How Self-Service Business Intelligence Education can develop Data Literacy and AI Literacy: Lesson Learned from Practitioners

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Abstract

Artificial Intelligence (AI) can take Business Intelligence (BI) to the next level by empowering users in their daily decision-making tasks. Just like Self-Service Business Intelligence (SSBI), AI integrated business analytics comes with many benefits, but also with numerous implementation challenges. In fact, typical SSBI implementation challenges like data quality, data governance, and employee training are equally relevant when integrating AI. Hence, lessons learned from development of SSBI education could increase data literacy and AI literacy. Two case studies of SSBI education in large BI consultancy firms have identified five SSBI education steps: (1) increase the interest of using data; (2) introduce data to all users; (3) clean and define data to create standard reports; (4) develop SSBI data governance and (5) become self-reliant on accessing and using data. SSBI education can create a foundation that leads to being better prepared for the implementation and use of more advanced AI analytics.

Keywords: Self-service Business Intelligence, Artificial Intelligence, Education, Data Literacy, AI Literacy.

1. Introduction

SSBI enables all users within an organization to analyze data when making decision in a self-reliant manner (Alpar & Schulz, 2016; Lennerholt et al., 2022; Logi Analytics, 2015). This involves the ability to access and use data as desired to create SSBI reports and alter their content instantly, without any support from technical power users normally found in IT departments. SSBI removes the time-consuming process from traditional BI, where casual business users need to wait weeks or months until they are served by power users who create and alter reports that fulfill the casual business users' requirements.

To achieve the benefits of SSBI users need to understand the importance of accessing and using appropriate data (Lennerholt et al., 2022). Accessing and using data is not an easy task. Consequently, users need proper education to understand how to access and use data (Berndtsson et al., 2019), to increase data literacy among employees (Abhari et al., 2022), or to increase interest in analyzing data (Pedersen & Bossen, 2024).

The momentum of big data, business intelligence and business analytics are increasing at an unprecedented manner due to the arrival of AI. To successfully integrate data and AI is not just at final step of a project but a core discipline that should be considered from the start (Davenport & Malone, 2021; Rana et al., 2022). AI integrated Business Analytics can be defined as the analytical insights provided by intelligent machines and augmented by both machines and humans to make meaningful decisions (Rana et al., 2022). AI offers many benefits when combined with SSBI, but comes at the same time with numerous challenges (Pinski & Benlian, 2024; Rana et al., 2022). Instead of working with BI in a self-reliant manner, AI could guide users and give suggestions on how to make the best decision. However, the importance of using appropriate data sources when making decisions are still required, and may be even more important for the case of AI integrated business analytics (Jakubik et al., 2024; Pinski & Benlian, 2024; Rana et al., 2022). Users need to trust data and its content before decisions are made (Laato et al., 2022). The worst-case scenario would be to enable AI to operate on in-appropriate data that mis-guide users into making bad decisions. This is a phenomenon called AI hallucination, i.e. when incorrect AI output is perceived as logical and cohesive at first sight by users (Pinski & Benlian, 2024; Sun et al., 2025). Enabling AI without being prepared for its potential negative consequences (Rana et al., 2022) can cause AI to become a monster.

Data quality, data governance, and employee training are major implementation challenges shared

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by AI driven analytics (Figalist et al., 2022; Rana et al., 2022) and SSBI (Lennerholt et al., 2022).

This study aimed at exploring what kind of SSBI education would be needed to develop data literacy, which addresses the challenges of using, and be aware of using, appropriate data sources when making decisions. Lessons learned by SSBI practitioners how to develop data literacy, could also inform researchers and practitioners to become better prepared for the journey to integrate AI in BI.

2. Background

SSBI has improved the ways of working with traditional BI systems since it empowers users to create reports and conduct analysis on their own (Alpar & Schulz, 2016; Lennerholt et al., 2022; Logi Analytics, 2015). Users can access and use data as desired on the fly without any support from technical power users from the IT department. This speeds up the process of using BI since users do not have to wait for reports to be created and delivered by the IT department. SSBI also releases pressure on the IT department since they do not have to serve users with BI reports that could take weeks or months to be delivered. This saves valuable organizational resources since all users can work more effectively compared to traditional BI. Despite these advantages, SSBI is challenging to implement (Clarke et al., 2016; Lennerholt et al., 2022; Passlick et al., 2020; Schlesinger & Rahman, 2016).

While practitioners still are struggling to tackle SSBI implementation challenges, AI integrated Business Analytics is presented as the next step to further develop data driven decision making (Davenport & Malone, 2021; Jakubik et al., 2024; Pinski & Benlian, 2024; Rana et al., 2022). Just like SSBI, AI integrated Business Analytics comes with numerous implementation challenges such as: lack of perceived value, lack of time and resources, lack of understanding for how AI works, low data quality, lack of expertise in data analytics, lack of expertise how to interact with AI, lack of trust in AI output, lack of governance, inefficient employee training, security risks (Figalist et al., 2022; Laato et al., 2022; Pinski & Benlian, 2024; Rana et al., 2022). Many of these implementation challenges of AI integrated Business Analytics resemble common SSBI challenges (Clarke et al., 2016; Lennerholt et al., 2022; Passlick et al., 2020; Schlesinger & Rahman, 2016).

One way to increase the awareness amongst end users to understand how they should use and access data sources and address data quality is the development of data literacy through proper education (Abhari et al., 2022; Berndtsson et al., 2023; Davenport & Malone, 2021; Lennerholt et al., 2022). Data literacy can be defined as the awareness of, curiosity for, and competencies related to the use of data in an organizational setting (Abhari et al., 2022). According to Abhari et al. (2022) it is very important to motivate, engage, and train end users in data literacy. They suggest that any education program in data literacy should include four aspects: i) experiential data training, ii) critical incident reflection, iii) rational open discourse, and iv) autonomous experimentation. Hence, an education program that goes beyond a 2-day (technical) course in a specific tool.

Developing data literacy of end users is a crucial success factor in SSBI, but similarly relevant for more advanced forms of business analytics as well as for AI driven business analytics. In addition to data literacy, research literature has started to explore the related concept called AI literacy.

AI literacy includes competencies abilities and knowledge to understand AI, to enable self-determined, effective, and ethical interaction with AI, to utilize AI actively (in the workplace and everyday life), and to critically evaluate AI (Cetindamar et al., 2022; Ng et al., 2021; Pinski & Benlian, 2024). Although AI literacy is a broader concept, it includes data literacy, for example the understanding of data structures, data sanitization, control and authority over data management (governance), and the ability to appropriately interpret output data from AI systems and recognize potential biases (Pinski & Benlian, 2024). AI technology has become pervasive, while at the same time AI users have mostly been left ill-prepared to comprehend, utilize, and critically engage with, i.e. AI illiterate (Pinski & Benlian, 2024). This mismatch raises productivity, privacy and ethical concerns (Pinski & Benlian, 2024). More specifically Knoth et al. (2024) argue that AI users need to be trained in prompt engineering which they define as developing and improving specific inputs for generative AI models in order to obtain high-quality outputs from such a model, and thereby take advantage of the capabilities of generative AI. Prompt engineering involves bi-directional human and AI interaction, to refine prompts iteratively.

As AI driven business analytics and decision making meets similar challenges as SSBI driven business analytics and decision making, with respect to for example data use, data quality, and data governance, lessons learned with regard to SSBI education for developing data literacy could inform how education to develop AI literacy could be designed and conducted. Therefore, this study focused on understanding how SSBI education has been organized, and to what extent lessons learned from

SSBI education could guide the development of AI literacy and to integrate AI in BI.

3. Research Method

Case study research is an appropriate method for conducting and interpretivist research strategy that aims at achieving in-depth understanding of a phenomenon (Braa & Vidgen, 1999; Oates, 2006). The phenomenon studied was how large BI consultancy firms and their customers organize SSBI education in order to develop data literacy and AI literacy.

Two cases studies were performed. In case study one, twelve interviews were conducted with BI consultants from a large BI consultancy firm in Sweden (5 respondents) and one of their main clients who have been implementing SSBI for 4-5 years (7 respondents). The semi-structured interviews focused on creating understanding how SSBI education was designed and performed. Data from these interviews was analyzed inductively through open, axial and selective coding (Wolfswinkel et al., 2013) and resulted in the identification and description of five SSBI education steps. Twelve follow up interviews were conducted (one with each respondent) to validate the results of the analysis. Nothing was added or rejected during this process. The result was considered trustworthy and summarized the practitioner's experiences of designing and conducting SSBI education to achieve data literacy.

Next, a second case study was conducted with another large SSBI consultancy firm, to further validate the five SSBI education steps. This consultancy firm was selected as an interesting case because they have strong ongoing relationships that focus on supporting implementation and use of SSBI. They have developed understanding from many projects related to BI and SSBI in a large variety of organisations in Sweden. They have also developed an internal education program to develop data literacy and AI literacy amongst their consultants, which was judged as so valuable that it in the next phase even was used to educate their clients. For case study two, data collection consisted of observation of a workshop where the SSBI education program was presented and discussed, as well as a semi-structured interview with the main education program coordinator.

Data from case study two was analyzed deductively, i.e. the characteristics of the SSBI education were mapped into the five SSBI steps identified in case study one. The analysis showed that the five SSBI steps clearly could be identified in the SSBI education of the consultancy firm in case two, and thus, the validity of the five SSBI steps was confirmed once more.

In the next section, the five SSBI education steps are presented, including citations and observations from both the first and the second case study.

4. Results

The results of the conducted research consist of five SSBI education steps that are needed to develop data literacy. They are listed in table 1 and described in the following sub-chapters.

Table 1. Five steps of SSBI education

Steps:	*Focus:*
1. Increase the interest of using Data	Educate employees to see the benefits of SSBI
2. Introduce data to all users	Educate on accessing and using appropriate data
3. Clean and define data to create standard reports	Educate on how to clean data sources in order to understand its content easily. Educate on how to create standard reports.
4. Develop SSBI data governance	Educate on how to govern SSBI content and to avoid creating similar reports. Educate on how to identify useful and outdated content.
5. Become self-reliant on accessing and using data	Educate employees on how to access and use data as desired without support from technical power users when creating reports in a self-reliant manner.

The five steps of SSBI education prepare organizations on how to access and use appropriate data, understand its content, in order to create useful SSBI reports. Data is key for all kinds of decision making. AI driven analytics and decision making meets similar challenges as SSBI driven analytics and decision making, with respect to data use, data quality, and data governance. Consequently, proper SSBI education could achieve awareness of data literacy that creates a solid ground for the implementation and use of more advanced AI analytics, and make organizations better prepared for the journey to integrate AI in business analytics.

4.1 Increase the interest of using data

The first step when the consulting firm introduces BI or SSBI to a customer is to focus on the importance to show how to access and use data appropriately and how it can bring benefits to the organization. The idea is to increase the interest among employees how they can access and use data to speed up their daily work. Experienced users who have the technical skills to setup and run SSBI form pilot groups (Lennerholt et al., 2022) where they show the benefits of SSBI compared to traditional BI, before SSBI is launched as a project within the entire organization. Less experienced employees who see the benefits of using SSBI demonstrated by their more experienced peers, can increase their interest in SSBI and develop a need to implement and use SSBI themselves. The importance to educate the employees on what benefits can be achieved when accessing and using data appropriately, is illustrated as follows: "*When we start up a project consulting a customer, we need to focus on increasing the interest of accessing and using data appropriately so the customer can see the benefits of, in this and many cases, SSBI*" (case 2). If employees do not understand the importance of accessing and using data, it becomes very difficult to achieve the benefits of SSBI. This goes in line with a respondent from case study 1: "*a success factor is to increase the SSBI interest among employees by demonstrating benefits. The goal is to achieve a desire to use SSBI since it offers benefits compare to using traditional BI tools*". According to respondents from both cases, the first step of education is to show the benefits of SSBI are compared to the old ways of working. Employees who have worked with traditional BI understand the time-consuming process to create and alter reports. SSBI simplifies these steps by enabling users to access and use data as desired when creating reports on their own. This is a huge benefit compared to traditional BI. Education needs to show these benefits so that employees get interested in SSBI since it will affect their daily work tasks positively. Lennerholt et al. (2022) argue that the interest of using SSBI among employees is critical before launching huge SSBI projects within an organization. SSBI practitioners in this study argue: "*the employees who see the benefits of SSBI during education simply want to use it by themselves afterwards*" (case study 2). This goes in line what respondent from case study 1 mention "*we use pilot groups and SSBI champions to demonstrate SSBI benefits to all employees*". This includes the ability to access and use data. Preparing data is one important foundation before combining AI with BI. Therefore, the first step to prepare an organization is to educate the users with the focus to increase the interest of accessing and using data to create reports that simplify their daily work tasks.

4.2 Introduce data to all users

Data is considered the core foundation when using traditional BI and SSBI (Foley & Guillemette, 2010; Gaardboe & Svarre Jonasen, 2017; Imhoff & White, 2011). Previous research suggest that education should separate and target different users groups depending on their previous technical background (Lennerholt et al., 2022). Education for technical power users should focus preparing data so that all users within an organization can understand its purpose. This simplifies the ability to access and use appropriate data when creating SSBI reports. Accessing and using data is considered one of many challenges that affect the implementation and use of SSBI (Lennerholt & van Laere, 2019; Lennerholt et al., 2018, 2020a). The second step of education is to target the difficulties of accessing and using data by educating all users within an organization to understand the importance of appropriate data and its effect of daily work tasks and decisions. When the consultants start up a project with a customer, they often meet a small group of people. Commonly, they have the management perspective within their own organization, like executives, managers, leaders or technical power users. These people typically have the best overview of how data access and SSBI should be implemented within their organization. A challenge to be managed regarding properly educating their clients is the following: "*When we meet new customers, we find that education does not reach out to the entire organization. It often gets stuck within the project group we are working with. But education does not reach out to the core business users who are supposed to work with SSBI and data, which is problem we need to manage*" (case study 2). Therefore, a lesson learned in this study is that education must include all users who work with data and not just the smaller project group that initially meets the consultants. Lennerholt et al. (2022) mention the importance of using champions within the small pilot groups to reach success. Education needs to reach out to all employees and champions are probably a useful tool to introduce data to all users. This goes in line with a respondent from case study 1: "*we aim to make sure that all users are able to access and use data as desired. This is achieved by identifying specific user groups that normally work within the same department. These users often use the same data sources when making decisions".*

An important prerequisite for being able to include all end users in education considering data

access and data use, is that they are interested. Hence, if organizations have succeeded in completing the previous step of the suggested SSBI education, it should be easier to educate all users since they already are aware of the benefits that data and SSBI offers, which will increase their interest to learn how to access and use appropriate data effectively: "*It is important to educate all users within an organization to fulfill the first step, to increase the interest of using data in the second step*" (case study 2).

4.3 Clean and define data to create standard reports.

Great decisions with positive and expected results are always grounded on appropriate data (Eder & Koch, 2018; Gaardboe, 2017; Hawking & Sellitto, 2010). BI content like reports, dashboards etc. are created on appropriate data in order to simplify the process to make decisions. Employees who want to make sure that right decisions are being made should not have to question the importance and validity of the data being used. Still, there is a time-consuming process when employees ask power users, normally working in an IT department, for support to alter content in reports in order to analyze content differently (Lennerholt & van Laere, 2019; Lennerholt et al., 2018). This is one of the benefits of SSBI to enable all users to become self-reliant when choosing data sources when creating reports, alter its content on the fly. Using appropriate data sources and understand what the content actually mean and can be used for is important (Lennerholt et al., 2020a, 2020b). SSBI practitioners argue that education should target the data sources in step three. Employees should be educated on the process of how to clean and define data: "*All users who make decisions must understand the importance of using appropriate data. Therefore, we educate them on how to clean data and define dimensions that clearly describe what the data actually means and can be used for*" (case study 2). The cleaning process should educate employees to correct faulty data, which is normally done by power users within the IT department. This goes in-line with previous research arguing that this responsibility should be given to business users since they are experts on their own data and could easily identify faults (Lennerholt et al., 2022). Proper education shows examples how to clean, correct data and define its meaning, which increase the quality if data. "*to achieve the benefits of SSBI, users must be aware of data quality since faulty data do exists when making decisions. Users need to determine the right level of data quality for their kind of decisions. They should also be able to correct faulty data when recognized*" (case study 1),

Focus is to educate on how to prepare data to be appropriate for the next step: to create reports that are used for analysis and decision making.

The process to use SSBI tools to create reports are mentioned as difficult even though it is supposed to be easier compared to traditional BI (Lennerholt et al., 2018, 2020a). Employees need to develop skills on how to create reports that support their daily work: "*When employees make decisions, they need to trust the content and report they are using. Otherwise, the analysis becomes difficult and is often questioned in a negative manner. Therefore, we spend lots of time to educate employees on how to create standard SSBI reports that are based on the previously cleaned and defined data. The main purpose is that employees understand how to create a report that simplifies their daily work and which they can trust.*" (case 2). Education in step 3 should include the process on how to access and use the cleaned and defined data in order to create appropriate reports that aid employees to make their decisions. This includes how to visualize data in order to simplify analysis in a self-reliant manner were users are allowed to alter the content on the fly without support from power users. Creating standard reports is key for organizations to implement and use SSBI efficiently, which previous research also recommends (Lennerholt et al., 2022). This study suggests that educating employees on how to clean and define data, and to learn how to create appropriate reports are needed to meet this recommendation.

4.4 SSBI Data governance

Someone has to be responsible for governance of SSBI standard reports. Previous research shows that it is a challenging process since there is a responsibility shift between IT departments and business (Lennerholt & van Laere, 2019; Lennerholt et al., 2018, 2020a). Normally, IT departments are governing data sources and are responsible to update and correct faults that exist. To enable the benefits of SSBI, end users must be allowed to change faults on their own and govern their SSBI content without interference from the IT department (Lennerholt et al., 2022). But governing SSBI content requires education since it is not easy to determine the validity and usefulness of a standard report in the long run. Once reports are outdated, someone needs to question its existence, which is part of the governance process. The end users working with the standard reports have the best knowledge of the business and should be responsible

for governance. Hence, education is needed on how to govern SSBI reports properly: "*Once standard reports are in place, users need to learn how to govern content. We educate on how to govern content as the next step once users understand how to clear, define and create standard reports*" (case study 2). These users must be able to change faulty data in order to govern SSBI reports properly and to address potential data quality challenges. "*SSBI users create reports as they like and it is common that colleagues create the exact same report. Within a couple of years, they realize that there are lots of redundant reports available. You have no idea which reports that are used or not used anymore and the IT department does not dare to delete them. Business users must be given the responsibility to govern SSBI content*" (case study 1).

Education on how to change faults are needed as a step to use SSBI efficiently. To govern content, users need to understand the quality of the reports and how content can be used within the organization. Users working with very specific data with fine granularity require different reports compared to users analyzing overall trends. Faulty data has a huge negative effect on decisions being made on fine and granular data compared to data for general and overall trends. This affects governance since different users have different requirements. Therefore, part of education is to increase the awareness of data quality and its impact when governing standard reports: "*We educate users on data quality and quality of reports. They need to be aware of the negative effects that can occur if users are analyzing reports that are not suited for the decision being made*" (case study 2). The governance of data and reports so that users are aware of its quality is important to achieve before AI is enabled. Otherwise, organizations can create an AI monster that suggests information which can cause faulty and bad decisions. SSBI practitioners in this study suggest that education should address how to govern SSBI content, how to avoid creating similar existing reports and how to identify useful and outdated content.

4.5 Become self-reliant on accessing and using data.

Using existing standard reports can be sufficient for many business users within an organization. But to achieve the core benefits of SSBI all users should be able to access and use data as desired when creating reports in a self-reliant manner (Alpar & Schulz, 2016; Lennerholt et al., 2022; Logi Analytics, 2015). According to SSBI practitioners, the final step of education to achieve the benefits of SSBI and to prepare for AI is to teach users to become self-reliant. Users should be able to understand what data sources are available and useful for their decision being made. This includes the process on how to access and use data, which previous research show as challenging (Lennerholt & van Laere, 2019; Lennerholt et al., 2018). "*We cannot have competences of how to use SSBI isolated in the IT department. We need to mix the competences between IT department and business users in order to become more self-reliant and gain speed when using SSBI. Business users need to achieve the competence of how to access and use data as desired*" (case study 1).

The final step of education is to educate the users on how to access and use data as desired without support from technical power users when creating reports: "*to become self-reliant, we educate all users to understand how to access and use appropriate data. We have sessions were users work in the SSBI tool to freely select the already cleaned and defined data. The goal is to increase the awareness on how to understand the entire chain of SSBI, to access and use data that simplifies their analysis before decisions are being made*" (case study 2).

The entire SSBI initiative is fulfilled once employees understand the importance of the entire chain of SSBI, to access and use data, clean and define its content, to create and govern standard reports and to become self-reliant. The increase of overall awareness of the importance of using appropriate data when making decisions is important to achieve before enabling AI. AI can be a useful asset that recommends different suggestions for decisions being made. But, AI should use the same data sources that SSBI users do. Otherwise, it is difficult to understand and trust the suggestions that AI would propose.

5. Discussion and Future Research

5.1 From SSBI education to Data literacy

AI driven analytics and decision making meets similar challenges as SSBI driven analytics and decision making, with respect to data quality, data governance, and employee training (Figalist et al., 2022; Lennerholt et al., 2022; Rana et al., 2022). Hence, researchers and practitioners who face the challenge of integrating AI in business analytics could learn from SSBI research and SSBI practitioners who have dealt with similar challenges earlier.

This case studies show how two leading BI consultancy firms design and conduct their SSBI education aiming at developing data literacy through five key steps: (1) Increase the interest of using Data, (2) Introduce data to all users, (3) Clean and define data to create standard reports, (4) Develop SSBI data

governance and (5) Become self-reliant in accessing and using data. These steps of SSBI education develop data literacy that addresses the challenges of using appropriate data sources when making decisions, which also is a foundation when integrating AI in BI.

Researchers studying AI literacy development have identified learning needs and education strategies that fit these identified steps to some extent. For instance, Figalist et al. (2022) emphasize the need to demonstrate the value of AI analytics for BI (in line with step 1) and Laato et al. (2022) emphasize the need to create understandability of AI systems, defined as the degree to which end users are able to form an accurate mental model regarding how the AI system works (also step 1). Knoth et al. (2024) discuss the importance of training prompt engineering, i.e. how to give instructions to AI models, which is comparable to learning to design SQL queries in SSBI (step 2). Pinski and Benlian (2024) and Rana et al. (2022) highlight the importance of addressing data quality and data governance, but do not provide specific education strategies or methods to implement this in the context of integrating AI with advanced business analytics. Ng et al. (2021) distinguishes between training aiming at "know and understand AI" (step 1), "use and apply AI" (step 2) and "higher-order skills related to evaluate AI results and reflect on AI ethics" (step 5). Likewise, Cetindamar et al. (2022) describes the capability to recognize potential (step 1), the capability to use AI technology in the decision-making context (step 1 and 2), and the capability to learn and reflect (step 5).

Beyond these five steps, there are other similarities between SSBI employee education strategies and AI literacy education strategies. For instance, SSBI literature highlights the need to adapt data literacy training to different user groups (Berndtsson et al., 2019; Lennerholt et al., 2022). Similarly, AI literacy literature portrays how different user groups have different learning needs (Laato et al., 2022; Pinski & Benlian, 2024). Likewise, SSBI literature has emphasized the need for case based training with assignments closely related to the end user's work context (Berndtsson et al., 2019; Lennerholt et al., 2022), which even in AI literacy literature is recognized as a promising education strategy (Knoth et al., 2024; Laato et al., 2022; Pinski & Benlian, 2024). Our findings of SSBI education are in-line with the learning theories of Kolb (2014) since user experiences are transformed into knowledge and skills used to educate others. This creates a foundation often seen as requirement in the early stages of analytics maturity models (Menukhin et al., 2025). SSBI education mentioned in this paper support reaching the more matured levels of analytics maturity models were user skills are more advanced, data is trusted and the processes of conducting advanced analytics are fulfilled.

5.2 Future research needs

From the above discussion it can be concluded that research on AI literacy thus far has recognized learning needs and education strategies connected to step 1 (understanding the value of AI), step 2 (learning how to use AI) and step 5 (higher order reflection skills and user independence). Although AI literacy literature acknowledges the threat of AI hallucination, i.e. that AI output is based on wrong and malformed data, while perceived as logical and cohesive at first sight by end users (Pinski & Benlian, 2024; Rana et al., 2022), education strategies to tackle data quality, data cleaning and data governance (step 3 and 4) are currently missing in AI literacy literature. Consequently, an important future research avenue is to identify how AI literacy development education strategies for this purpose could look like.

A research avenue worth to explore is how the findings five steps of SSBI education could be visually mapped onto the data to insight pipeline of capability maturity models. This could benefit organisations who progress from ad-hoc data handling to more optimised, data and insight driven processes by their structured pipelines.

In line with Pinski and Benlian (2024), we agree that AI literacy research thus far has focused on mapping the availability of education methods for data literacy and AI literacy in the context of advanced business analytics, and that an important future research avenue is to qualitatively or quantitatively evaluate the effectiveness of these education methods.

Another interesting research avenue is to identify education strategies to mitigate the system hallucinations or managing biases in training data for AI.

6. Conclusion

The aim of this study was to explore what kind of SSBI education would be needed to develop data literacy when making decisions. The implementation of SSBI has learned that shifting the responsibility for data use, data cleaning and data governance from technical expert users to casual business users is challenging. Understanding the practicalities and consequences of self-reliant data use for decision making is far from plug-and-play, and requires extensive education. This study reveals how SSBI education of two leading BI consultancy firms in Sweden is designed and conducted through five steps:

(1) Increase the interest of using Data, (2) Introduce data to all users, (3) Clean and define data to create standard reports, (4) Develop SSBI data governance and (5) Become self-reliant in accessing and using data.

AI driven business analytics and decision making meets similar challenges as SSBI driven business analytics and decision making, with respect to data quality, data governance, and employee training (Figalist et al., 2022; Lennerholt et al., 2022; Rana et al., 2022). SSBI education could therefore create a solid ground for the implementation and use of more advanced AI analytics, and make organizations better prepared for the journey to integrate AI in BI.

Thus far, AI literacy literature has addressed "understanding the value of AI", "learning how to use AI" and "higher order reflection skills and user independence". A first contribution of this study is that SSBI education shows how these different competencies can be trained in a cohesive program, both for SSBI related data literacy and for advanced business analytics related AI literacy.

A second contribution of this study is the observation that education strategies for data quality, data cleaning and data governance is lacking in AI literacy literature. To prevent that AI driven business analytics is based on wrong and malformed data, development of AI literacy through end user employee education should also address awareness and skills for securing data quality, performing data cleaning and establishing data governance.

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