SAP Implementation Bias for Small Businesses

Modular, Cloud-Based SAP Development

A Thesis Prospectus
In STS 4500
Presented to
The Faculty of the
School of Engineering and Applied Science
University of Virginia
In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science in Computer Science

By
Skylar Haskiell

November 1, 2023

ADVISORS

Benjamin J. Laugelli, Department of Engineering and Society

Brianna Morison, Department of Computer Science

Introduction

SAP (Systems, Applications, and Products) is a widely used enterprise resource planning system that is costly and complicated to implement. The high costs, both in terms of money and time, of this implementation create an inequity for small businesses. SAP's intricate implementation landscape becomes clearer when viewed through a specific case like Spar's operations in Poland. By focusing on this case, one can see the intricate interplay between technical and socio-technical factors within the SAP implementation. I will leverage a simplified, cloud-based, and cost-effective SAP implementation model, tailored training, and ongoing support to empower small businesses with the advantages of enterprise resource planning (ERP). Because of both the technical and social factors that play a role in SAP implementation, it is necessary to understand how these factors work together to play a role in the technology's implementation. I will draw on the framework of actor-network theory (ANT) to investigate relationships between small businesses, SAP software, IT infrastructure, and the broader social, cultural, and economic factors that shape the implementation process, ultimately aiding in the development of more effective and tailored solutions

It is imperative to recognize that SAP's implementation is a realm where technical and socio-technical factors meet. ANT facilitates the exploration of the intricate web of relationships between small businesses, SAP software, IT infrastructure, and the broader societal, cultural, and economic factors that wield significant influence over the implementation process. By embracing this approach, I aim to contribute to the development of more efficacious and tailored solutions that not only address the technical intricacies of SAP but also harmonize with the broader socio-

technical context, fostering equitable access to this powerful tool for small businesses and their communities.

Technical Project

I aim to create a tailored SAP implementation for small businesses that is cost-effective, user-friendly, and easily adaptable to their specific needs. In the past, others have tried to solve this problem by offering one-size-fits-all SAP systems, which are often expensive, averaging around $50,000, and filled with complex features that small businesses might not need (SEO). These generic solutions do not consider the unique constraints and requirements of small businesses, leading to high expenses, a steep learning curve, a lengthy implementation period, and an overwhelming set of features that might not be relevant to their operations. It takes on average about 6-12 months to set up these complicated systems, which is not practical for a new business (Macaulay).

Implementing SAP involves a detailed process to make organizations work better. However, this process, which is well-established and works well for larger companies, can be very hard for small businesses. A typical implementation involves planning, realization, implementation, integration, go-live, production, and support ("7 Key Stages of SAP Implementation Methodology | Cloud4C"). The complexity and cost of setting up SAP can be a big problem for smaller organizations with limited money, resources, and people.

The details of SAP, like how the system is designed, the data is migrated, and customizations are created, can be too much for small businesses. These features often require hiring outside experts, which can be expensive. Hiring an SAP consultant in the US costs around

$117,855 yearly, for just one person ("Request a Quote, Now | Developers.Dev"). Many companies have employees specialized in each implementation step which further drives up the necessary manpower and costs (SAP Junior & Senior Consultant, n.d.). Plus, the time it takes to test the system, train people to use it, and support it after it's set up adds additional strains on a small company. Therefore, there is a need for a simpler and cheaper way to implement SAP that is made just for small businesses.

My solution offers cost-effective, customizable, and user-friendly SAP implementation specifically tailored to small businesses. It can grow with the business, and it's made up of different parts that can be added or removed as needed. I'm suggesting a cloud-based SAP system with a simple user interface, affordable prices, and a structure that lets small businesses pick the parts they need. I'll use user-focused design, cloud technology, and a step-by-step design process to create and improve this solution. I will focus on creating a solution addressing the precise needs of entities like Spar in Poland.

To develop the design, I will analyze data and information regarding small business requirements, their current software usage, budget constraints, user feedback, market research, and socio technical factors affecting their operations. Furthermore, I will analyze the failures in the Spar case and ensure my solution does not have similar downfalls. Demonstrating the value and viability of the design will involve usability testing, cost-benefit analysis, and ongoing feedback from small business users to refine the solution continuously.

STS Project

The case study for this STS project centers on a specific example of an SAP ERP implementation within small businesses, with a particular focus on Spar's operations in Poland. I will work to answer the question: How do socio-technical factors impact the successful adoption and adaptation of SAP ERP systems within the context of small businesses, using the Spar Poland case as an illustration?

Utilizing SAP offers numerous advantages for businesses across various industries. One of the primary benefits is enhanced operational efficiency. SAP provides a centralized platform for managing and optimizing a wide range of business processes, from finance and human resources to supply chain and customer relationship management ("8 Ways SAP ERP Software Implementation Benefits Your Business"). Moreover, SAP helps ensure compliance with regulatory requirements by providing robust audit trails and data security features ("Legal Regulation Configuration Setup in SAP GTS | SAP Blogs"). Spar aimed to capitalize on SAP's touted benefits of operational efficiency, data accuracy, and scalability to revive the struggling operations in Poland (Botched Spar SAP Project Cost Retailer R1.4-Billion in 11 Months - TechCentral, 2023). However, despite initial intentions, the implementation encountered unforeseen socio-technical challenges, resulting in complications that hindered its success.

The complications faced by Spar in the Polish context were multifaceted. The projected efficiencies from SAP implementation didn't manifest as expected. Turnover increased by 5% for the Polish operations in the period, but this was offset by continued losses from previous periods(Areff, n.d.). The discrepancy between increased turnover and continued losses posed a significant setback, indicating a discrepancy in the expected versus actual benefits of SAP integration.

These complications had profound consequences for Spar's operations in Poland. Despite Spar's endeavor to leverage SAP's capabilities for operational optimization, the financial losses persisted, signaling an incongruence between the anticipated benefits of SAP implementation and the actual financial performance. The total financial losses from this are estimated to be at least 1.6 billion (Moyo, 2023). Such repercussions, both financial and operational, raised concerns about the effectiveness of SAP's integration within Spar's specific operational landscape.

While SAP offers substantial advantages theoretically, the application within Spar's context didn't yield the expected outcomes. The discrepancy between projected benefits and realized results raises critical questions about the adaptability of SAP ERP systems within the constraints of small businesses, particularly when considering factors like limited budgets, resource constraints, and adaptability to unique socio-technical environments.

To explore this discrepancy further, this project will employ the Actor-Network Theory (ANT). ANT delves into the activities of network builders who construct heterogeneous networks comprising both human and non-human actors to tackle problems or achieve goals (Cresswell et al., 2010). This approach will unveil how various actors and components interplay within the network, potentially elucidating the causes behind the implementation's shortcomings within Spar's Polish operations.To address these challenges, this project will employ the Actor-Network Theory (ANT) framework to analyze the relationships between small businesses, SAP software, IT infrastructure, and other relevant factors that shape the implementation process.

Conclusion

In conclusion, the integration of both a technical project and an STS project offers a comprehensive approach that holds great promise for addressing the socio-technical challenges highlighted in the Introduction, using the Spar Poland case as a pivotal example.

The technical project is strategically focused on delivering a novel SAP ERP implementation tailored explicitly for small businesses. This specialized design emphasizes user-friendliness, scalability, and cost-effectiveness, effectively tackling the persistent issue of high implementation costs. This enhanced design has the potential to empower small businesses by providing advanced technological capabilities while simultaneously lowering financial barriers. The value of this initiative is substantial for our clients and users, as it equips them with the means to access and leverage SAP ERP systems, thereby enhancing their operational efficiency and increasing their competitiveness within the market.

Conversely, the STS project is poised to yield a deeper and more nuanced understanding of the sociotechnical dynamics within small businesses, drawing inspiration from the Actor-Network Theory (ANT) framework and exemplified through the Spar Poland case study. The insights garnered encompass critical factors like budget constraints, resource limitations, and unique operational requirements, all of which are pivotal to understanding the specific challenges faced by small businesses during SAP ERP implementation. This STS project serves as an invaluable resource for the technical project.

The insights gathered from the STS research will be seamlessly integrated into the design of the technical project, particularly in shaping the user-centered design aspects. This process

ensures that the technical solution aligns seamlessly with the specific socio technical context of small businesses, making necessary adjustments for affordability, adaptability, and user-friendliness while considering the financial constraints and operational realities experienced by small businesses. By directly addressing the historically formidable obstacles of high implementation costs and complex features that have hindered small businesses, our combined approach directly contributes to the broader socio-technical challenge of making sophisticated ERP systems like SAP more accessible and advantageous to smaller enterprises. In harmony, these projects provide a holistic solution that strives to empower small businesses with the benefits of cutting-edge technology, while judiciously acknowledging their unique constraints and requirements, ultimately fostering growth and sustainability within this pivotal sector of the economy.

References

"7 Key Stages of SAP Implementation Methodology | Cloud4C." Know about the Key Stages of
SAP Implementation Methodologies such as Accelerated SAP That Ensure Successful
SAP Implementations. - the 7 Key Stages in Your SAP Implementation Journey,
www.cloud4c.com/sap/blogs/7-key-stages-your-sap-implementation-journey.

"8 Ways SAP ERP Software Implementation Benefits Your Business." Fingent Technology, 5
July 2021, www.fingent.com/blog/8-ways-sap-erp-software-implementation-benefits-
your-business/.

Areff, C. by A. (n.d.). Spar exits Poland, while IT problems cause R1.4bn headache. Business.
Retrieved October 24, 2023, from https://www.news24.com/fin24/companies/spar-exits-
poland-while-it-problems-cause-r14bn-headache-20230928

Botched Spar SAP project cost retailer R1.4-billion in 11 months - TechCentral. (2023,
September 28). https://techcentral.co.za/spar-sap-project-r1-4-billion-11-months/232461/

Cresswell, K. M., Worth, A., & Sheikh, A. (2010). Actor-Network Theory and its role in
understanding the implementation of information technology developments in healthcare.
BMC Medical Informatics and Decision Making, 10(1). https://doi.org/10.1186/1472-
6947-10-67

Gable, Guy, and Glenn Stewart. "SAP R/3 Implementation Issues for Small to Medium
Enterprises." AIS Electronic Library (AISeL), 2023, aisel.aisnet.org/amcis1999/269/.
Accessed 22 Oct. 2023.

"Legal Regulation Configuration Setup in SAP GTS | SAP Blogs." Blogs.sap.com,

    blogs.sap.com/2019/08/08/legal-regulation-configuration-setup-in-sap-gts/. Accessed 22

    Oct. 2023.

Macaulay, Angus. "The Duration of an SAP Implementation Project." IgniteSAP, 14 Sept. 2023,

    ignitesap.com/the-duration-of-an-sap-implementation-

    project/#:~:text=The%20SAP%20Modules%20Being%20Implemented. Accessed 22

    Oct. 2023.

Moyo, A. (2023, November 23). Spar loses R1.6bn due to failed SAP project. ITWeb.

    https://www.itweb.co.za/content/Pero3qZ35JyvQb6m

"Request a Quote, Now | Developers.Dev." Www.developers.dev, www.developers.dev/request-

    a-free-quote-popup.htm?q=beforexit.

SAP Junior & Senior Consultant. (n.d.). Careers.ey.com. Retrieved November 26, 2023, from

    https://careers.ey.com/ey/job/Jakarta-SAP-Junior-&-Senior-Consultant-12190/814974201

SEO, Admin. "Average ERP Implementation Cost - a Complete Guide." Silver Touch

    Technologies UK, 18 July 2023, www.silvertouchtech.co.uk/blog/how-much-does-an-

    erp-implementation-cost/.