User self-efficacy enhances business intelligence tools for organizational agility

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Article Info

ABSTRACT

The primary objective of this paper is to investigate the interplay between individual self-efficacy (SE) and the adoption of business intelligence (BI) tools, and their combined effects on organizational agility and performance. This research offers a novel perspective by examining the relationship between individual SE and BI tools together, which was neglected in the previous research, shedding light on how these factors collectively influence organizational performance and agility. The importance of this study addresses the crucial need for understanding the role of individual capabilities in leveraging BI tools, especially in the context of rapidly changing environments. The study employs a quantitative approach to examine the proposed model. A survey was conducted with 174 respondents from private and public organizations in Jordan. The findings reveal significant and positive impacts of individual experiences, vicarious experiences (VE), and psychological feedback (PS) on SE. Moreover, the study demonstrates that SE significantly and positively influences the utilization of BI tools, consequently affecting organizational agility and performance. The significance of the study findings lies in its ability to bridge the gap between individual capabilities and the effective utilization of BI tools to equip businesses with invaluable insights for enhancing their decision-making processes.

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1. INTRODUCTION

In this age of rapid digitization, the business landscape has become incredibly dynamic, marked by substantial changes in the surrounding environment, and intensified competition. These factors necessitate swift adaptation by businesses to meet the evolving needs and demands of their customers [1]. This presents a formidable challenge for enterprises, as rapid adaptation is a prerequisite not only for survival but also for gaining a competitive edge [2]. Consequently, businesses must take full advantage of various information technology solutions and intelligent tools to empower their employees to efficiently execute their tasks and generate valuable insights for informed decision-making [3]. This highlights two fundamental concepts: the adoption of business intelligence (BI) or intelligent tools, as advocated by [3]-[5] and employee self-efficacy (SE), which has a positive impact on organizational performance, as proposed by [6]-[9].

SE constitutes a pivotal element within Bandura's social cognitive theory of Bandura [6], signifying an individuals' confidence in their capacity to complete specific tasks and achieve predetermined objective [8], while yielding favorable outcomes [10]. This theory focuses not on the skills individuals possess but on

what they can achieve and accomplish with those skills [8]. As noted by Flammer in [11], individuals with high SE derive a sense of self-satisfaction from their belief in their capacity to make a difference and exhibit high self-esteem, in contrast to those who perceive themselves as ineffective, dissatisfied, and lacking motivation to take action. Furthermore, individuals with high SE view obstacles not as threats to be avoided, but as challenges or problems that, when solved, can lead to genuine opportunities or solutions contributing to organizational goals [10], [12]. In this arena, numerous scholars such as Ithriah *et al.* [12], Siddiqui [13], and Cherian and Jacob [14], all agreed that those individuals with high levels of SE exhibit a superior and more positive performance in their work environments. Moreover, individuals who can enhance their capabilities and skills are better equipped to handle physiological challenges when faced with fatigue and stress [8].

On the other hand, BI is a contemporary concept that merges business knowledge with information technology. Broadly defined, it encompasses various information technology tools, procedures, and practices that assist employees and managers in making informed decisions. Studies [5], [15] Emphasized that diverse businesses rely on BI to attain their objectives and sustain success by enhancing the decision-making process. Daradkeh and Al-Dwairi [16] demonstrated that BI is used to improve enterprises business process and support the activities that yields to a correct decision process. Kim and Kim [8] focuses on an individual's skills and proficiency in achieving specific goals. In simple terms, SE plays a crucial role in how effective a person is. It involves using one's beliefs, knowledge, and skills to tackle challenges and navigate different situations efficiently. This helps individuals succeed and handle situations effectively. Another study [11] Found that individuals who believe in their ability to make a difference, no matter how small, feel more satisfied. This satisfaction motivates them to actively pursue opportunities, unlike those who see themselves as powerless, leading to reduced satisfaction, unhappiness, and a lack of motivation to take action. Other studies like [3], [5] emphasize the importance of adapting BI technologies and tools to enhance business performance and decision-making.

Despite the existing research, there is a shortage of studies that examine the role of individual behavior in BI technology acceptance [17]. In addition, the limitations of previous research lie in dealing separately with the two concepts: SE and BI, ignoring the fact that BI is a technology that requires good technical skills for optimal deployment. The current study merges the impact of individual SE and the use of BI tools on business agility and performance. Its significance lies in the innovative approach of focusing on individual SE and BI tools together, exploring how these factors collectively influence organizational performance and agility. This is crucial for businesses navigating changing environments and striving for success. Given this context, there is an urgent need to investigate how individual SE in various business environments influences the use of BI applications to achieve improved institutional performance and responsiveness to customer demands [18]. The existing literature also lacks sufficient emphasis on the concept of SE among employees and companies and its impact on BI system use. Therefore, the aim of this research is to highlight significant factors influencing the acceptance and adaptation of technologies in the era of rapid digitization.

This study contributes to the current body of knowledge by addressing the interplay between individual SE and the use of BI tools, its provide acurate insight into their joint impact on organizational performance and agility. Through careful analysis, we fill a critical gap in the existing literature by integrating these elements and demonstrating their collective impact on achieving organizational goals. By examining the behavioral aspects of SE and the practical implications of using BI tools, our research not only improve theoretical understanding, but also provides actionable strategies for decision makers and practitioners. We provide a comprehensive framework that focuses on the interconnections between individual psychological factors and technology solutions, and help organizations leverage these insights to navigate swiftly business environments and achieve sustainable success. The study proposes a conceptual framework based on Bandura's SE theory to assist companies in making timely and informed decisions. The primary objectives of this paper are to address two key questions:

RQ1: What specific factors of an individual's SE significantly affect the use of BI tools?
RQ2: Does the BI tool usage positively affect the institutional performance and the speed of responding to customer demands?

2.   THE RELATED WORK AND HYPOTHESES DEVELOPMENT

In the realm of SE, researchers have offered various definitions of this concept. For example, SE has been defined as the way individuals gauge their ability to perform particular processes or tasks, organize actions to achieve predetermined goals [8] make substantial contributions [11], yield favorable results [10], or reach specific performance benchmarks [11]. The concept of SE revolves around an individual's skills and proficiency in attaining specific objectives. Consequently, SE plays a pivotal role in an individual's effectiveness. It entails harnessing one's beliefs, knowledge, and skills to confront various challenges and

efficiently navigate particular circumstances [8]. Efficiency holds a crucial position in shaping individual personalities within this context. Individuals who recognize their capacity to make a difference, regardless of its magnitude, experience heightened self-satisfaction, which motivates them to proactively seize opportunities, in contrast to those who perceive themselves as powerless, leading to diminished satisfaction, unhappiness, and a lack of incentive or motivation to take action [11]. Moreover, individuals plagued by self-doubt are more prone to early setbacks and abandonment of tasks when faced with obstacles. Additionally, SE contributes to the understanding of individual behavior, influencing how people perceive, process, and utilize available information to attain their objectives [10]. SE helps individuals succeed and deal efficiently with potential situations [8]. On the other hand, the business landscape surrounding companies is marked by dynamic competitiveness. To thrive in such a mercurial environment, businesses must respond swiftly to customer demands and make sound decisions. Given the limitations of the human mind in promptly adapting to these environmental changes, organizations can turn to technologies like BI tools to not only facilitate rapid response to external shifts, but also enhance decision-making processes and overall performance [3]. The concept of BI represents the usage of some technological tools/techniques/methodologies/practices that are used to collect data from different sources, and then analyze it to reach sound decisions. The main advantage of using business intelligent tools is the ability to generate timely and accurate information to facilitate the process of decision-making in business companies to gain the competitive advantage [5]. To address all these facts altogether, the proposed framework of this study integrates the SE theory concepts of Albert Bandura with usage of business intelligent technologies in working environments to provide businesses with effective tools that help individulas to collect, analyze, and interpret huge amounts of data in real-time. Figure 1 shows the research model.
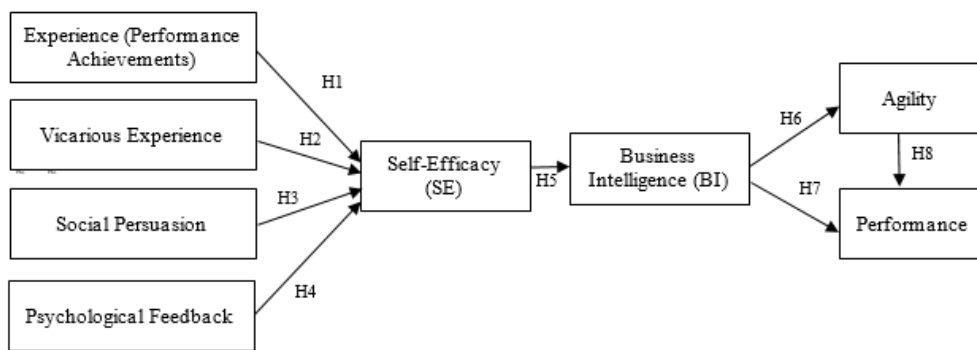

Figure 1. The proposed model

Shahzad et al. [19] Explored the connection between SE in information technology and personal knowledge management practices. Their research revealed a strong and positive correlation between information technology SE and individual knowledge, which contributes to the sustainability of lifelong learning and fosters innovation within organizational performance. Ithriah et al. [12] highlighted the significance of SE, underlining its dependence on four primary sources of information. Notably, performance achievements, derived from successful prior experiences in diverse work environments, constitute a pivotal determinant of SE. Conversely, individuals can acquire indirect experiences, often referred to as vicarious experiences (VE), by observing the accomplishments of others, as noted by study [20]. Close observation of others' achievements plays a crucial role in instilling self-confidence and the belief in one's ability to excel in tasks akin to those previously undertaken, as emphasized by study [21]. Consequently, individuals possess the opportunity to cultivate and mold their own SE. Bautista [22] pointed out, experiences serve as valuable templates that yield favorable outcomes when employees engage in specific tasks. These experiences enable individuals to assess their past practices, thereby gauging their skills and competencies. Furthermore, when individuals draw upon their past experiences to address current situational challenges and achieve success, their self-confidence and competence are likely to grow, as elucidated by study [23]. In light of this information, the following two hypotheses are formulated:

H1: Experience (performance achievements) has a positive and significant effect on an individual's SE.
H2: VE have a positive and significant effect on an individual's SE.

The concept of social persuasion (SP) encompasses the exposure of individuals to both verbal and non-verbal judgments from others, which are formed based on their performance, skills, and personal characteristics. These judgments can result in either positive or negative evaluations of individuals. Positive

feedback and evaluations have a motivating effect, encouraging individuals to make progress and foster personal growth, while negative persuasion tends to lead to diminished performance [23]. Those with the ability to effectively persuade others excel in providing feedback grounded in reality and factual observations. Verbal persuasion, in particular, serves as a catalyst for individuals to enhance their performance and excel in their respective endeavours [12]. Lam and Chan [24] conducted a study exploring the impact of SP from parents and teachers on students. The results revealed that students' SE increased in response to positive feedback, and conversely, a negative evaluation had adverse effects. Given these insights, we propose the following hypothesis:

H3: SP has a positive and significant effect on an individual's SE.

The concept of psychological reactions pertains to how individuals respond to specific situations they encounter, eliciting various emotions, like anxiety and fatigue that subsequently influence their reactions to these circumstances [25]. These psychological states are linked to a multitude of adverse outcomes, affecting both the mental and physical well-being of individuals and influencing their task performance within these situations [23]. Individuals who harbour negative perceptions regarding the tasks they must undertake tend to need to exert greater effort in completing them. Furthermore, when individuals receive unfavourable feedback regarding their personality traits, task execution, or responses to given situations, it can adversely affect their psychological states, leading to heightened stress and anxiety. The psychological condition of individuals profoundly shapes their responses and their ability to adapt swiftly to the environmental variables imposed upon them. SE emerges as a crucial factor in how individuals manage and modify some psychological responses [25] based on this information, the following hypothesis can be addressed:

H4: Psychological feedback (PS) has a positive and significant effect on an individual's SE.

SE plays a pivotal role in driving behavioural change among individuals [13]. It is intricately linked to individuals' capacity for self-control, adaptability, resilience in the face of failure, and their proficiency in effectively addressing the challenges they encounter [14]. Individuals boasting high SE are characterized by their proactive and flexible approach to problem-solving. Moreover, the integration of BI technologies equips individuals with potent tools to resolve situational dilemmas and bolster their productivity. Mesaros et al. [26] proposed a comprehensive model outlining the principal success factors of BI within organizations. Their findings underscore the pivotal role of information and communication technology in facilitating the seamless exchange of information and streamlining daily tasks within business organizations. The amalgamation of individuals possessing high SE with essential business technological resources is poised to enable rapid responsiveness to customer needs and requests, thereby enhancing overall business performance. Consequently, we present the following hypothesis:

H5: User's self- efficacy has a positive and significant effect on using BI tools.

The adoption of BI within organizations yields a multitude of advantages, including cost reduction, minimization of production errors, and comprehensive monitoring of internal and external activities, all of which contribute to heightened organizational productivity [27], [28]. Additionally,BI leverages tools that empower individuals to gather and analyze data, generating high-quality information that enables swift responses to market demands [29]. In the contemporary business landscape, BI has become a pivotal and indispensable component of modern enterprises, instrumental in ascertaining their true performance [30]. Its primary objective is to collect information from diverse sources, encompassing the surrounding environment, competitors, suppliers, and customers, and subsequently conduct multidimensional analyses to elevate the performance of business organizations [31]. Consequently,BI furnishes decisionmakers with the requisite insights for informed thinking, future forecasting, problem-solving, and strategic planning. Organizational performance represents an entity's capacity to achieve its predetermined objectives utilizing available resources [32]. GhalichKhani and Hakkak [4] underscores a positive correlation between BI and organizational agility, while study [33] assert a direct link between the utilization of BI and enhanced organizational performance. Studies [27], [28], [31] highlighting a favorable relationship between an organization's technological capabilities and its agility and productivity. Moreover, study [30] endeavors to assess the impact of BI systems on decision-making and performance within small and medium-sized enterprises. The results substantiate that the utilization of BI facilitates timely decision-making, bolsters organizational performance, aligns organizations with the demands of the business environment, and enhances employee satisfaction. In the realm of banking, study [34] investigates the influence of BI systems on organizational performance, revealing a positive impact that operates indirectly by overseeing internal processes, customer interactions, and employee learning and growth, rather than directly affecting financial performance. Also, study [31] seeks to measure the impact of using BI tools on corporate management performance, finding that the effective utilization of these tools significantly enhances an organization's abilities in analysis, planning, and decision-making, thereby indirectly influencing operational processes. Based on these findings, the following hypotheses are posited:

H6: Using BI tools has a positive and significant effect on organizational agility.

H7: Using BI tools has a positive and significant effect on organizational performance.

Organizational agility serves as a catalyst for enhancing both the financial and non-financial facets of an organization's operations. This emphasis extends beyond purely financial considerations to encompass critical internal operations, exerting an indirect yet substantial influence on financial returns. Consequently, the performance of organizations hinges on the intricate interplay between technological capabilities, business processes, and the prevailing business environment, while the crux of agility's significance lies in an organization's ability to continuously monitor various facets of its business and respond promptly, thereby bolstering its overall performance [35] Wanasida [35] the focus was on unraveling the impact of technological capabilities on an organization's performance and agility. The findings underscored the substantial effect of technological capabilities on information quality and innovation capability, subsequently enhancing the organization's agility. Moreover, it was established that organizational agility directly influences overall organizational performance. Furthermore, study [9] delved into examining the influence of technological capabilities on organizational agility and its empirical effect on the performance of startup fishing companies in Indonesia. The empirical evidence from this study firmly supports the notion that organizational agility plays a pivotal role in shaping organizational performance. Based on these arguments, the following hypothsis is proposed:

H8: Organizational agility has a positive and significant effect on organizational performance.

3. METHOD

In light of our study to examine the impact of SE on technology adoption and usage in business environments and its impact on organizational agility and performance. We developed a questionnaire, drawing upon insights from prior research within the same domain. We initiated the process by conducting comprehensive database searches employing relevant keywords to identify pertinent studies. The resulting questionnaire is structured into two primary sections. The first segment encompasses the demographic profiles of the study participants, while the second segment comprises questions employing a Likert scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree), designed to measure the constructs outlined in the proposed model. The study adapted items for use from previous studies. Specifically, items assessing SE were adapted from [33] while those measuring BI used items from [29]. Performance and agility were assessed using items from [32], [34] respectively. While the items measure experience extracted from [36], VE from [37] and PS from [38]. This comprehensive adaptation of items ensures that our study is consistent with established measurement frameworks, enhancing the reliability and validity of our data collection. To ensure alignment with the terminology and concepts prevailing in the field of study, the questionnaire was initially prepared in English. To enhance the questionnaire's quality, we sought the input of four instructors from the Information Technology Department at Yarmouk University, Jordan. Their valuable feedback on question quality, clarity, and their aptitude for measuring the phenomenon under investigation was instrumental. Further input was solicited and employees, incorporating all their feedback to effect necessary improvements. Subsequently, the questionnaire underwent translation into Arabic to ensure accessibility for participants with limited proficiency in English. The final questionnaire was created using Google Forms, and the link was broadly distributed across social media platforms, forums, and online communities, thereby affording diverse respondents ample opportunity to participate. It is essential to emphasize that participation in this study was entirely voluntary and not accompanied by any financial incentives. The study sample encompassed a total of 174 individuals, drawn from various sectors including both private and government, all of whom contributed by completing the questionnaire. The resulting dataset, which is suitable for analysis, was subjected to examination using the "SPSS" software. This analysis included both descriptive statistics, which provided a comprehensive overview of the participants' demographic characteristics, and predictive statistics aimed at processing the available data based on the study's sample size. Table 1 provides a detailed profile of the study's respondents.

Table 1. The respondents' profile

Category	Type	Frequency	Percentage
Gender	Male	58	33.3
	Female	116	66.7
Age	From 18-25	77	44.3
	From 26-35	15	8.6
	From 36-45	35	20.1
	>=46	47	27
Job Type	Private Sector	84	48.2
	Public Sector	90	51.8

4.   DATA ANALYSIS

When conducting the data analysis for this study, a careful and comprehensive approach was adopted to ensure comprehensive examination of all available data. No data was excluded during the analysis process, emphasizing a commitment to transparency and maintaining the integrity of the data set, ensuring that the entire data set was taken into account when drawing conclusions and providing interpretations. By choosing a comprehensive approach, potential biases and selective omissions were mitigated, promoting robust and unbiased representation of participant responses. This strategy enhances the reliability and validity of the results, providing a comprehensive, unfiltered picture of the relationships and patterns observed within the data set. In the context of our study, the analysis of the collected data was conducted utilizing IBM SPSS Statistics version 20.0. In order to proceed with the examination of the gathered data, it was imperative to assess the prerequisites for conducting a linear regression analysis. These prerequisites included evaluating the assumptions of linearity, normality, multicollinearity, and the identification of potential outliers.

4.1. Linearity

Our assessment of the linearity assumption as proposed by [39] was supported by scatter plot of SE versus BI Figure 2 which demonstrats a distinct linear trend characterized by uniformly and randomly distributed data points throughout the chart. This observation affirms the fulfilment of the linearity assumption, bolstering the validity of our findings.
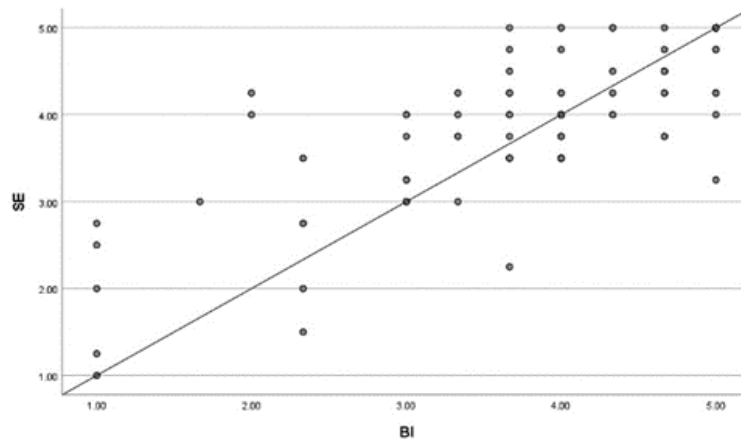

Figure 2. SE VS. BI Scatter

4.2. Normality

The examination of residuals data Figures 3 and 4 show a well-distributed pattern across the charts with no pronounced skewness. This observation aligns with the recommendations of study [39] guidelines and provides compelling evidence for the fulfillment of the normality assumption.
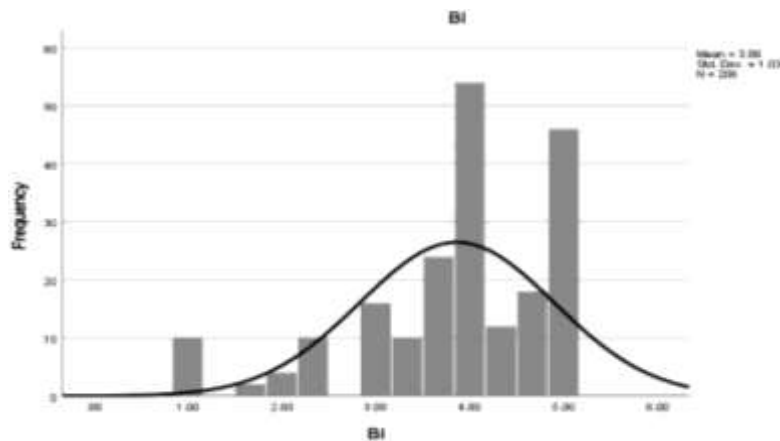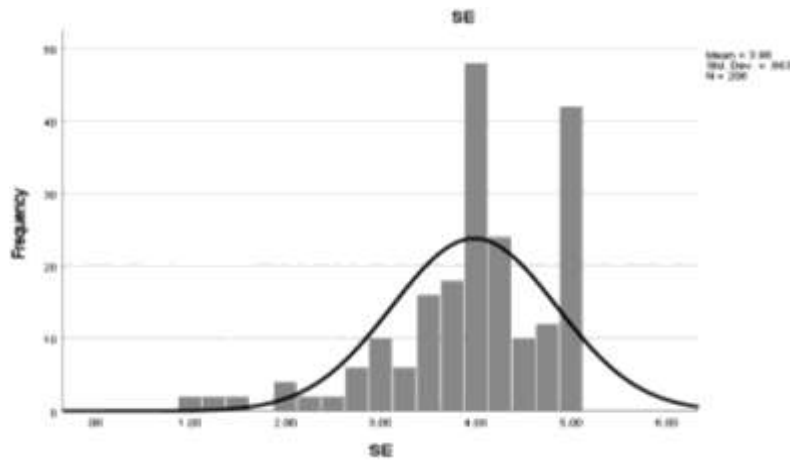

Figure 3. Histogram of BI

Figure 4. Histogram of SE

4.3. Multicolinearity

Variance inflation factor (VIF) values, presented in Table 2, consistently fell below or equal to 4, signifying the absence of noteworthy multicollinearity concerns [39]. Furthermore, tolerance values for all predictors surpassed the 0.10 threshold, indicating our ability to discern predictors that make substantial contributions to the dependent variable.

Table 2. Collinearity statistics

Model	Unstandardized coefficients		Standardized coefficients	Collinearity statistics	
	B	Std. error	Beta	Tolerance	VIF
(Constant)	.985	.159			
PS	.121	.060	.237	.402	2.487
SP	.003	.046	.329	.584	1.713
VE	.163	.052	.052	.383	2.611
EX	.481	.063	.132	.305	3.274

4.4. Outlier analysis

Our assessment of outliers, as indicated by the Durbin-Watson statistic in Table 3, resulted in a value of 1.969, which closely approximated the ideal value of 2. This finding suggests that there is no violation of the independence assumption for the residuals data, supporting the adequacy of the regression model. Moreover, it indicates the absence of outliers or influential points that could significantly affect the regression analysis, as outlined by [39].

These results collectively support the reliability of our linear regression model. The fulfillment of these crucial assumptions enhances the credibility of our findings, and it underscores the validity of our approach in examining the relationships between the predictor variables and the dependent variable. The robustness of our regression model ($R^2 = 0.674$) instills confidence in the validity of our results. Businesses can rely on this model to make informed decisions about resource allocation, employee training, and technology investments. Understanding the drivers of SE and the consequent impact on BI adoption, agility, and performance empowers organizations to optimize their strategies.

Table 3. Outlier statistics

Model	R	R square	Adjusted R square	Std. error of the estimate	Durbin-watson
1	.821[a]	.674	.667	.49812	1.969

a. Predictors: (Constant), EX, SP, PS, VE
b. Dependent Variable: SE

5.   RESULTS AND DISCUSSION

In this section, we present and discuss the results of our analysis, which investigated the relationships among various factors, including PS, SP, VE, experience (EX), SE, BI, organizational agility (A), and organizational performance (P). Our study aimed to test a series of hypotheses regarding the

influence of these variables on SE and their subsequent effects on the uasge of BI, then the impact on organizational agility, and performance.

To investigate the first four hypotheses (H1 to H4), we conducted a linear regression analysis to examine the effects of EX, SP, VE, and PS on SE. The results of the regression analysis as shown in Table 4 indicate that EX has a significant positive effect on SE (β = 0.552, p < 0.001), supporting H1. Additionally, VE (β = 0.205, p = 0.002) and PS (β = 0.127, p = 0.047) also have positive and significant effects on SE, providing support for H2 and H4, respectively. However, SP did not show a significant effect on SE (β = 0.003, p = 0.947), hence H3 is rejected.

Table 4. Coefficients

Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.985	.159		6.205	.000		
	PS	.121	.060	.127	1.999	.047	.402	2.487
	SP	.003	.046	.003	.066	.947	.584	1.713
	VE	.163	.052	.205	3.151	.002	.383	2.611
	EX	.481	.063	.552	7.575	.000	.305	3.274

Our study's findings affirm the significance of fostering experience, VE, and PS in cultivating SE among individuals within businesses and companies. For organizations, recognizing and harnessing the influence of experience and the observation of others' experiences can be pivotal in nurturing a workforce with heightened SE. The study findings are alighned with the results of [12], [20], [22], [23]. Moreover, providing constructive PS further aids in this development. When employees possess enhanced SE, they tend to display increased confidence and motivation, enabling them to tackle challenges, innovate, and perform better. Ultimately, these empowered individuals contribute to a more productive and agile work environment, driving business success and resilience in the face of evolving market demands and complexities. This result maches the findings of [23], [25]. Thus, businesses can strategically utilize these insights to design better decision making systems, targeted training programs, mentorship initiatives, and feedback mechanisms that boost SE for better deployment of business intelliegent tools which consequently promotes growth and competitive advantage.

To investigate H5, we can look at the correlation between SE and BI as shown in Table 5. According to the correlation matrix, the correlation between SE and BI is highly significant (r = 0.784, p < 0.001). This strong positive correlation confirms H5, indicating that individuals with higher SE are more likely to effectively use BI tools. The significant positive relationship established between individuals' SE and their effective utilization of BI tools, as indicated by our findings, holds immense potential for business enterprises. This insight underscores the importance of nurturing and enhancing employees' self-belief in their abilities and skills, as it directly contributes to their proficiency in leveraging BI resources. This leads to providing top managers with accurate information that provides a strong base for making correct decisions. This helps them in achieving the company's strategic goals by increasing its agility and performance. This results maches the conclusuions of [6], [8], [9], [26]. By investing in employee development programs and initiatives that bolster SE, organizations can potentially unlock a higher level of BI utilization. As employees become more confident in their data analysis skills, they are likely to make more informed decisions, extract valuable insights from data, and contribute to enhanced BI practices. Ultimately, this synergy between SE and BI utilization can translate into better strategic decisions, increased operational efficiency, and a competitive edge in the marketplace.

To explore H6, we examine the relationship between BI and organizational agility (A). The correlation between these variables is also highly significant (r = 0.672, p < 0.001), providing good support for H6. This suggests that organizations that effectively utilize BI tools tend to exhibit greater agility in responding to market changes and adapting their strategies.

H7 posits a relationship between BI usage and organizational performance (P). The correlation analysis shows a significant positive correlation between BI and organizational performance (r = 0.762, p < 0.001), confirming H7. This implies that organizations that harness BI tools tend to achieve better overall performance outcomes. This finding aligned with [27], [29]. Finally, H8 focuses on the relationship between organizational agility (A) and organizational performance (P). The correlation between these variables is also significant (r = 0.667, p < 0.001), providing strong support for H8. This suggests that organizations with higher agility levels tend to achieve better performance outcomes, highlighting the importance of adaptability and responsiveness in today's dynamic business environment. This reslut maches the findings of [33], [35].

In light of our findings, which demonstrate a significant positive relationship between the effective use of BI Tools, organizational agility, and organizational performance; businesses enterprises can derive

substantial benefits from these results in their respective fields. By investing in the adoption of BI tools and fostering a culture of data-driven decision-making, organizations can not only enhance their agility in responding to market dynamics but also improve overall performance. The ability to quickly adapt to changing circumstances, supported by robust data insights, empowers businesses to stay ahead of competitors, seize emerging opportunities, and mitigate risks more effectively. This synergy between BI, agility, and performance not only ensures sustained competitiveness but also positions organizations to thrive in an increasingly data-centric and rapidly evolving business landscape.

Our research underscores the pivotal role of individual sub factors of SE in fostering BI adoption. We reveal a significant correlation between BI utilization, organizational agility, and performance, shedding light on vital implications for both academic research and practical application. Our study accentuates the necessity of recognizing individual psychological elements in the realm of organizational technology adoption. By delineating the precise sub factors of SE that affect the utilization of BI tools, we offer researchers a deeper comprehension of the human aspects inherent in technology adoption processes. On the other hand, the observed relationship between the use of BI, organizational agility, and performance underscores the strategic importance of data-driven decision making in enhancing organizational effectiveness,this match with study [40]. Organizations that use BI tools effectively not only demonstrate greater agility in responding to market dynamics, but also achieve superior performance results. These findings indicate a shift toward data-centric organizational cultures and practices, with implications for strategic planning and resource allocation in modern organizations. Furthermore, our research highlights the interconnectedness between individual and organizational factors in shaping technology adoption and organizational performance. By recognizing the interplay between employee SE, AI adoption, and organizational outcomes, organizations can develop targeted interventions to improve their technology investments and empower their workforce.

Table 5. Correlation matrix

	PS	SP	VE	EX	SE	BI	A	P
PS	1							
SP	.590**	1						
VE	.610**	.565**	1					
EX	.734**	.522**	.760**	1				
SE	.660**	.483**	.705**	.803**	1			
BI	.685**	.555**	.706**	.753**	.784**	1		
A	.676**	.580**	.630**	.639**	.577**	.672**	1	
P	.707**	.619**	.764**	.708**	.752**	.762**	.667**	1

**. Correlation is significant at the 0.01 level (2-tailed).

6. CONCLUSION

This study addressed a significant gap in the literature by examining the relationships between SE, BI adoption, organizational agility, and performance within modern organizational contexts. By formulating and testing hypotheses, we contributed to a deeper understanding of the factors that influence the use of BI tools and their impact on organizational outcomes. Specifically, we identify that individual subfactors of SE play a pivotal role in influencing the adoption of BI tools. The study results emphasized the importance of experience, indirect experience, and physiological feedback in shaping employees' SE, and thus their tendency to deal with BI techniques. The results of our study also confirmed the positive and significant association between users' SE, use of BI, and organizational agility. Moreover, the observed positive relationship between BI use and organizational performance, underscores the strategic value of data-driven decision making to achieve superior organizational outcomes. In addition, our study provided strong evidence of the strong and positive effect of agility on organizational performance. This result also underscores the interconnectedness between organizational characteristics and their collective impact on overall performance.

While this study provides valuable insights, it is not without limitations and provides fertile ground for future research endeavors. Extending our study to different industries can unveil industry-specific nuances in the relationships between SE, BI adoption, agility, and performance. Investigating how these relationships evolve over time and under different market conditions would provide deeper insights into their dynamics. Furthermore, our study relies exclusively on a quantitative approach to test the model. In addition to this quantitative approach, incorporating a qualitative approach can reveal hidden issues related to building employee SE, using artificial intelligence, and enhancing business performance, as appropriate to specific workplace cultures. These considerations will guide our future research initiatives, contributing to a more comprehensive understanding of the multifaceted dynamics in the ever-changing business landscape and enhancing the long-term competitiveness of organizations across diverse industries.

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