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Consequences and determinants of the impact of innovation on the labor market in the

area of financial intermediation and in banking

Abstract

This article highlights the key difficulties with the determination of the impact of information

innovations on the labor market. The consequences of these changes update the traditional

canons of employment and work, some dating back to the industrial era. In particular, these

changes concern the area of financial intermediation and banking. Reintermediation and

informatization of customer service has enabled the use of outsourcing and has prompted the

development of indirect distribution channels for services. Customers increasingly service

themselves. In the financial services sector, the structure of employment is changing, in which

the growing importance of intermediaries and the diminishing importance of banks, which in

the future will be centers of decision-making and organization, can be noted. Consequently,

the decentralization of customer service, combined with the centralization of management,

can be observed. This, in turn, has a strong impact on the labor market. The changes concern:

the work itself, employers, and employees.

Keywords: innovation, labor market

Introduction

Information innovations are currently the ones that are profoundly changing the daily

lives of modern societies. The consequences of these changes disrupt the traditional canons of

employment and work, some of which date back to the industrial era. This, in turn, has a

strong impact on the labor market. The changes concern not only the work itself and

employers but also employees. Thus, it is not just the job market, but societies as a whole, that

are changing significantly. Work is being perceived differently, and the expectations of

employers and employees are becoming different, too.

The characteristics of information innovations give rise to a number of related

hypotheses which cannot be easily verified. An interesting example of the impact of

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information innovations on the labor market are the changes they have initiated within the banking system (and in the area of financial intermediation). The purpose of this study is to indicate the most important factors, which emerge as determinants of the phenomena occurring in the Polish banking system, and the consequences of the popularization and increasing dependence of banks on information technologies, including changes in conditions, organization and financial implications of employment and work of employees hired in such branches or institutions that cooperate with them.

The main hypothesis in this paper argues that information innovations, and in particular the intensity and scale of their application, are key determinants of changes in the part of the labor market, which in Poland is associated with financial intermediation institutions. Changes prompted by the use of new solutions transform the business models of selected institutions, which then trigger changes in the nature of the work performed on their behalf by employees. Similar changes will also occur in other segments of the labor market, where until now, there have been fewer information innovations compared to the operation of banks and related institutions.

This research focuses on the review of selected literature items (from different disciplines), which are closely related to the topic of this paper. Due to the theoretical nature of the considerations, no quantitative data were used.

The article consists of three sections. First, it characterizes the key consequences for the labor market brought about by the popularization of information innovations in the economy. Subsequently, attention is shifted to the area of financial intermediation and banking. To that end, an attempt is made to identify the determinants that provide information innovations with the possibility to influence the labor market in a selected market segment. Finally, conclusions derived from these considerations are presented in the summary of the paper.

Consequences of innovations within the labor market

The rapid pace of introducing information innovations has become the cause of conceptual confusion. Information innovations are a unique type of innovation. Economics as a science cannot comprehensively contain them within a coherent theory. This is mostly due to features such as a short period of implementation into economic reality, rapid popularization, economies of scale and benefits resulting from the law of large numbers (*Modele Biznesu* ..., 2014, p.85). However, this is rather the bright side of information innovations. Unfortunately, they have a dark side, too. Information resources collected in databases grow in a geometric pace (Kowalik, Sobolewska 2017 p. 18). This makes the

transition stages of intoxication by the possibilities of new technologies, inevitably slip into the stage of critical reflection and selection of the consequences of progress that society will want to use because they consider them to be positive, and counteracting those that will be considered negative. An example involves the problems experienced by many entrepreneurs, especially small, which spring from the implementation of the EU's General Data Protection Regulation (GDPR). The introduction of these provisions is a consequence of the fully justified striving of network users to protect their privacy. Unfortunately, organizational, cost-related and formal consequences will affect the outcome of economic activities being currently conducted (GDPR, p. 1135).

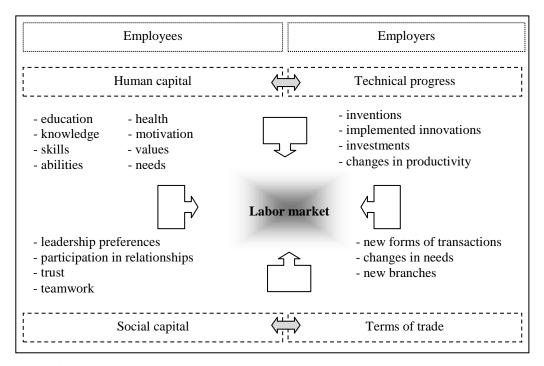
Referring to the labor market, the impact of innovations has always been a source of serious controversy. Nevertheless, as history shows, resistance to changes caused by the implementation of inventions and technical advancements is consistently overcome (Kotliński 2016, p. 16). The jobs that are taken away by these innovations are, over time, compensated in the form of redistributive flows, which are skillfully designed by politicians and economists. Economics comes here to the succor of politics (or rather to politicians shaping changes in democratic societies). Sometimes, in the past, organizing and then taking advantage of technical progress was a fertile soil for dictatorships (e.g. in Ancient Mesopotamia and Egypt). In democratic conditions, the benefits of innovations have so far been more or less successfully distributed among various groups and social strata. Should these changes ever become removed from the common sense of social justice, sooner or later social unrest, and consequently political upheavals, would follow. Notwithstanding, information innovations have thus far not counted with any such achievement. This shows either their extremely successful implementation, or it indicates that such transformations are still awaiting us in the future. Only time will reveal the premises for an objective assessment of the sense of decisions and actions currently made and undertaken.

Ever since our civilization came to exist, the goal of innovating has been to improve living and working conditions. While in the former case innovations are measured by the increase in the quality of life (comfort), the latter case proves more complicated. An innovation used to improve working conditions can have very different effects: it can involve both improved working conditions and increased productivity, or it can achieve these both goals at the same time. However, innovations can also replace or improve people's work so much as to reduce its input. Interestingly, this was first hinted at in the nineteenth century with the first protests of the nascent working class at the time, for whom technical advancements introduced into factories appeared as a threat and as a harbinger of replacing

human workforce with increasingly perfected machines. In fact, many such historical examples can be quoted. In nineteenth-century England, views of this sort became the nucleus of Luddism, while Chełmsko Śląskie (*Schömberg*) saw a rebellion of weavers (1793). On the one hand, this reasoning seems to be fully justified and logical, and technical progress was approached in the past with a similar superficiality by prominent economists, both bourgeois and socialist. The creation of increasingly modern machines and equipment, whose work replaces human work, is beneficial for companies because it boosts performance (machines are more productive, need fewer breaks, do not get sick and, above all, do not get tired as quickly as people). Thus, introducing machines in a workplace reduces the need for human labor. However, this is only as far as microeconomics is concerned.

In macroeconomic terms, many additional characteristics of technical progress are revealed that make the overall judgment no longer so distinctly negative. There are many reasons for this, which is why only the most important ones will be addressed. First and foremost, progress is innovation: in the simplest terms, it can be a new device representing the features indicated above. Before it can be installed in a production plant, it must be invented, designed, manufactured, tested, sold, properly assembled, and finally, it must be operated by people who can do it, in other words, who have undergone proper training. It is difficult to renounce these claims. The problem is, the processes indicated provide work to specific people: inventors (innovators), researchers and technologists, engineers and workers, sales specialists, fitters and employees, who then have to be trained by other professionals in the scope of operating said machines. In this simplest case of introducing an innovation, in order to determine its effect on a microscale, it is necessary to list and compare the scope of work required for production before its use and the work needed to both create it and operate it later on. A graphical representation of this process is shown in Figure 1. Looking at this problem objectively, it should be stated that innovations, although they do shrink individual sectors of the labor market, they also update its structure and expand it, diversifying and further demarcating the social division of labor. In abstract terms, i.e. in a "narrow" approach produced as a natural human reaction, work-related innovations meet with much reluctance and hostility. No innovation, however, arises from a vacuum., and its creation and implementation require a large amount of work, referred to by classical economists (Stankiewicz 1998, p. 168) and Mark as "objectified" (Marx 1951, p. 576), i.e. included in the products and services that are being produced and reflecting the social valuation of input that needs to be borne in order perform work.

Figure 1. Indirect correlations in the long-term shaping of the labor market



Source: own study

However, this reasoning is difficult to back with research and measurements for several reasons, primarily because it is difficult to objectively compare the input required for creating and implementing innovations with the effects they introduce. It took a long time for the information revolution to take effect and the long-term horizon has been usually associated with significant changes in the environment, so large that they made comparisons impossible. Also, this passing time was a problem, because as a rule, some generations create innovations, while others end up using them. In addition, innovations are multiplying. Human inquisitiveness and intelligence make it easier to create new innovations based on previous ones. In line with this, it seems that competing today is relatively easy. In a sense, this is true because improvements in communication and technological progress are accelerating the development of modern economies. Innovations are clearly correlated with economic growth. In relation to other areas of social life, their effects may be different, not necessarily being linked with progress and development (Simpson, Siguaw, Enz 2006, pp. 1133-1141).

One of such areas is the labor market. Innovations change the reality of every society, but the pace of their adoption varies depending on the country. Countries that are quicker to integrate innovations are considered leaders of change and thus their economy grows faster, causing jealousy in societies where these processes are slower. It is not the static speed itself, however, that decision-makers care about, but rather the financial and social effects achieved in various fields, with the labor market being of them. The concept of the labor market is

thoroughly defined and unambiguously understood in the modern world, consisting mostly in confronting supply with demand for labor. A question might then be asked: what characteristics can, and do, innovations affect?

First of all, the labor market is changed by innovations, which are demanded by employers. Modernizations introduced as a result, regardless of their final nature, reduce the need for low-skilled employees. However, they increase the demand for other, qualified ones, depending on the needs.

It is difficult to expect that these contradictory consequences will be strictly balanced. Certainly there will always be at least transient imbalances. The role of the labor market is precisely to even out this imbalance, in a way that does not disturb the continuity of the economy.

It would be a good idea to know the reasons why some of the indicated areas have played a role of inspirers of changes in the labor market. It was easy in the pre-information era, when the priority was given to changes in terms of trade. Currently, in an information society, this situation has changed. Prompted by a substantial increase in the access of the masses to the Internet, each of the indicated four areas has an impact on the shape of the future labor market. Not only that, the indicated areas are interrelated, creating transient and rapidly changing compilations. This hinders any attempts to provide long-term forecasts of changes in the labor market, given that changes in human capital, but in part also in social capital and others, are correlated with the processes currently taking place in the education of the youngest members of our society. The success or failure in this field will determine the capital these people will have at the time of entering the labor market. On the other hand, only the confrontation of the human capital of future generations with trends related to technical progress or changes in terms of trade will allow us to assess objectively whether the human capital represented by future employees will live up to the expectations of employers. Needless to say, a significant uncertainty entails, which should make us consider accepting in the future a large mismatch existing between expectations and possibilities. This, in turn, makes it necessary to account for the necessity of maintaining high flexibility in shaping the human and social capital of the youngest students and carefully preparing for changes in the field of technical progress and terms of trade. In these conditions, and in following such reasoning, the main factor of influence, whose effects may prove particularly important for the future shape of the labor market, is education (and possible changes in its scope, goals and means). Importantly, with easy access to information, and thus also knowledge (Koźmiński, Latusek-Jurczak 2017, p. 117), social capital will be of key importance. On the one hand, progressive dehumanization of key processes performed during work prompts a lack of trust in colleagues; on the other hand, the emergence of new markets requires the satisfaction of new customer needs, and therefore, the creation of relations also between employees and customers, or better yet, between employees and consumers. In fact, the term prosumer appears in economic papers increasingly more often (Cyfrowa gospodarka ..., 2014, p. 58). It denotes a consumer aware of their needs, who can create the services or products they need, often cooperating with employees of companies that provide services (Płókarz 2018, p.292). The trends described above pose a great challenge to education, as it must ultimately increase not only human capital, but also develop people's skills in the area of establishing and maintaining relationships. It may turn out that this task is too difficult to handle, as sociologists indicate that the development of information technologies (including automation and robotization) leads to the "closing up" of individuals within personalized "information bubbles" (or "filter bubbles") and progressive alienation in society (Pariser 2011, pp. 51-52). This is particularly important from the point of view of the Polish people, because, as sociological studies show, the deficit of social capital is on the rise in Poland, which is all the more evident when contrasted with Poland's relatively high intellectual capital (Czapiński 2008, pp. 20-25).

The labor market is one of the crucial components of a market economy, whose rules of operation are similar to those in other segments. This is ensured by professionally established legal institutions. Striving for a balance between supply and demand, the labor market ensures freedom of choice for both employees and employers. The observance of the rights and liabilities of employees and employers is supervised by the competent state, public and social institutions. Ultimately, the situation of each individual employee is shaped by a group of norms and customs, which are subject to the applicable law that individuals freely choose to submit to. This creates an interesting situation of the presence on the labor market not so much of individual entities, but of entire groups comprising both employees and employers. The labor market has a complex internal structure, which is formed by mutually overlapping areas determined by particular professions, types of economic activity, forms of employment, etc. Because the activities of individual participants interfere, the shaping of the labor market is a complex process marked by a spontaneous course. It is difficult, then, to come up with long-term forecasts of its development, as it is not shaped by the actions of a single entity, or a group of these, but rather by the interaction of all its participants.

An additional obstacle lies in the fact that direct relationships are particularly visible in the short-term perspective, whereas indirect relationships come to the fore in the long term. The impact of the latter is reflected in shaping trends in the creation of human and social capital (in employees) and in the changes triggered by technical progress (Fiedor 1979, p. 35) and terms of trade (in employers). A graphical representation of this process is shown in Figure 1.

In dynamic terms, innovations restructure the labor market, a process which takes place continuously (i.e. it is permanent). Optimistically speaking, the direction of these changes should be clearly defined, noting that the demand for more and better-educated employees is unarguably increasing. This, however, does not necessarily have to be true, as processes are not always so unequivocally benevolent. A good example of this involves information innovations, whose impact on the discussed category is ambiguous. The popularization of the Internet, the development of IT systems and the automation of individual processes covered by innovative activities triggered some interesting phenomena. There is now a growing demand for employees who can handle relatively uncomplicated software programs and applications, which is to say, a demand for the work of people who are not necessarily highly qualified, but certainly modern-educated (Płókarz 2018, p. 45). At the same time, the demand for highly qualified specialists is growing, as their work input is needed to generate new solutions. However, what will happen to them when machines learn to replace their work? Is the development of artificial intelligence not the announcement of a new era, in which work and creativity of highly qualified specialists can be replaced by automata (or robots)? Currently, it is difficult to answer this question.

Determinants of the impact of information innovations on changes in the area of financial intermediation and banking

The broadly understood financial intermediation (including banking) is an excellent example of the field in which innovations have transformed reality, especially in the area of work organization, due to the clarity of the changes. In this particular case, the most important innovations were of technical, information and organizational nature (see Figure 2). The first two groups led to informatization of operations (activities), while the third was related to the process approach to management.

The combination of the effects of the informatization with the implications of the process management approach (Capiga, Gradoń, Szustak 2016, p. 34) enabled outsourcing, and in the process, facilitated the creation of franchise branches (Pacud, Cichorska, Klimontowicz, Zieliński 2017, p. 48), which then led to reintermediation in banking, manifested by the emergence of fintechs, i.e. innovative ventures focused on the use of

modern technology in the provision of financial services. All four allowed the flexibility into the traditionally very rigid rules of bank management, and in doing so, they enabled banks to properly respond to the needs of information societies. Furthermore, they brought direct implications to the nature and structure of banks' the demand for employees, also forcing banks to adjust demand for labor, a change that is quite different from the popular view.

Technical innovations

Information innovations

Financial intermediation and banking

Informatization of operations

A process approach to management

Outsourcing

Reintermediation

Franchisebranches

FinTech

Figure 2. Impact of innovations on processes related to the social division of labor within a banking

Source: own study

Despite the successful implementation of innovations, banks are still looking for highly educated IT specialists as well as experienced managers. However, despite this need, their demand has strict limits. Apart from them, in fact only employees entering data into systems, and not dealing with their processing, are sought after. Nevertheless, IT specialists did not seek employment in banks three or four decades ago, as it simply was not there for them. In an information society, this has been adopted à rebours, given that the development of credit institutions, including banks, is directed primarily at their further dependence on electronic distribution channels. This is what the competition requires. However, the rules of this competition follow a clear logic: pioneering solutions become the norm over time. When this happens, the demand of the financial sector for employees with IT background will surely drop again. This trend is already becoming noticeable, and its first premise is the increasing outsourcing of information services in banks (especially information transfer and processing). It was due to the wide implementation of the process approach to bank management, in which functions performed by employees were divided into processes and rational rules for managing them were introduced, resulting in the outsourcing of their implementation. The

combination of benefits and threats related to such proceedings has been very favorable for banks so far (Kłos 2017, p. 43).

Outsourcing strictly defined actions to external entrepreneurs specialized in their implementation - not just for one, but usually many institutions - means that their services are valued for high professionalism guaranteed by far-reaching specialization. Implementation of information innovations in banking has paved the way for the effective implementation of the process approach, and along with this extremely important organizational innovation, it made banks more more keen on outsourcing, offshoring and franchising as an accessible method of branch network expansion. It should be said that this would have not been possible had it not been for the widespread implementation of the key information innovation - the use of advanced data encryption methods, primarily during their transmission and processing. Thanks to this innovation, we no longer need to worry about breaching bank secrecy. The data sent between two branches of the same bank or transferred to third parties, even if intercepted or copied by unauthorized persons, is simply useless to them. Nevertheless, there is still a need for due diligence in the creation, storage and transmission of encryption keys, whose leak would undermine the legitimacy of the whole operation. Thanks to the indicated facility, it becomes possible to have a flexible approach to many, sometimes very improbable, organizational innovations, while maintaining their basic condition - observing the principles of security and confidentiality of collected, transmitted and processed data.

Figure 3 shows there are two major outcomes to these processes. First, as a result of informatization and the associated centralization, the organizational structures of banks are gradually "flattening". Facilitating the transfer of information eliminated the need for various levels of the organization. The side effect is the systematic standardization of work on key positions, meaning that an increasing number of employees do not have to be highly educated to work in a bank office (especially since the main task of branches is to sell services and provide customer service). Analytical, financial and management functions are transferred "upwards" and centralized (Kaźmierczyk 2014, p. 126). This results either in the localization of designated departments in the head offices of banks, or the outsourcing of related tasks, e.g. to fintech companies. Ultimately, thus, the demand for educated experts is transferred to central banks or to external institutions cooperating with them.

This would not be possible were it not for a broad application of the process approach to management. Separation of processes and their analysis often results in the practice of commissioning their implementation to specialized outsourcing companies. This, in turn, results in the creation of more and more jobs for experts in banking outside the banks

themselves (Węgrzyn 2013, p. 212). As long as such processes do not involve offshoring, they are very beneficial to the domestic labor market.

Thanks to the introduction of innovations that enable outsourcing, the procedures for creating and operating franchise branches have also become significantly more simple. The network of franchise branches is still a growing method of expanding and concentrating the bank branch network. Importantly in their case, however, they must ensure the security of service and confidentiality of data transferred between branches belonging to entrepreneurs and the bank, who must incorporate said data into the internal information system in a flexible way. These requirements can now be met thanks to data encryption used during their transmission. Most importantly, the client service in a franchise branch may never know they are in an institution that is not actually owned by the bank.

MAIN Outsourcing
OFFICE

FINTECH

"Pushing" the implementation of specific functions outside the bank

Organizational structure of the bank ("slimming and flattening")

Figure 3. Innovations and changes in the organization of operational activities of an informatized bank

Source: own study

Summarizing this part of the considerations, it is worth noting that the effects of implementing innovations in banking essentially come down to reducing the demand for labor on the bank's side. On the other hand, there is a growing, and very dynamic, demand for employees able to handle the execution of bank orders on the part of outsourcing companies, companies managing franchise branch networks and fintechs. In either case, innovations slowly reduce the demand for labor on the part of the institutions implementing them, but then again, it prompts the development of new forms of its provision outside (Kaźmierczyk 2012, p. 193). Contrary to the most pessimistic scenarios, the overall picture of innovations in the

labor market (not only for the needs of banks, but also for banking institutions) is positive, both in qualitative and quantitative terms.

Conclusions

The trends shaping the development of the Polish financial and banking intermediation system clearly illustrate the consequences and determinants of the impact of innovations in the labor market (which was intentionally limited to the demand for financial intermediaries and banks, and institutions providing services to them). Technical advancements markedly change the nature of operational activities in selected market areas, and coupled with the consequences of implemented organizational innovations, they force changes on the labor market. First of all, the structure of employees hired in institutions providing services to clients changes. The implementation of the service function and key business functions has become the domain of main offices, while the share of sales employees in banks is growing. Also noticeable are changes that lead to the "pushing out" of demand for labor from banks to external companies (i.e. outsourcing), some of which provide specialized services bordering on information technology and finance (fintechs). This confirms a claim that technical progress does not necessarily "take away" work, but rather restructures the demand for it.

The indicated consequences and determinants of the impact of information innovations on changes within the labor market segment, limited to financial intermediation and banking, should be supported in the future by quantitative and qualitative research. Currently, however, this is relatively difficult, since the institutions are reluctant to share this kind of information. All the more so because many bank managers prefer not to disseminate information about outsourcing and reintermediation for the simple fact that this could potentially undermine the trust of their clients.

In the course of these deliberations, an observation was made that the education of future employees is particularly important from the point of view of the Polish economy. It is not only human capital that is shaped during this process, but social capital as well. While human capital in Poland performs relatively well, social capital still poses a number of challenges, requiring adaptation of the education process so that it fosters teamwork and mutual trust, both indispensable in outsourcing and reintermediation. This will surely have a key influence on the competitiveness of Poland and its labor market internationally. It may also define Poland's development opportunities, whether for good or bad, for many years to come.

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Konsekwencje i determinanty wpływu innowacji informacyjnych na rynek pracy w obszarze pośrednictwa finansowego i w bankowości

Abstrakt

W opracowaniu wyznaczono kluczowe trudności związane z określeniem wpływu innowacji informacyjnych na rynek pracy. Konsekwencje tych zmian korygują tradycyjne, stworzone jeszcze w erze przemysłowej, kanony zatrudniania oraz świadczenia pracy. Szczególnie wyraźnie zmiany te przebiegają w sferze pośrednictwa finansowego i w bankowości. Reintermediacja i digitalizacja obsługi klientów pozwoliła na wykorzystywanie *outsourcingu* i rozwoju pośrednich kanałów dystrybucji usług. Klienci coraz częściej obsługują się samodzielnie. W sektorze usług finansowych zmienia się struktura zatrudnienia. Rośnie znaczenie pośredników, a maleje banków, które w przyszłości będą centrami decyzyjnymi i organizacyjnymi. Następuje decentralizacja obsługi klientów połączona z centralizacją zarządzania. Ma to silny wpływ na rynek pracy. Zmiany dotyczą: samej pracy, pracodawców i pracowników.

Słowa kluczowe: pośrednictwo finansowe, bankowość, rynek pracy, innowacje informacyjne, outsourcing