]–[27]. The Belgian state created and heavily subsidized a "Service Voucher" system in order to reduce the prevalence of undeclared work in the sector. In this system, a person can buy one hour worth of work for less than 9€ (after tax credit). The company hiring the professional receives approximately 23€, and it must in turn must pay the worker around 11€ per hour. This system costs approximately 235 million € annually to the public for the Region of Brussels alone, a considerable spending which calls for a thorough evaluation of its impact. Federal studies [27], [28] have shown that this system lead to a drop in undeclared work and a better social protection for the domestic workers.

Step 1 – customization. Fig. 2 represents an application of our model to the sector.

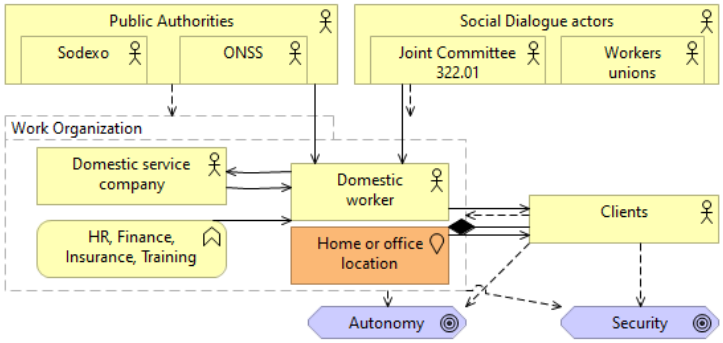

Fig. 2. Application of the WEC model to Voucher services

Step 2 – key relationships. Regarding **security**, we identify three actors that contribute to the security of workers – noteworthy, none of these actors would be involved in the work organization in the case of an undeclared work situation. The **domestic service company** which, as employer, has to abide by obligations such as taking responsibility for what the worker does as part of their work (including damages to outsiders) or the responsibility of paying the worker's salary in due time. The **public authorities**, of which the *National Offices of Social Security* (ONSS) grants the workers access to social security (unemployment insurance, retirement pay, medical leave, etc.) in exchange for social contributions. The public authorities also outsources the sales and collection of the vouchers to a private company, *Sodexo*. Lastly, the **social dialogue actors**, including the **workers unions** verify at the individual level that wage workers benefit from the rights they are entitled to, such as a 13th paid month or reimbursement of travel costs. They also advocate for the advancement of the worker's rights to public authorities at the sector-level. Further, employers and workers unions meet to set regulations such as the worker's wage level in the **joint committee 322.01**. The three same actors play a key role regarding **autonomy**. The **domestic service company**, as an employer, has a power of authority towards the subordinated worker. It can thereby set working hours and impose specific behaviours at work (such as the usage of specific washing products, or wearing a uniform). The **public authorities** also set limits to the determination of work, such as a minimal and maximal amount of hours worked per week (which is between 10 and 38 hours in the service voucher system). Lastly, **social dialogue actors** also set boundaries, such as the wage level – for instance, a domestic worker with less than a year seniority will earn 11,35€ per hour. This wage is fixed regardless of job performance or client appreciation, which can be seen as a limitation in autonomy. Lastly, the **client** has an undetermined impact on autonomy: they can help bypass some boundaries set by the other actors – by paying extra tips to the worker or by letting the worker register himself the hours worked – both practices that might be prevalent in the sector, but for which there is no documentation.

Step 3 – analysis. Undoubtedly, the **domestic service company, the public authorities and the social dialogue actors** all have a positive impact on security, but tend to limit autonomy by exerting some control over the way work is conducted. A major difference with traditional employment lies in the location of the **production entity**, outside of the scope of the work organization: the value-creating actions take place at the client's homes or offices, where all other actors have but a limited influence. Therefore, end-clients could bypass the regulations that are set at a national level by these actors regarding security, which would imply a gap between theoretical work conditions and practice. For instance, in the recent Covid-crisis, many clients did not abide sector-wide regulations for the protection of domestic workers, such as asking clients not to be in a room at the same time as the domestic worker. The influence of clients on work organization therefore potentially weakens security, in comparison with regular employment.

To summarize our observations, service voucher workers are undoubtedly more secure than undeclared workers (which this model sought to replace) – with three types of actors that contribute to making sure that the workers are treated fairly, re-

ceive their wage in time, work reasonable hours in a secure environment. However, they are also subject to more limitations to their autonomy, by the same three actors. In comparison to generic wage workers however, the service workers may be worse-off in terms of security, as the distance between the production entity and the protecting actors is increased – the client acting as an intermediary in that regard. The situation of autonomy is also unclear in comparison to generic wage workers, as the role of the client is undetermined.

With this case, we have shown the versatility of our model, in that it is able to describe a non-standard form of employment. We highlighted the key role of the client in bypassing some of the regulations imposed by the public authorities, the social dialogue actors and the employer. However, we have also shown that this model by itself is not able to give a final appreciation of job quality – it needs to be linked with other data to evaluate some unclear relationships, such as the impact of the client on autonomy and security.

3 Limitations and conclusion

In this paper, we introduced the *Work-Enterprise Canvas* as an *enterprise architecture model-based* analysis technique to evaluate job quality through two components: autonomy and security. This canvas is designed to effectively describe any type of form of employment, in order to evaluate and compare it.

However, for this model to become a fully-fledged *enterprise architecture model-based* analysis tool, it still need to be applied to be further developed, based on its application to a greater number of cases. In its current form, it can already help researchers organize and orient their evaluation of Job Quality; it points to structural differences and helps the researchers identify what they should pay attention to when comparing those employment types. However, its application is still largely dependent on the researcher's interpretation, as we have yet to develop precise guidelines for users. Further, we still need to describe how the WEC combines with other approaches such as the *subjective perspective* or the *objective approach* to collect and interpret data and perform complete analyses. Lastly, the relationships of the concepts with each other also need to be further developed.

Lastly, we expect that mobilizing this model will facilitate cross-country and cross-sector comparisons that will help decision-makers and citizens to forge an informed opinion about new, non-standard forms of work. Besides, we hope that this contribution can inspire researchers in information science by showing how methods and languages can be useful beyond their intended boundaries – such as we did with ArchiMate.

Annex 1 – mapping job quality indicators to autonomy or security

The table below introduces an illustrative mapping of the measures of job quality mentioned in [15] to the two measures we use in this paper, autonomy and security.

Measure mentioned in [15]	**Link to autonomy or security**
Wage (pay and fringe benefits; financial rewards)	**Security**: ability to sustain a certain quality of life based on a stable wage
Working conditions	**Security**: activity that safeguard the workers (psychological & physical) health
Workers' risks and job insecurity	**Security**: activity that safeguard the workers (psychological & physical) health
Maintaining the health and wellbeing of workers	**Security**: activity that safeguard the workers (psychological & physical) health
Quality of working time	**Security**: activity that safeguard the workers (psychological & physical) health
Intrinsic rewards	**Security**: activity that safeguard the workers (psychological & physical) health
Work intensity	**Security**: work that applies reasonable (psychological & physical) pressure upon the worker
Ability to combine work and family life (Reconciling work with non-work life ; work-life balance)	**Security**: activity that safeguard the worker's right to a healthy private life
Outsourcing; Downsizing; Increased use of contingent employment	**Security**: risk of one's job disappearing
Control	**Autonomy**: ability of the worker to exert (some) control his job his/herself
Personal discretion over work tasks and participation in workplace decisions	**Autonomy**: ability of the worker to exert (some) control his job his/herself
Social dialogue and worker involvement	**Autonomy**: ability of the worker to exert (some) control his job his/herself (or via representatives)
Job prospects	**Autonomy**: capacity to evolve towards another job or position
Skills and training	**Autonomy**: capacity to evolve towards another job or position
Developing skills and competencies	**Autonomy**: capacity to evolve towards another job or position
Interpersonal relationships	**Autonomy**: work that allows the worker to sustain interpersonal relationships with other people
Promotion of gender equality	**Autonomy**: equal chances given equally to all genders to evolve towards another job or position
Diversity and non-discrimination	**Autonomy**: equal chances given to all people to evolve towards another job or position
Use of information and communication technologies (ICTs)	**Autonomy**: ability given to workers to use the relevant technologies in his/her work

References

[1] A. Murgia, L. Maestripieri, et E. Armano, « The precariousness of knowledge workers: hybridisation, self-employment and subjectification », *Work Organ. Labour Glob.*, vol. 10, nº 2, p. 1-8, 2016.

[2] S. Bologna, *The Rise of the European Self-employed Workforce – Mimesis International*. Mimesis, 2018.

[3] A. Murgia, R. Bozzon, P. Digennaro, P. Mezihorak, M. Mondon-Navazo, et P. Borghi, « Hybrid Areas of Work Between Employment and Self-Employment: Emerging Challenges and Future Research Directions », *Front. Sociol.*, vol. 4, 2020, doi: 10.3389/fsoc.2019.00086.

[4] J. Charles, I. Ferreras, et A. Lamine, « A freelancers' cooperative as a case of democratic institutional experimentation for better work: a case study of SMart-Belgium », *Transf. Eur. Rev. Labour Res.*, vol. 26, nº 2, p. 157-174, mai 2020.

[5] G. Valenduc, « Les travailleurs indépendants économiquement dépendants - Balises pour analyser une tendance émergente sur le marché du travail », Chaire Travail-Université, 2017. [En ligne]. Disponible sur: http://www.ftu-namur.org/fichiers/CSC-ChaireTU-Independants_economiquement_dependants.pdf.

[6] A. Koukiadaki et I. Katsaroumpas, « Temporary contracts, precarious employment, employees' fundamental rights and EU employment law », Directorate-General for Internal Policies, EU Parliament, 2017.

[7] P. Charhon, « Les travailleurs autonomes en Europe : action collective et représentation d'intérêts », Pour la Solidarité, 2019. Consulté le: juill. 14, 2019. [En ligne]. Disponible sur: http://www.pourlasolidarite.eu/fr/publication/les-travailleurs-autonomes-en-europe-action-collective-et-representation-dinterets.

[8] N. Countouris et V. De Stefano, « New Trade Union Strategies for New Forms of Employment », ETUC, Brussels, 2019.

[9] I. Esser et K. M. Olsen, « Perceived Job Quality: Autonomy and Job Security within a Multi-Level Framework », *Eur. Sociol. Rev.*, vol. 28, nº 4, p. 443-454, août 2012.

[10] A. K. Alvi, R. Haider, et R. R. Ali, « Effect of job autonomy, job security and employee training on perceived organization support », *Asian J. Empir. Res.*, p. 10, 2013.

[11] H. Lopes, S. Lagoa, et T. Calapez, « Work autonomy, work pressure, and job satisfaction: An analysis of European Union countries », 2014.

[12] V. Wong et T. C. Au-Yeung, « Autonomous precarity or precarious autonomy? Dilemmas of young workers in Hong Kong », *Econ. Labour Relat. Rev.*, vol. 30, nº 2, p. 241-261, juin 2019.

[13] S.-Å. Dahl, T. Nesheim, et K. M. Olsen, « Quality of Work: Concept and Measurement », *SSRN Electron. J.*, 2009.

[14] E. L. Deci et R. M. Ryan, « Self-determination theory », in *Handbook of theories of social psychology, Vol. 1*, Thousand Oaks, CA: Sage Publications Ltd, 2012, p. 416-436.

[15] Á. Díaz-Chao, P. Ficapal-Cusí, et J. Torrent-Sellens, « Economic Crisis and Job Quality in Spain: A Multi-dimensional and Micro-data Empirical Approach », *Soc. Indic. Res.*, vol. 125, nº 2, p. 613-633, janv. 2016.

[16] S. A. Geurts, W. B. Schaufeli, et C. G. Rutte, « Absenteeism, turnover intention and inequity in the employment relationship », *Work Stress*, p. 16, 1999.

[17] C. M. Pereira et P. Sousa, « A method to define an Enterprise Architecture using the Zachman Framework », in *Proceedings of the 2004 ACM symposium on Applied computing - SAC '04*, Nicosia, Cyprus, 2004, p. 1366, doi: 10.1145/967900.968175.

[18] G. Antunes, M. Bakhshandeh, R. Mayer, J. Borbinha, et A. Caetano, « Using Ontologies for Enterprise Architecture Analysis », in *2013 17th IEEE International Enterprise Distributed Object Computing Conference Workshops*, Vancouver, BC, Canada, sept. 2013, p. 361-368.

[19] The Open Group, *ArchiMate® 3.1 Specification*. The Open Group Standard, 2019.

[20] L. Meertens, M.-E. Iacob, B. Nieuwenhuis, H. Jonkers, et D. Quartel, « Mapping the business model canvas to ArchiMate », mars 2012.

[21] A. Osterwalder et Y. Pigneur, *Business Model Generation*. 2010.

[22] A. Osterwalder, « The Business Model Ontology - a proposition in a design science approach (BMC) », Université de Lausanne, 2004.

[23] I. Ferreras, *Firms as Political Entities: Saving Democracy through Economic Bicameralism*. Cambridge University Press, 2017.

[24] M. E. Porter, « How information gives you competitive advantage », in *Competitive Advantage*, Free Press., New York, 1985.

[25] O. Brolis et M. Nyssens, « Le quasi-marché des titres-services : Qualité d'emploi, motivation au travail et diversité des prestataires, » 2016, Consulté le: déc. 09, 2020. [En ligne]. Disponible sur: https://dial.uclouvain.be/pr/boreal/fr/object/boreal%3A178191.

[26] J. Defourny, A. Henry, S. Nassaut, et M. Nyssens, « Les titres-services: quelle qualité d'emploi et d'organisation du service? », *Regards Econ.*, vol. 69, avr. 2009, Consulté le: déc. 09, 2020. [En ligne]. Disponible sur: https://orbi.uliege.be/handle/2268/6393.

[27] Idea Consult, « Evaluation du régime des titres-services pour les services et emplois de proximité 2009 », p. 158, 2010.

[28] K. Goffin, « Une vision à 360° sur les titres-services », *Federgon*, p. 103, 2018.