More Than Meets the Eye: A Case Study on the Role of IT Affordances in Supporting Compliance

Completed Research

Andrea Zasada
University of Rostock
andrea.zasada@uni-rostock.de

Tung Bui
University of Hawaii
tung.bui@hawaii.edu

Abstract
Meeting compliance requirements in highly regulated business environments is imperative as companies face severe consequences if they fail. Compliance is particularly crucial in financial services as providers are frequently confronted with changes in regulations that financial advisors have to follow when providing investment advice. Deploying IT affordances is expected to assist in assuring compliance, and optimize the process of information management and retrieval. However, there is no research to date that substantiates this assumption from the employee perspective. We propose a conceptual model for assuring compliance derived from a case study conducted at a German savings bank. Our preliminary findings suggest that IT does indeed help employees in improving their compliance. More importantly, our research reveals compliance concerns such as the limited business intelligence of the current system, loss of flexibility in the advisory process, and uncovers the emerging conflict of interests between client, advisor and service provider.

Keywords
Business process compliance, legal requirements, regulations, process modelling, information systems, information technology.

Introduction
Meeting regulatory compliance is a legal obligation for many businesses (Akhigbe 2017). This holds especially true for highly regulated industries such as the financial services industry in which companies are typically confronted with ongoing updates of legal requirements (Staikouras and Koutsomanoli-Filipaki 2006). While financial services providers are required to implement a specific compliance framework to meet external compliance requirements (e.g., Gupta 2008), the role of individual employees is decisive since they have to assure compliance in their daily work activities (Collier and Esteban 2007; Lepak and Snell 2002). As compliance requirements are continuously updated and provided in various forms, the cognitive load is often higher than most employees can deal with. As a consequence, employees’ compliance effort has to be supported to ensure that their cognitive load is reduced and work behavior is more likely to be compliant.

Although, an employee’s attitude towards compliance seems to be motivated by the benefits and costs of (non)compliance (Bulgurecu et al. 2010), research related to IT compliance has yet to determine how compliance factors interrelate with business operations and information systems (Abdullah et al. 2010). Liang et al. (2012) define IT compliance as the extent to which employees follow organizational policies to adequately use the target IT in their job. Hence, the first step for an organization is to understand the status of its IT systems to decide what security and control it should provide (Damianides 2005). The problem faced in research as well as in practice is that IT is usually seen as crowbar to restrict user choices by specifying desired and undesired use. However, to improve security and control, a more user-oriented approach should be pursued not only by means of theory to explain employee behavior, but also to find solutions to deal with the complexity and intensity of compliance requirements. Furthermore, Bessis
(2015) contends that corporate audit and compliance functions should be practiced from the perspective of risk management and control, and most importantly, decision making.

Thus, in this research, we ask how IT would help employees ensure the adherence of compliance requirements. To answer the research question, we have developed a conceptual process-based model of IT affordances for compliance based on a case study. The proposed model provides a mapping between the role of IT, the applicable compliance requirements and the respective compliance activity. We conducted the case study at a German bank using problem-centered interviews as suggested by interviews Scheibelhofer (2005) and Walsham (1995). In the case study, we target financial advisors whose job is to consult customers with regard to buying securities; a representative process in this regard. Based on this conceptualization, we derive implications and recommendations to further improve the use of IT for ensuring compliance.

The paper is organized as follows: The next section contains the methodology applied in this paper. After that we provide the theoretical foundations describing the challenges that come from imposed compliance regulations as well as the contribution of IT solutions to process compliance. In the next following section, we present key findings and suggest how IT could be used to manage compliance more efficiently from the perspective of the employee. The paper concludes with a discussion of findings, limitations and future work.

Research Method

In order to answer the research question, we chose a case study design. Interviews are an essential part of case study research, since they provide the best access to the interpretations that participants have regarding the actions and events, as well as the views and motives of themselves and other participants (Walsham 1995). Specifically, we used problem-centered interviews to explore how and why compliance is seen as benefiting from IT. The information stems from case study literature, financial regulations and the bank’s process documentations. We thereof prepared six opening question complemented by a shortlist of themes to develop theoretical suppositions on a meso-level (Scheibelhofer 2005). The list of interviews can be found in the Appendix.

Like in many financial institutions, each bank runs a compliance department headed by a compliance officer, who manages and oversees the implementation of compliance requirements including: legal interpretations, regulative changes, employee trainings and monitoring activities, such as failure analysis and subsequent cause and effect research. This officer is the most qualified and apparently only authority subject to be interviewed. However, we supplemented our interviews with three additional subjects with customer advisors due to the important role of financial advisory employees in applying compliance regulations. An in-depth analysis of the employees’ behavior is crucial to obtain deep and reflected answers as well as validated measurements (D’Arcy and Herath 2011). In this regard, we gathered information from selected employees with a working experience ranging from 9 to 37 years.

In the interviews, we first individually asked the participants to briefly describe the process from their perspective, before continuing with more specific questions. Compliance requirements are addressed by asking which requirements are important for this process and how these requirements are affecting their work. In this regard, we asked about the suitability, workload and flexibility of compliance requirements as well as the interfaces to customers and coworkers. Based on this process knowledge, the roles and functions of IT were reflected by asking which of the mentioned activities are supported by IT and how the employees feel about this support. In the course of the interview, we refined the last question with several follow-up questions regarding possible (dis)advantages. For example, we asked for the disclosure and retrieval of information, the indication of potential risks, available analysis functions and further administrative tasks.

The interviews were audio-recorded and transcribed afterwards. They were conducted by the researcher with a background in compliance and process modelling. For the data analysis we used the qualitative data analysis software MAXQDA (www.maxqda.com) and coded the text with regard to reported benefits and challenges of compliance activities and their IT support. After finalizing the coding, we retrieved a list of the coding, which we used to conceptualize the findings as presented in Table 2, and which were also checked against the process model introduced in Figure 1.
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**Theoretical Foundations**

*Compliance Requirements and Increase of Cognitive Load*

The purpose of financial advisory services is to fulfill the customer's need for information (Nussbaumer and Slembek 2009). As such, the investment advisory of a financial institution follows a structured procedure based on an internal requirement catalogue. In general, compliance requirements stipulate which actions have to be exactly taken to ensure compliance in business processes according to an external set of legal requirements, standards and guidelines (Ly et al. 2012). Considering that guidelines and standards act in the boundaries of laws, we confine compliance requirements to activities that are aligned to legal regulations (i.e., laws and transnational agreements). In Germany, for example, an investment is considered as legally compliant if and only if (BMJV 1994):

- The suggested product complies with the investment goal of the customer;
- The customer is able to manage the investment risk resulting from the investment;
- And the customer is able to understand the investment risks based on her/his knowledge and experience.

Any financial institution that fails to comply with these requirements is banned from offering investment advice. As a consequence, financial advisors are obliged to obtain all necessary inputs from the customer to build and maintain an investment portfolio with full assessment of possible risks. The capabilities of employees dealing with such information, i.e., processing this information, are mainly dependent on their individual cognitive ability (Brünken et al. 2010). This is referred to as cognitive load that an individual has to be able to deal with. Cognitive load occurs due to the information itself as well as how the information is presented to an individual (Roodenrys et al. 2012). Information overload is present when the amount of information including the way it is presented moves beyond a certain threshold (Eppler and Mengis 2004). In this case, the cognitive load an individual is confronted with is higher than the capability of an individual to deal with (Ayres and Paas 2012). Information systems can provide an opportunity to sort out unnecessary information and to improve the way this information is interfaced with its user.

**A Typical Process in Financial Advisory Services**

To investigate the benefits and challenges of IT on typical financial processes from a compliance view, we focus on a securities purchasing process, which includes an advisory sub-process. Basically, the advisory sub-process serves the asset optimization, which hints at a target investment portfolio the customer had agreed on during the advising session. The advisory sub-process applies to other asset classes as well. A first iteration of the process has been obtained from the bank's working instructions on processes in securities and custody business. A complete model of the process has been developed in course of a process workshop with two employees of the bank's compliance department; one of them the compliance officer. Figure 1 shows the resulting securities purchase process as it is implemented in real-life settings.

The process is initiated when a customer asks for an investment advice in the asset group “securities”. If the request comes from a new customer, the advisor is obliged to conduct a customer identification and legitimation, which means to obtain and verify the necessary documents, and under certain conditions, to weigh the plausibility of customer statements (Timm, Zasada, and Thiede 2016). Thereafter, the advisor files a custody account contract and opens the account which is used to execute security orders. For existing customers these activities can be dropped. The advisory sub-process “Advisory Process: Investment Advice” (API) begins with the customer information and ends with the completion of the advisory protocol. Subsequent activities encompass the conclusion of the securities purchase contract and the order entry. The process is completed when the invoice is sent to the customer.

Compliance requirements steer the whole process towards the legal standards that are imposed by banking regulations such as the German Securities Trading Act (WpHG), the EU Markets in Financial Instruments Directive (MiFID II) or the US Foreign Account Tax Compliance Act (FACTA). The statements of the interviewees cover all process activities as outlined in Figure 1 with respect to these basic regulations. Other regulations that have an impact on this process, but are not explicitly addressed in the interviews, are the German Banking Act (KWG) as well as the German Money Laundering Act.
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IT is involved whenever customer-related data has to be maintained or information related to the customer order needs to be obtained and properly documented. Basically, the operations are supported by four information systems. The Securities Databank (1) provides a product overview including information on single titles, new issues and trend analysis, while the Securities Order System (2) is used to determine the execution price and for conducting the customer order. In addition, information on compliance is stored and exchanged via the Document Management System (3), for example, in form of circular letters, working instructions or downloads. The Integrated IT Solution (4) serves as central working platform with interfaces to each of these applications.

![BPMN Model of the Securities Purchase Process](image)

**Figure 1. BPMN Model of the Securities Purchase Process**

### IT Affordances and Compliance Activities

In Business Process Compliance (BPC) research, compliance requirements are formally represented as compliance rules which usually refer to multiple process perspectives including control flow, data, time and resources (Knuplesch et al. 2017). Most approaches focus on the control flow perspective of business processes (Ramezani et al. 2014) using temporal logics to abstract from the textual requirement and enable automated compliance checks. Accordingly, BPC research concentrates on the detection of potential inconsistencies in process models (Lu et al. 2015). Apart from process modelling and automation, IT might serve as a lever to ensure the reduction of cognitive load (Agarwal and Karahanna 2018).
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Case Study Results

In the case study, we address the question how IT supports employees in assuring compliance requirements in a typical financial advisory process. After modelling the process, we conducted four problem-centered interviews at a German savings bank. The results of the interviews are summarized in Table 2. The table is divided into four quadrants that illustrate the benefits and challenges of IT in relation to compliance activities. In the first Quadrant (I), we report activities that are fully supported by IT. The activities listed inside (in bold print) match the ones of the securities purchase process. The second Quadrant (II) includes challenges from a compliance perspective but not for IT. Indeed, even if the amount of mandatory information is perceived as challenging compliance task, IT provides a solution. In the third Quadrant (III) we assigned rather administrative tasks as well as the information search that are so far not satisfactorily addressed by IT. The last Quadrant (IV) refers to unsolved problems originating in compliance requirements that require further reflection on applicable IT solutions. Note that the number of the information system is only assigned to a compliance activity, when there was only one particular solution supporting it. If this number is provided in the headline, it supports a group of activities. For example, Quadrant III indicates that attaining the customer consent is a security feature, which requires paperwork that is not facilitated sufficiently by IT, because (1) provides only a download functionality.

Out of these findings we elicit four main prepositions for an adequate IT support. The prepositions suggest an increasing objectivity with which information is maintained and communicated to improve the quality of advisory. Selected quotes from the interviews further accentuate the summary of Table 2. The interviewees are distinguished by an acronym that links the statement to a different customer advisor (P1-P3). In that regard, IT affordances facilitate:

Table 1. IT Affordances of the Securities Purchase Process

<table>
<thead>
<tr>
<th>ID</th>
<th>Requirements</th>
<th>Supported Activity</th>
<th>Assigned Role</th>
<th>IT Affordances</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apply regulatory changes</td>
<td>Conduct customer advice</td>
<td>Internal communication</td>
<td>Document Mgmt. System</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Change management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Information retrieval</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fulfill information duties</td>
<td>Conduct customer order</td>
<td>Order execution</td>
<td>Securities Order System</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Send purchase invoice</td>
<td>Decision support</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Access and disclose risks</td>
<td>Conduct customer advice</td>
<td>Information retrieval</td>
<td>Securities Databank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct risk disclosure</td>
<td>Decision support</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Document advisory process</td>
<td>Obtain customer data</td>
<td>Interface to all above</td>
<td>Integrated IT Solution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conduct risk disclosure</td>
<td>information systems</td>
<td></td>
</tr>
</tbody>
</table>

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2000). IT can select relevant information for employees more precisely, present them adequately in the context and provide an easy access (Dewett and Jones 2001). Employees might however be resistant against IT supporting their work as these typically lead to less individually and flexible process execution (Aalst et al. 2003). In addition, IT may cause additional cognitive load as employees have to understand how to use the systems (Hollender et al. 2010).

Given the high IT support in financial processes, and assuming that the cognitive load induced by the use of IT can be leveled by training (Puhakainen and Siponen 2010), IT can become a valuable instrument to ensure compliance especially with regard to the accessibility of information (DeLone and McLean 2003; Thimm 2016) and the monitoring of risks (Sherer and Alter 2004). According to Norman (1999) every novel device has three elementary dimensions: conceptual models, constraints, and affordances. This principle applies to IT in so far as the term “devices” refers to actionable properties between the world and an actor (Gibson 1977). In this study, we explore the relationship between IT, reflected in different information systems, and the user, whose actions are subject to regulatory constraints such as compliance requirements. Table 1 maps the four information systems to activities and legal requirements that apply to the securities purchase process of the previous section. It highlights the main areas of IT use that were discussed during the process workshop.

Table 1. IT Affordances of the Securities Purchase Process
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Standardization of compliance processes. “Well, for starters, this is our basis for consultations: it is rather a questionnaire, which is first of all very standardized constructed. [...] In the past, one could deviate from it more often, if the customer wants to have, for example, a lower share quota.” (P3)

Retrieval of compliance information. “Yes, this is good that one has this data bank to support a decision. This is especially important for us that we do not slap something out and say, ‘buy this’, but to have a reasonable, well, analysis behind it.” (P2)

Awareness of compliance risks. “Thereof, we are then getting, over a point system, a statement regarding the risk awareness. Advantage is very clearly, well, this advisory process investment; that we can advise well and advise the customer in securities that he would not have taken otherwise, because he can access his risks much better than in the past.” (P2)

Transparency of compliance requirements. “Conflicts of interests, these always have to be listed, so that after all, the customer knows in which conflicts of interest the bank could blunder into. [...] I mean, we try of course to clarify for what it is; that it serves customer protection.” (P2)

<table>
<thead>
<tr>
<th>Compliance Activities</th>
<th>Benefits</th>
<th>Challenges</th>
</tr>
</thead>
</table>
| **Obtain customer data** | » Sample portfolio provided by external researchers (1)  
» Checks for completeness and plausibility (4) | I |
| **Conduct risk disclosure** | 4  
» Assessing the customer’s experience, asset structure and risk tolerance  
» Increasing risk awareness | |
| **Conduct investment advice** | » Customer-oriented advisory through target investment portfolio (4)  
» Market support as external control instance and point of contact  
» Standardized advisory process  
» Justification of investment advice (4)  
» Improved advisory quality (3)  
» Investor protection (1) | II |
| **Conduct customer order** | » Fast transmission of the execution price (2) | III |
| **Send purchase invoice** | » Invoice is processed by an external bank service provider  
» Restricted functionality of electronic mailbox (online banking) | IV |
| **Obtain customer data** | » Data import between forms (4) | |
| **Conduct risk disclosure** | » Calculation of investment horizon, attitude towards investment and fluctuation margins  
» Easy-to use classification scheme | |
| **Conduct investment advice** | » Broad product range to fulfil customer wishes (3)  
» Documentation of requirements (1)  
» Communication of changes (1)  
» Decision support based on information to single titles, new issues, product portfolio and trend analysis (3) | |
| **Conduct customer information** | » Conflict of interests between customer, advisor and service provider  
» Information overload (1) and (3)  
» Deviation from customer expectations regarding prescribed advisory process | |
| **Conduct investment advice** | » Less flexible advisory process  
» Decision problem when an advisory starts  
» Expenditure of time for individual advisory  
» Less sales through time intensive advisory  
» Number of titles is limited by external analysts of bank service provider (3)  
» Preparing paper-based contracts and handouts for sign off (1)  
» Follow-up work through necessary data administration (1) and (4) | |

Table 2. Synopsis of Interview Findings
However, the interviews also raised compliance concerns that are not sufficiently supported by IT yet. This could partly be reduced to the high compliance requirements that are imposed on financial processes. Our interviews also indicate that there are at least four prepositions that are linked to compliance challenges. Examples for these challenges demonstrate the necessity of adjusting IT to compliance requirements, but also to foster a more efficient and customer-oriented advisory process. Beyond the intuitive expectations the IT support would improve the efficiency of the compliance process, compliance requirements lead to:

**Less flexibility.** “Like I said, very very much paperwork, very very much preparation time, or preliminary works at the end, like you see one has to do a lot before one even gets to the advisory. And this is it and you cannot change this; but this is a limitation, if a customer comes to me and says he wants to buy a security; then I must tell the customer all what is required.” *(P2)*

**Information overload.** “This is very very much, especially since there are these advisory protocols, but this is legally prescribed; we cannot change this. [...] Disadvantages are definitely the information flood, which the customer gets. This is what the customer tells us then. For example, this basic information, the customer takes it along, but they also say, ‘Honestly speaking, I will not read this.’” *(P2)*

**Higher workload.** “Well, when you are going through the entire process, with the finance concept at the beginning and the whole disclosure, API and so on, then you sit with the customer two and a half hours, really, until everything is completed.” *(P3)*

**Deviation from customer expectations.** “Naturally, it is a bit difficult to convince the customer that one starts with something totally different for what he didn’t come, but usually the customers adapt to it. [...] I am saying then that this is a required reading that I must hand out and they also need to document me this.” *(P3)*

Finally, the interviewees were asked to rate the overall IT support with regard to compliance. They stated that the process is fully supported as measured by the legal requirements enclosed in templates, questionnaires, working instructions and product information provided by the different information systems. Restrictions were only made regarding the advisory itself and the data maintenance after the advisory. The participants also recognized a significant increase of the IT support caused by regulations and law changes, when asked about the IT development over the past five years.

**Implications and Recommendations**

While the IT provides means to adhere to regulations, a key challenge is to develop a better IT alignment to increase the functionality of the involved information systems. We depict four emerging problem areas when using IT, namely: less flexibility, information overload, higher workload and deviation from customer expectations. Since the latter depends on obligations to inform the customer and disclose potential risks, we limit the discussion on possible improvements to the first three compliance concerns. Figure 2 exemplifies the IT strategy for the given sample process.
Every listed recommendation is mapped to the number of the respective information system that has been introduced in Table 1. Due to the high volume of information that need to be processed in order to be compliant, we focus on strategies that integrate online banking functionalities in customer-advisor interactions, and provide an easy access to the existing database (e.g., by personalized content). We also encourage a variety of employee trainings for the use of IT to enable an advanced information search and efficient data administration, but also with regard to the customer’s investment profile (i.e., customer group) or admissible derivations from compliance activities. All recommendations rely on the compliance activities that are, as shown in Table 2, either partly supported by IT (Quadrant III) or lack full IT support (Quadrant IV).

Discussion

By evaluating the use of IT for a specific process, we were able to identify the benefits and challenges related to a banks compliance program as evidenced by the financial advisors. The analysis on how employees perceive the benefits of IT from the qualitative interviews indicates that, on the one hand, IT supports the standardization of compliance activities and the retrieval of compliance information. However, compliance staff reports an increasing transparency of applied compliance requirements as well as a stronger risk awareness when discussing possible investments with a customer. On the other hand, compliance imposes a multitude of requirements causing a higher workload, where employees show signs of additional information overload. At the same time, legal requirements do not only help standardize activities but also restrict the flexibility with which employees can react on customer inquiries. Our results contribute to prior literature in showing how compliance requirements affect work practices in the financial services sector, and how IT could be applied meaningfully to ensure compliance.

As with any research, there are limitations to take into account. First, the empirical grounding of the results is limited to a case study with a relatively low number of interviews, albeit well qualified. While the case study approach allows for valuable insights from a qualitative point of view, future work should take quantitative methods into account. Second, our scope of analysis is limited to an important but selected process in banking compliance requirements. Other processes might include employees with other mindsets, e.g., working in the back-office, which might add additional insights. Third, our results are limited to a German context while employees in other countries might have a different attitude regarding compliance and IT.

Conclusion

With our case study, we have provided evidence on the benefits of IT in the context on meeting regulatory compliance. Perceptions of IT benefits are that compliance is seen as a necessary and unavoidable complex task involving high volume of information processing. Being trained in handling asset classes with different investment risks, financial advisors usually do not question the necessity of compliance requirements, but do complain about frequent changes to the process due to new regulations leading to an increasing workload.

Moreover, the findings of our analysis suggest that deploying IT affordances has created a new set of challenges for users. While IT has helped the core requirements of the process (Quadrant I) its use also raises a number of additional and somehow unexpected challenges (Quadrant II, II and IV). As such, providing IT affordances is more than meets the eye. Additional IT tools should be supplemented to the current four affordances (cf., Figure 1 and Table 1) that would satisfactorily improve the user experience and productivity to meet regulatory requirements. All in all, the interviews reveal that the burden of ensuring compliance is considerably lightened by the way IT facilitates the acknowledgment, presentation and documentation of information; even though with some limitations regarding an efficient information retrieval.

Further research should be attempted with other process categories in banks and highly regulated processes in different industries. Another relevant area of research could be to look at how companies should present compliance relevant facts to a customer. Accordingly, it would be interesting to find out how customers decide in favor of or against a financial service based on different types of information about the process and legal consequences. This research issue becomes even more important in the
emerging context of co-creation and an increasing interest of companies to mobilize new resources. Another perspective would be to explore the possibility to use technology to re-engineer the compliance process from a customer perspective to adjust service processes more and more to customer needs and to recognize potential process innovation. In any case, our research suggests that institutions that are required to build IT affordances to meet compliance should take this effort as an opportunity to go beyond the need to support the compliance process. Rather, the effort should be seen as an opportunity to take advantage of IT to help their customers meet or exceed their investment goals.

Acknowledgement

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Appendix: Interview Questions

1. What are your tasks regarding this process?
   Description of the (sub)process

2. Which compliance requirements are important for carrying out the process?
   Importance of compliance requirements

3. How do these compliance requirements affect the process?
   (Dis)advantages of compliance requirements

4. Which of these activities are supported by IT?
   IS support of compliance requirements

5. How do you feel about the provided IT support?
   (Dis)advantages of IT

6. How do you perceive the use of IT for ensuring compliance requirements overall?
   Overall IT support

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