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An Employee Perspective of IT Innovation in the Banking Industry: Evidence from a Canadian Bank Branch

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The purpose of this paper is to understand the perceived impact of check imaging service as a technological innovation on bank employees. Following a substantive literature review, we conducted an empirical research aiming at understanding how bank employees perceive the adoption of such IT innovation by their bank. An inductive approach and qualitative methodology helped to understand employees' feelings and perceptions following the adoption of check imaging by their institution. Semi-structured interviews were conducted with all three staff members of a Canadian banking agency taken as a unit of analysis in a unique case study approach. We used grounded theory as the qualitative data analysis method. Research findings show that technological and organisational innovation has improved the work systems. It has also fostered a close relationship between the client, the staff and the financial institution. From the employees' standpoint, the new check processing technology allowed them to tighten their relationship with clients, to improve compliance with enacted regulations and to learn to better share their knowledge.

Key words: *cheque imaging service, technological innovation, impact on employees, financial industry*

1. Introduction

The banking sector is becoming increasingly sophisticated and is continually seeking to improve security measures. Within this framework, the adoption of cheque imaging as a technological innovation aims at preventing fraud, facilitating transaction processing, reducing operating costs, improving the efficiency of service processes, and optimising service quality (Kooli, 2019; Legris et al., 2003; Meuter et al., 2000). For example, easy access to cheque images through online banking, smartphones, and tablets optimises services and makes them more efficient (Kansal, 2018). Indeed, not only does the creation of virtual documents eliminate the use of paper, but it also simplifies the processing of banking transactions and allows the bank to reduce certain costs (Kansal, 2018; Beziade et al., 2014; Fauve-Bonté et al., 2009; De Coussuges et al., 2007; Legris et al., 2003; Meuter et al., 2000; Kamarkar, 2000; Silber, 1975).

Despite this sophistication, humans must continue to intervene in this new service, which is cheque imaging, to capture the content of cheque images and to digitise encrypted amounts using a code known as QR (Quick Response). The adoption of this technology creates a change in the way banking transactions are processed. Several research studies have addressed this issue from the customer's perspective (Kansal, 2018; Legris et al., 2003; Meuter et al., 2000; Wong & Hsu, 2008; Davis, 1989). The challenge of our research lies in the experience, the feeling, and the impact of innovation on bank employees.

The human dimension is often neglected in the existing literature on the adoption of technological innovation by the bank. Studies realized by Decoussergues et al. (2017); Favre- Bonté, et al. (2009); Legris et al. (2003) and de Meuter et al. (2000) present innovation as a strategic necessity (Pennings & Harianto, 1992), whether for cost reduction (Silber, 1975) or for improving services and launching new products. The research of Naslund (1986) and Reidenbach and Moak (1986) focuses on product innovation as a competitive advantage. On the other hand, the work carried out by Gallouj and Gallouj (1997), and Warrant (2001) focuses on the behaviour of individuals, specifically the assignment of new roles to employees. In the past, technology and technological development helped employees to enable the production process. Today, consumers are increasingly using technology to serve themselves (Kansal, 2018). Amid these changes, bank staff may face adjustment challenges and may perceive either a sense of threat (Venkatesh, 2000) or a sense of comfort (Davis, 1993; Venkatesh and Davis, 2000). Hence the relevance of the present research through which interviews will be conducted with employees directly involved in the cheque imaging process in their work in order to understand their perceptions regarding the adoption of this technology. The purpose of the research is to examine technological innovation in the banking sector as perceived by employees. The specific goals are, first, to review the state of knowledge on innovations in banking services, including cheque imaging. Then, through empirical

research, we will try to understand how this technology has been experienced by employees and has impacted them, given the critical role they play between the bank and its customers.

2. Literature review

2.1. The innovation in the banking sector

The innovation process is generally a non-systematic process of research and learning (Sundbo, 1997). In recent years, banks have used innovation in services, products, processes, and activities. The aim is to ensure security, meet specific customer needs, and create a sustainable relationship of trust. Also, banks are developing new markets in a continually changing competitive environment. This raises questions about the strategic effects of innovation on the financial sector in its ecosystem (Favre-Bonté, Gardet, Houat & Thévenard-Puthod, 2009). In this perspective, authors Naslund (1986), Reidenbach, and Moak (1986) conducted the first studies on product innovation in the banking industry. The results of their research show that this type of innovation rarely gives banks a sustainable competitive advantage because products cannot be patented and are imitable. The question is more about whether or not the bank needs this type of innovation.

Besides, Menor and Roth (2006) find that the focus of researchers on studying product innovation is likely to marginalise innovations of other types, particularly in the provision of services. Thus, innovation is seen as a strategic necessity (Pennings & Harianto, 1992) in the sense that it makes it possible to improve the quality of services and to develop specific new products such as "home banking." Furthermore, innovation reduces the costs of the internal back-office organisation system and frees employees from their tedious tasks (Decoussergues et al., 2007; Kamarkar, 1999). The latter researchers also argue that banks have grown as a result of business process re-engineering (BPR). The adoption of BPR gives an advantage in terms of cost reduction (Silber, 1975). It also increases service quality (Legris et al., 2003; Meuter et al., 2000) as well as profits. BPRs save time and share knowledge (Goodhue and Thompson, 1995), thus making the bank competitive. Merton (1992) concludes that innovation is essential, not only to improve the competitiveness of banks but also to ensure the survival of institutions in a competitive environment (Scardovi, 2017). Van Horne (1985) argues that the innovation process does not rely on an adverse event (Siber, 1983), such as a contraction of a constraint, but rather on a change in the environment or on constraints imposed on firms. Van Horne (1985) and Finnerty (1988) also identified academic research as an essential stimulus for innovation.

2.2. Motivation for adopting new technologies

Béziade and Assayad's (2014) research focuses on improving client autonomy. The latter wishes to have adapted services without suffering from delays and complex procedures. To do so, the bank adopts cheque imaging to better meet customer needs. Also, it ensures a good match between utility (Davis, 1989, 1993; Obay, 2014) and usage (Barras, 1986). Hence, banks might first make a cost-benefit assessment based on specific criteria. These criteria include utility, ease of use, and compliance with standards.

On the other hand, under the influence of competition, banks may be compelled to adopt IT by constraint. The challenge here is to understand that only users can describe their experiences in actual IT practice and not adoption decision-makers (Dubois, Bobillier-Chaumon, 2009). In their conclusion, these authors point out that the assessment required before the adoption is often based on incomplete information because of the complexity and diversity of technological innovation. The challenge would be to establish a better match between the actual need and the design of the technology (Barras, 1986). Other research has examined the new processing of digital cheques, including cheque imaging in agencies. This is seen as a radical innovation in both the internal and external organisational system. The challenge lies in the sharing of information and the need for agility. Access to information becomes easy for both customers and bank staff, which strengthens the relationship of trust (Davis, 1989; Favre-Bonté et al., 2009; Kansal, 2018). In their research on the evolution of technology development, Bobillier, Dubois, and Retour (2006) show that e-banking contributes to broadening the virtual limits of banking institutions to make the customer the final user of this information system.

Innovation is essential in every business or organisation (Freeman, 1996; Crane & Bodie, 1996). It is also essential in human activity. Humans use information technology to facilitate interaction with stakeholders. Human relationships with technology are social, domestic, or professional. Staff can develop their skills or improve the quality of work through the training offered. Therefore, innovation could be seen as an opportunity (Barras, 1986; Pennings & Harianto, 1992).

On the other hand, innovation may also be perceived as an obstacle to fulfillment insofar as the staff does not want to change their work habits, and they do not want to appear incompetent (Béziade et al., 2014; Retour & Dubois, 2006). For their part, Retour et al. (2006) show that staff experience stress between the service effort expected by the client and the administrative constraints that are standardised. Also, staff sometimes become discouraged and feel unable to adapt to the new work system. On the other hand, studies by Schumpeter (1943), Winter and Nelson (1982), and Tremblay (1992) maintain that, through innovation, staff develop their skills and become flexible. Their work becomes fast, easy, and safe.

2.3. Cheque imaging technology

Banks innovate their services to better meet customer requirements and to be more competitive in a challenging environment (Pennings & Harianto, 1992). According to Béziade & Assayad (2014) and Fauve-Bonté et al. (2009), paperless banking in general and cheque imaging in particular offer some advantages. These are in the form of reduced costs and transaction processing times. Cheque imaging encourages a reduction in customer visits to branches, customer involvement and the development of teleworking.

2.3.1 Historical overview

The idea of online cheques emerged in the early 2000s. The adoption of the new technique was linked to the legislative project of the United States government. This project was strongly supported by the electronic clearing house (ECCHO). In fact, the idea of online cheques was intended to encourage the implementation of electronic check presentment (ECP). Its activities focus on regulation, education and lobbying. The idea of cheque imaging has already been proposed by the Financial Services Technology Consortium (FSTC). In 1996, FSTC developed the eCheck service. This was the best prototype for the transposition of the traditional cheque into computer support. However, the project to develop the eCheck service in the early 2000s was doomed to failure. After that, the FSTC retained the debit transfer model intrinsic to the cheque. In 2004, the Check Clearing for the 21 st Century Act (Check 21) came into effect. Its purpose was to allow the transfer of cheques by electronic imaging called "Cheque Substitutes" (Felsenfeld & Bilali, 2006). The Check 21 improved the efficiency of the payments system in the sense that clearing times were reduced in the United States as well as in Canada. Since March 2007, cheque imaging has been operational in Canada, with input from members of the Canadian Payments Association (CPA) and other stakeholders who developed the project called "Non-Circulation and Electronic Cheque Presentment" (La coursière, 2007).

2.3.2 Description of the technology and its scope of use

Fauve-Bonté, Gardet, and Theverard-Puthod (2009) describe the new functioning of the internal organisation (back-office), including services, work methods, equipment, and computer systems. According to the new cheque processing process, called cheque imaging, the cheque goes from being physically deposited in the branch to being scanned through an automated machine. The images are then transmitted to the computer platform that centralises the flow of the various branches. Clients take care of the digitisation of the cheques through the internet, computers, and by telephone using a specific application. The recorded information is then transmitted directly to

the agency, and the cheque images are sent to a computer platform for centralisation (Béziade and Assayad, 2014; Fauve-Bonté et al., 2009). Cheque images are obtained by reading bar codes or QR codes. It is the task of back-office managers. By adopting this technology, the bank is opening up a path in the search for key success factors in order to be more competitive. Studies on the Crédit Agricole group case (Fauve-Bonte et al., 2009) show that, with cheque imaging, processing time becomes very short (one day versus three) with a reduction in costs and a reduction in staff (five people previously fourteen). Also, the processing system has become secure. This innovation within the Crédit Agricole Group has led to the development of new technical and organisational skills. The Crédit Agricole Group, through the cheque imaging department, has had a cost advantage, a competitive advantage, a reduction in staff on duty, and an optimisation of services. To achieve this, staff have aligned and adapted to the new system. The results of the research mentioned above prove that cheque imaging has an impact on the bank's business lines, particularly of the personal customer service representative, the back-office manager, and the branch manager. The impact affects three aspects, namely, mission, environment, and core competencies (Béziade and Assayad, 2014).

The Check 21 project has been so successful in the United States (Felsenfeld & Bilali, 2006) that nearly 100% of checks are now cleared electronically. This project has inspired the Canadian banking community, and, in recent years, cheque imaging has been developed in Canada and elsewhere. Several prototypes have been launched in Singapore, Spain, Australia, the United Kingdom, Spain, and Hong Kong (Lacoursière, 2007). Today, in almost all other countries, banks have aligned themselves with and adopted cheque imaging services at the expense of paper cheques deposited at the teller counter (Lacoursière 2007). These services better meet the needs of customers who no longer need to visit the counter. Imaging services save time and optimise services for clients. Cheque imaging services contribute to the creation of home banking, teleworking, as well as the creation of a long-term relationship of trust with customers. While cheque imaging services better meet customer requirements, it is essential to note that this technique can also constitute a burden on the business or bank. For example, to date, the ratio of effort and unit cost of duplicate deposits remains very high in both major banks in the US and Canada. Estimates range from 40-100 (Payment Canada, 2015) duplicates per million payment items in the US to over 80,000 duplicates per year in Canada. In order to enjoy the benefits and gains of these services, staff must develop vigilance and caution in processing data to avoid errors, production of false documents, and fraud (Béziade et al., 2014; Lacoursière, 2007).

2.4. The impact of cheque imaging as an innovation on in-service personnel

The adoption of technological innovation in financial institutions through cheque imaging technology has enabled staff to free up time, agility, and adaptability (Jayadevan et al., 2012;

Béziade et al., 2014). The organisation has become networked with instant information sharing; the client can track their cheque and get the disposition of their cheque in the system. In a way, this allows the employee to delegate part of his work to the customer. Innovation has also made it possible to achieve certain operational ease and to develop stress resistance as well as the degree of expertise (Béziade et al., 2014). However, technology does not always succeed. Barras (1986) described some of the obstacles that can delay technological innovation. Among others, he cited the factor of the "usability" of technology, as reflected in the degree of innovation and technical performance of new equipment. Barras (1986) cited another factor that can potentially affect the realisation of technological innovation, which is the "adaptability" of the organisations installing the equipment. This includes the resistance (Brown, 1981) of labour or management to the introduction of new technologies; the extent to which work procedures can be adjusted; and the rate at which the workforce can be trained in the skills needed to use the technology. In the case of cheque imaging, the potential failure of the new system results in significant loss of time and work overload (Venkatesh, 2000). This situation, when it does occur, creates negative feelings among staff. Feelings that translate into aggressiveness, resignation, and a sense of loss of control over the activity (Venkatesh, 2000; Bobillier- Chaumon et al., 2013). Staff incompetence can cause work disruption or lead to transfer to other positions (Barras, 1990). Besides, cheque imaging allows competent staff to be autonomous, reduces stress, makes work more comfortable, and ensures job stability. This technology offers both positive and negative effects to staff, in that, on the one hand, it allows the employee to create added value (Schumpeter, 1943; Nelson and Winter, 1982; Tremblay, 1992) but, on the other hand, it poses a threat to unqualified staff (Brown, 1981; Barras, 1986; Greenan, 1996; Dubois et al. 2009; Béziade et al., 2014;). This paradox prompts us to seek a better understanding of the impact and issues of innovation among staff in cheque imaging operations. The literature review allowed us to note that the research conducted on service innovation concerns individual behaviour, particularly the assignment of new roles to employees. Employees are freed from difficult administrative tasks.

On the other hand, innovation does not always generate profits (Gallouj and Gallouj, 1997; Warrant, 2001). Indeed, some handling errors and malfunctions constitute failures that result in financial losses. On the other hand, little research has focused on the human dimension of banking innovation. This dimension seems to be neglected, opening a path for further research.

3. Research methodology

The research main goal is to examine technological innovation in banking sector as perceived by employees. Based on the literature review, we formulated our research question as follows: How do bank branch employees perceive and experience their bank's adoption of cheque imaging technology?

The epistemological positioning we adopted for this research is social constructionism. According to a constructionist view, neither the thought nor the experience of the individual mind is the origin of meaning. Meaning is "born out of co-ordination between people, agreements, negotiations, affirmations" (Gergen, 2001, p. 90). This is how we search for a social reality embodied in the discourse of employees through a process of social co-construction that takes place through social relations, interaction, and interlocution (Dumora and Boy, 2008).

This research is mainly aimed at studying the meanings conveyed through the discourse of bank employees. According to Richards and Morse (2013), the qualitative design is recommended when the aim is to seek to learn from participants the meaning they give to a context or process and how they interpret their experience, or when the aim is to seek to understand phenomena in-depth and in detail, as in this case.

With that base, using a convenience sampling logic, we conducted a single case study with a bank branch as the unit of analysis. We were successful in obtaining the agreement of a Canadian bank branch manager to participate in this research. As this is research involving humans, a rigorous ethical process preceded the collection of data. We complied with the requirements of the ethics certificate obtained by the first author from the research ethics committee of the University of Québec in Outaouais. We obtained free and informed consent from each of the three employees of the agency in question who are involved in the processing of cheque imaging to participate in our research. Confidentiality and anonymity are part of our ethical commitments to our three participants, whom we will name HP, OD, and SL, respectively.

Data collection was done through semi-structured interviews of approximately one hour, with each of the three participants. The data collection instrument consisted of an interview that includes, as a main open-ended question, an invitation to tell one's own experience story as an employee concerning their bank's adoption of cheque imaging technology. Multiple sub-questions were used to explore employees' perceptions of the technological innovation adopted by their bank.

The analysis of the qualitative data was done using the grounded theory approach (as a method of data analysis, not as a research methodology). We used NVIVO version 11 software to conduct the different coding cycles of the qualitative data collected.

4. Results

In order to better meet the demanding needs of members or clients, the financial institution has opted for the services of Cheque Imaging (CI). CI's services simplified the intricate work of depositing and processing cheques and conducting research. The three interview participants also

show how the work of the staff went from being slow to being fast, from being cumbersome to being simple, from dissatisfaction to decreased dissatisfaction. In addition, these same participants show how competition can motivate the acceptance and adoption of CI's services. Indeed, these services can add value to the triad: client, staff, and financial institution. Creating this added value could justify the advantage of having opted for CI services these days. Such advantage will be even more valued within a context of increased complexity of operations and closer link between employees and clients.

4.1. Simplification of operations

"Before cheque imaging [...], I remember when we used to call them cash register filmers [...]. We had all the cheques deposited at the cashier's desk, we encoded them through the cheque encoder, and then we filmed them. We would put them through a big machine that would take a bundle of checks and make a picture of them," according to participant SL. Imaging the cheques made the job easier. At the time, it was difficult in the sense that the staff no longer used the cheque encoder, but instead used copies of the cheques filmed in image form. These are fed into the batch system for the clearinghouse. Through an application, staff working in these departments make copies available in return for the cashed or rejected cheques. With the help of the new online platform, the customer can quickly access the information and smoothly perform bank reconciliation. This reduces the slowness of the services in the sense that the member or client can do the research themselves, whereas previously, the client would have to undertake a query and wait a few days for a response. As soon as the cheque is deposited, through specific online applications, the client has the possibility of doing his or her research to find out the outcome of his or her cheque (cashed or rejected). So, the services of the CI can create added value for the client, the staff in service, and the financial institution. For HP, the CI option has made the work easy, fast, and understandable. Also, the information on the cheques is virtual and very accessible for clearing. Currently, waiting times no longer exist for customers, and in the event of anomalies or for research purposes, staff contact the clearinghouse, which makes the information available. According to participant OD, the CI facilitates the work of staff and allows for efficient and faster responses to questions from members and clients. For the three participants OD, HP, and SL, as a result of IC, the work of the staff involved in these services is now easy, simple, fast, and efficient. Also, unlike the previous process, which was complicated and challenging, the CI has responded to client requirements and ensured client satisfaction.

Furthermore, participant OD stated that "[...], the daily financial transactions are now done more simply and quickly. In addition, the financial information is more precise [...], I have an open mind." The more satisfied the customers are, the more satisfied employees are.

Nowadays, the CI allows members or customers to be autonomous since they access information through an online platform. Customers use an application to make check films and bank reconciliation. Previously, to get a copy of the check, the client had to call, apply, and was granted the $5 fee each time he wanted to know who owned or cashed the check, for example. Today with CI, the member or client pays only $2.00 a month. Through an online application, the client has access to his information. He can save it on a USB key or create a file on his computer and save this information and copies of cheques. The staff uses the films of the cheques as images that are sent to the clearinghouse and no longer use the cheque encoder. The CI has improved the work system in such a way that staff can identify the appropriate department and direct the request. Staff can also communicate directly with the clearinghouse and get an immediate response instead of waiting for days, which is very beneficial for both staff and the client. In his contribution, SL added that it could take a few days before the client had a response, and sometimes the response was not often favourable because the system was more manual and not 100% efficient. Also, there was a waiting time for both clients and staff, and the cash account had to be balanced first to ensure searches. This waiting time is considered a useless waste of time by the participant. SL also believes that the CI reduced the risk of error and the slowness of the system. HP also confirmed that the CI has come to make the work simpler, more comfortable and faster. Nevertheless, HP doesn't like the fact that customers themselves take cheque images, because the clearing system often rejects some images in batches because of the magnetic anchor: "I do not agree with that. It is another company that makes the cheques, and I am the one who receives them, and that does not work." In general, the CI seems to improve the work system that was difficult and complicated for both the staff on duty and the client. Today, clients and staff are satisfied with the new simplified system: "Today it is fine ... However, it was difficult at the time" SL; it is obvious to understand that the rate of dissatisfaction among members or clients has decreased. Even though the customer contribution is criticised by some participants, notably the HP participant.

4.2. Building a close bond between customers and employees

OD says "[...] I continue to educate, train and inform clients with the adoption of CI services, [...] when I realize that they do not have access to this service or they choose the transaction package [...] or the companies that receive and write a lot of cheques [...], I also intervene to encourage and coach clients to use the new services as much as possible". More emphasis is now placed on the continuous support the staff provides to clients whenever assistance is needed. As a result, IC's services have facilitated communication and generated a real understanding of members' needs. Second, these services ensure client satisfaction. When the member or client makes a cheque deposit or transmits the image of the cheque through an online application, the films of these cheques are transmitted in batches to the clearinghouse. The staff on duty makes the cheque spell and cheque copy available. The client, therefore, has direct access to his information if the films

have accepted the magnetic anchor. In addition, the client can go to the institution's branch for further explanations on this subject. Only the IC back-office staff on duty knows the entire clearing procedure and has all the information related to the copies of the cheque images. For example, SL stated: "I see the beginning when the cheque arrives and the end when the cheque clears [.]". This shows how often the client is reconciled with staff. HP adds that the cheque processing time and the return of imaged cheque copies to the customer provides a better link between the staff on duty and the customer because the staff has the flexibility to reject an NSF (No sufficient fund) cheque or keep it. For example, based on the physical file, the staff can take the risk of holding a cheque from the member or client who is waiting for payment next week and reject the cheque from the member or client whose account has multiple NSF cheques on it. They have to analyse the account activity and can decide to hold or return the cheque as appropriate without harming the customer and the financial institution's internal regulations.

Similarly, participant SL, stated that there is a close relationship between staff and the customer, as the staff is always attentive to customers' specific needs. For example, if the customer requests a search, the staff can identify the appropriate department and contact it in order to accompany the customer and answer the customer's question on the same day, which was not the case before. In addition, staff can also contact the clearinghouse who will make a copy of the cheque immediately available through the online platform. SL confirmed that "[...] if clients need to obtain a copy, we can provide them...", showing that this creates a closer link between the customer and the bank staff.

Similarly, speaking about customers, participant OD said, "I do my best to make them more self-reliant". Having some of the staff work done by the client without coercion shows that there is a connection between the client and the staff. In addition, when the client writes a cheque no matter what happens in their account, they will go to the branch of that financial institution to meet with their account manager or counsellor who will help them to understand their financial situation. Also, according to OD "[...] we can say that we are in the field, so we are in direct contact with the client [...]" and "[...] we are the ones who will discuss certain situations [...], we inform the manager". Staff is always taking a risk for the member/client even when it is an unusual case; they talk about it and discuss it with their manager. Then, together they find a solution to maximise client satisfaction and create a long-term client experience. HP adds, "It is at your fingertips," he wants to make it clear that support for the member has become more effortless and more instantaneous.

Sometimes, the staff can make an additional contribution in order to get the client better satisfied at all times and to maintain a long-term relationship of trust with him/her. Also, the client is even able to have cheque images the next day for bank reconciliation purposes. The contribution of

OD, HP, and SL shows that there is henceforth a tightened link between the customer and the cheque imaging staff. Whether it is for deposit or cheque imaging and search requests on a regular or instantaneous basis. Staff is always available to provide services to clients. All three participants agreed that the new technology had fostered a close relationship between the client, staff, and the financial institution.

5. Discussion

As stated above in the literature review, previous research has argued that the adoption of new technologies may lead to bank staff moving to other positions because of their inability to take upgrading training. In our research, we also found a shift of staff from cheque processing to the teller position and to other positions. This is explained by the fact that the observed transfer is not associated with incompetence, but rather with a reorganisation of work. This technological and organisational innovation has made it possible to improve the work system, which was difficult and complicated for both staff and clients.

We also questioned the degree of comfort perceived by employees following the adoption of new technologies in the banking sector. Several studies such as those conducted by Kansal (2018), Beziade et al. (2014), Fauve-Bonté et al. (2009), De Coussuges et al. (2007), Legris et al. (2003), Meuter et al. (2000), Kamarkar (2000), Silber (1975) show that the adoption of IT in the banking sector brings benefits in terms of time savings, costs and improved quality of work. It also liberates employees from tedious tasks, optimises the degree of customer autonomy, and reduces waiting times (Barras, 1986; Pennings & Harianto, 1992). A right level of harmony with specific points drawn from the research mentioned above has been noted in OD's comments: "[...] your transactions will be easier and faster [...] financial information is clearer [...]".

In addition, the results of the research show that speed, optimisation of client services, skills development, availability of information, and error correction promote the actual use of technology, which corresponds to the five factors set out by Nielsen (1994). There is, therefore, consistency between the theoretical framework and the empirical research on certain statements. The research also revealed new benefits of the IC service that were not apparent in the literature reviewed. At the employee level, the new technology has enabled employees to become more familiar with existing labour standards and regulations and to learn how to better share their knowledge. At the organisational level, most bank employees remained at the same workstation. Work processes have also improved through the availability of information from imaged cheques (both sides), the creation of home banking, bringing the bank's customers closer to the bank, and optimising the degree of security of banking data. Research has also revealed that the new

technology used in the banking sector has fostered a close link between the customer, the staff, and the financial institution.

As for the degree of discomfort perceived by employees following the adoption of new technologies in the banking sector, the literature (Béziade et al., 2014; Fauve-Bonté et al., 2009; Dubois & al., 2007; Venkatesh, 2000) shows that technological innovation leads to a reduction in the number of staff on duty, overwork, adjustment difficulties and, in most cases, employers had to deal with employee incompetence and their inability to adapt. This has led to increased stress levels, fuelled a sense of fear of losing one's job, and as a result, staff become aggressive and experience a sense of discouragement and withdrawal. Findings from the literature review are partially confirmed. Our research was able to temper the negative impact of the adoption of new technologies. For example, in our empirical research, we found that the volume and overload of work are mostly the results of the manual processing of cheques rejected by the clearinghouse because of the magnetic band. Research has also found that the sources of discomfort for bank staff are also attributable to the lack of collaboration between IC staff and administration. It is also worth mentioning that following the adoption of this new technology by the studied bank branch, the work unit experienced the voluntary departure of an elderly employee, as well as another IC-related retirement. The age factor played an essential and constraining role in adapting to the new work process and technology.

6. Conclusion

CI's services are more responsive to client requirements. Matching actual client needs with CI leads to user acceptance of the CI service. The choice is based on service optimisation, staff effectiveness and efficiency, simplicity of work, easy communication and simplified research. In addition, this choice promotes time and cost savings as well as quick access to information. Moreover, being competitive is also the set of factors on which people base their choices and decision-making. In summary, the research conducted was intended to explore the impact of the adoption of new technologies in the banking sector on in-service staff. Analysis of the data showed that bank employees agree that CI services are up-to-date and their impact is generally positive for the institution, clients and employees alike. However, they find that the staff involved in these services must have a minimum level of skills and experience. Staff should be familiar with applicable regulations, labour standards, and all categories of checks. Employees also believe that CI services will continue to exist as long as cheques are used as a means of payment. In short, we argue that despite technological progress, the human side will always have its place. It is unavoidable, regardless of the evolution towards digital technology. The computerisation of production processes will always be supervised and completed by staff both at the beginning and at the end of processing, despite the innovation of IC. In brief, we can say that this new technology

has allowed employees to develop their skills and knowledge and has fostered the development of fraternal ties and collaboration with customers.

7. Declaration of interest

The authors declare that they have no conflicts of interest.

8. References

Barras, R. (1986). Towards a theory of innovation in services. *Research policy*, *15*(4), 161-173.

Barras, R. (1990). Interactive innovation in financial and business services: the vanguard of the service revolution. Research policy, 19(3), 215-237.

Béziade, C., & Assayad, S. (2014). L'impact du numérique sur les métiers de la banque. *Observatoire des métiers, des qualifications et de légalité professionnelle entre les femmes et les hommes dans la Banque, Cabinet Weave, 50p*.

Bobillier-Chaumon, M. E., Dubois, M., & Retour, D. (2006). L'acceptation du changement technique: le cas des nouvelles technologies dans le milieu bancaire. *Psychologie du Travail et des Organisations*, *12*(4), 247-262.

Brown, L. A. (1981). *Innovation diffusion; a new perspective* (No. INVES-ET E14d B878). Methuen.

Crane, D. B., & Bodie, Z. (1996). Form follows function: the transformation of banking.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.

Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions and behavioral impacts. *International journal of man-machine studies*, *38*(3), 475-487.

De Coussergues, S., Bourdeaux, G., & Péran, T. (2017). *Gestion de la banque-8e éd.: Normes et règlementation à jour, Nouvelles stratégies bancaires* (Vol. 1). Dunod.

Dubois, M., & Bobillier-Chaumon, M. É. (2009). L'acceptabilité des technologies: bilans et nouvelles perspectives. *Le travail humain*, *72*(4), 305-310.

Favre-Bonté, V., Gardet, E., & Thévenard-Puthod, C. (2009). Gestion des innovations: le cas d'une caisse régionale du Crédit Agricole. *gestion*, *34*(1), 10-19.

Felsenfeld, C., & Bilali, G. (2006). The Check Clearing for the 21st Century Act-A Wrong Turn in the Road to Improvement of the US Payments System. *Neb. L. Rev.*, *85*, 52.

Finnerty, J. D. (1988). Financial engineering in corporate finance: An overview. *Financial management*, 14-33.

Freeman, A. (1996). Technology in finance. ¹he Economist, October 26, 3—26.

Gallouj, C., & Gallouj, F. (1997). L'innovation dans les services et le modèle du" cycle du produit inersé". *Revue française de gestion*, (113, mars-avril-mai), 82-97.

Glasser, B. G., & Strauss, A. L. (1967). The development of grounded theory. *Chicago, IL: Alden*.

Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. *MIS quarterly*, 213-236.

Greenan, N. (1996). Innovation technologique, changements organisationnels et évolution des compétences. *Économie et statistique*, *298*(1), 15-33.

Jayadevan, R., Kolhe, S. R., Patil, P. M., & Pal, U. (2012). Automatic processing of handwritten bank cheque images: a survey. *International Journal on Document Analysis and Recognition (IJDAR)*, *15*(4), 267-296.

Kansal, P. (2018). Factors Affecting Self-Service Banking Adoption in Females: A Discriminant Analysis. In *The Future of Organizations* (pp. 49-74). Apple Academic Press.

Karmakar, K. G. (1999). *Rural credit and self-help groups: micro-finance needs and concepts in India*. Sage Publications India Pvt Ltd.

Kooli, C. (2019). Governing and managing higher education institutions: The quality audit contributions. Evaluation and program planning, 77, 101713.

Lacoursière, M. (2007). Analyse de la trajectoire historique de la monnaie électronique. *Les Cahiers de droit*, *48*(3), 373-448.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & management*, *40*(3), 191-204.

Menor, L. J., & Roth, A. V. (2007). New service development competence in retail banking: Construct development and measurement validation. *Journal of operations management*, *25*(4), 825-846.

Merton, R. C. (1992). Financial innovation and economic performance. *Journal of applied corporate finance*, *4*(4), 12-22.

Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: understanding customer satisfaction with technology-based service encounters. *Journal of marketing*, *64*(3), 50-64.

Näslund, B. (1986). *Financial Innovations: A Comparison with R & D in Physical Products*. Salomon Bros. Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University.

Nielsen, J. (1994, April). Usability inspection methods. In *Conference companion on Human factors in computing systems* (pp. 413-414). ACM.

Obay, L. (2014). *Financial innovation in the banking industry: the case of asset securitization*. Routledge.

Paiement Canada (2015). Les effets de paiement en double dans l'environnement d'imagerie (Effets en double, partie 2). https://www.paiements.ca/%C3%A0-propos/nouvelles/le%C3%A7ons-tir%C3%A9es-de-lexp%C3%A9rience-am%C3%A9ricaine-effets-en-double-partie-2

Pennings, J. M., & Harianto, F. (1992). The diffusion of technological innovation in the commercial banking industry. *Strategic management journal*, *13*(1), 29-46.

Reidenbach, R. E., & Moak, D. L. (1986). Exploring retail bank performance and new product development: a profile of industry practices. *Journal of Product Innovation Management:*

an international publication of the product development & management association, *3*(3), 187-194.

Retour, D., & Dubois, M. (2006). Les professionnels de la banque: Le cas des chargés de clientèle. *Revue Française de Gestion, 32*(168/169), 205-219. doi: 10.3166/rfg.168-169.205-220

Retour, D., Dubois, M., & Bobillier-Chaumon, M. É. (2006). Les professionnels de la banque. *Revue française de gestion*, (9), 205-219.

Savoie-Zajc, L. (2009). L'entrevue semi-dirigée. *Recherche sociale: de la problématique à la collecte des données*, *5*, 337-360.

Scardovi, C. (2017). *Digital transformation in financial services*. Springer.

Silber, W. L. (1975). *Towards a theory of financial innovation* (pp. 53-85). Lexington, MA: Lexington Books.

Silber, W. L. (1983). The process of financial innovation. *The American Economic Review*, *73*(2), 89-95.

Sundbo, J. (1997). Management of innovation in services. *Service Industries Journal*, *17*(3), 432-455.

Tremblay, D.-G. (1992). Innovation et marchés internes du travail dans le secteur bancaire; vers un modèle multidimensionnel de l'innovation. *Technologies de l'information et société, 4*(3), 351-380.

Van Horne, J. C. (1985). Of financial innovations and excesses. *The Journal of Finance*, *40*(3), 620-631.

Venkatesh, V. (2000). Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information systems research*, *11*(4), 342-365.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204.

Warrant, F. (2001). *Favoriser l'innovation dans les services: un rôle pour les pouvoirs publics*. Editions L'Harmattan.

Winter, S. G., & Nelson, R. R. (1982). An evolutionary theory of economic change. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.

Wong, Y. K., & Hsu, C. J. (2008). A confidence-based framework for business to consumer (B2C) mobile commerce adoption. *Personal and Ubiquitous Computing*, *12*(1), 77-84.