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Business intelligence competence as a strategic enabler of organizational agility within supply networks

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Abstract

Purpose – This study investigates how Business Intelligence (BI) competence functions as a strategic enabler of organizational agility within supply networks. It examines the moderating role of BI competence in two critical relationships: between agile drivers and agile capabilities, and between agile capabilities and agile practices. In doing so, the study advances organizational agility theory by conceptualizing BI competence as a strategic and relational enabler that shapes agility development, rather than merely a technological support tool.

Design/methodology/approach – Using targeted sampling, 157 responses were collected through a structured questionnaire from manufacturing firms. The data were analysed using partial least squares structural equation modelling (PLS-SEM).

Findings – The results suggest that BI competence serves not only as a predictor of agile capabilities but also as a *contextual moderator,* particularly influencing the relationship between supply network capabilities and practices. This highlights a previously underexplored pathway in agility theory; whereby BI competence enables more effective translation of capabilities into actionable agile practices.

Originality/value – This is the first empirical work to examine the theoretical interplay between BI competence and agility constructs within a chain-network framework. It contributes to theory by advancing the understanding of BI as a strategic enabler and moderating force, rather than merely a technological tool. The study also offers practical insights for manufacturing firms in emerging economies seeking to build resilience and responsiveness within supply networks.

Keywords- Organisational agility; resilience, agile capabilities; business intelligence; sustainable supply networks; dynamic capabilities

Paper type- Research paper

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1. Introduction

Agility is increasingly recognized not only as a strategic necessity but also as a complex theoretical construct for organizations operating in dynamic and fast-paced environments (Badakhshan et al., 2020; Fasnacht & Proba, 2024). Organizational agility (OA) enables firms to respond swiftly to market fluctuations, manage uncertainty, and seize emerging opportunities with both speed and adaptability. Consequently, OA plays a pivotal role in enhancing resilience and sustaining long-term competitiveness.

Beyond its strategic importance, OA has attracted growing theoretical interest in explaining how firms develop, coordinate, and deploy capabilities amid environmental turbulence. It encompasses an organization's ability to meet new customer demands, adapt products and processes, respond to competitor innovations, and leverage new technologies to deliver better, faster, and more cost-effective solutions (Ashrafi et al., 2019). Although OA frameworks vary across studies, they generally converge on four central domains: Drivers, Enablers, Capabilities, and Practices (Sharif & Zhang, 1999; Gunasekaran, 1999; Sherehiy et al., 2007; Teece et al., 2016). However, the interactions among these domains, and the influence of contextual competencies such as Business Intelligence (BI) on their integration, have yet to be fully theorized.

The key factors driving organizational agility are referred to as "agility drivers," encompassing market forces, competitive pressures, technological advancements, and evolving customer expectations (Asadpour *et al*., 2022). Effective agility is further enabled by "agile capabilities," which include the skills, resources, and culture necessary for implementing agile practices (Rajaee *et al*., 2018). Developing these capabilities often requires training, investment in appropriate tools and technology, and fostering a culture of continuous improvement (Asadpour *et al*., 2022; Inman and Green, 2022; Suresh, 2022). These capabilities ultimately materialize in agility practices, iterative, collaborative, and transparent approaches that embed agility into the organization's core processes (Rahimi *et al*., 2020; Suresh, 2022).

In recent years, the role of BI has increasingly gained attention as an enabler of organizational agility. BI facilitates access to timely and relevant data and insights, allowing organizations to adapt quickly to environmental changes. According to Seo and LaPaz (2008), OA encompasses processes that help an organization detect changes in both internal and external environments and respond effectively. BI enhances this process by equipping firms with data-driven insights that

support quick and informed decision-making (e.g., Huang *et al*., 2022; Jafari *et al*., 2023). Scholars emphasize BI's role as a catalyst for agility, highlighting its importance in enabling organizations to respond proactively to market dynamics (Appelbaum *et al*., 2017; Alfalla-Luque *et al*., 2023). Yet, existing literature have mainly focused on examining BI's influence on organizational agility through direct relationships, without fully exploring the underlying mechanisms that explain how or why this influence occurs (Larson and Chang, 2016; Ashrafi *et al*., 2019; Cheng *et al*., 2020).While there is growing interest in the relationship between BI and organizational agility, most studies continue to focus on direct associations, with limited attention to the role of BI competence as a moderating factor within agility frameworks. Previous studies have overlooked how BI competence moderates/conditions the relationship between capabilities and practices. This presents a significant research gap. Specifically, little is known about how BI competence might strengthen the link between agile capabilities and agility practices, enabling organizations to proactively navigate uncertainties and respond dynamically to shifting market conditions. Addressing this gap is essential for advancing our understanding of BI not merely as a data management tool, but as a strategic enabler of agility with influence across multiple organizational levels.

Our study seeks to address this gap by investigating the moderating role of BI competence on the relationships between agility drivers, capabilities, and practices. Specifically, the research aims to determine the extent to which BI competence shapes an organization's progression from sensing environmental changes to developing agile capabilities and ultimately embracing agile practices. To achieve this, we focus on the Jordanian manufacturing sector, a rapidly growing industry that has emerged as a key contributor to the country's GDP. This context offers a valuable opportunity to deepen our understanding of these relationships within a dynamic emerging market. Thus, this study addresses the following research questions:

RQ1: Does business intelligence competence moderate the relationship between agile drivers and agile capabilities?

RQ2: Does business intelligence competence moderate the relationship between agile capabilities and agile practices?

By addressing these questions, this study contributes not only to empirical insights into how BI competence supports agile transformation, but also to the ongoing theoretical conversation about

the structure and sequencing of agility constructs. It offers a novel perspective on how BI competence acts as a conditional enabler that strengthens or weakens specific links within the agility chain.

The following sections of the paper are structured as follows: In Section 2, insights from existing literature are synthesized to construct a theoretical framework, along with a set of proposed hypotheses. Section 3 outlines the research methodology and details the data collection process. The results of the data analysis are communicated in Section 4, including an in-depth discussion of the findings and their implications. Lastly, Section 5 provides concluding remarks, addressing research limitations, and offering recommendations for future research endeavors.

2. Literature review and research hypotheses

2.1 Chain Relationships within Agility Frameworks

Organizational Agility (OA) is a multidimensional phenomenon that numerous scholars have attempted to portray, define, and conceptualize in accordance with its domain and context (Zitkiene and Deksnys, 2018). For example, Zhang and Sharifi (2000) anticipated a theoretical agile framework comprising three interrelating core areas: agility drivers, agility capabilities, and agility providers or agile practices (Vázquez-Bustelo *et al*., 2007). Though Zitkiene and Deksnys (2018, p 126), proposed a theoretical agile framework and stated that their resolution is to "construct a more unified and universal framework that can be applied to different types of organizations, regardless of their industry or business model". Therefore, different frameworks have appeared, while these frameworks to some extent differ in terminology and concepts used, they take inspiration from each other and thus share similarities that can be related to four major domains that constitute OA: Drivers, Enablers, Capabilities, and Practices. While enablers and capabilities operate concurrently—each enhancing the other and mitigating weaknesses in less agile components. However, enablers and capabilities operate simultaneously, reinforcing each other and mitigating weaknesses in less agile components of the organization (Zitkiene and Deksnys, 2018). Therefore, these two elements function in a mutually supportive manner, strengthening each other and contributing to the robustness of the organization's agility framework (Karlstedt and Hellenborg, 2020). Considering this argument, this work narrows its focus to examine the internal

dynamics of agile capabilities within organizational contexts, steering clear of a broader examination that incorporates enablers.

Based on the agility frameworks, this paper explores the chain of relationships between the agility domain consisting of drivers, capabilities, and practices. Accordingly, the journey to be an agile organization starts with the drivers of agility which means the causes and the reasons to be an agile organization (Christopher, 2016; Jum'a, *et al*., 2024). These agility drivers pressure organizations to adapt to the changing environment thus maintaining or gaining competitive advantage (Ciccullo *et al*., 2020). Agile drivers are the motivating factors or key principles that prompt organizations to adopt agile methodologies. These drivers often include a need for increased flexibility, faster time-to-market, improved collaboration, and enhanced responsiveness to changing requirements (Zanjirchi and Mirhoseini, 2017). These drivers are often rooted in external changes within the competitive environment, driven by turbulence, uncertainties, and business pressures (Lin *et al*., 2006). Drivers such as changes in customer requirements, competition criteria, market dynamics, technology, and social factors prompt organizations to recognize the need for agility (Asadpour *et al*., 2022; Alfalla-Luque *et al*., 2023). Once the change is sensed and recognized, decision-makers should take inventory of current situation in the organization by answering the question 'what resources do we have to address the changes in the environment? and do we have necessary abilities (capabilities) to utilize those resources and adapt to the changes?' which means agility drivers induce the need for agility capabilities of the organization (Khatri *et al*., 2018). In other words, once the inventory is established, organizational decision makers should respond to the environment drivers by utilizing these capabilities (Asadpour and Shirouyehzad, 2019; Asadpour *et al*., 2022; Al-Masa'fah *et al*., 2024; Abushaikha *et al*., 2025).

The second step is to develop capabilities which represent the essential strategic abilities that organizations must possess to respond effectively to change (Sharifi *et al*., 2001; Rajaee *et al*., 2018; Abushaikha, 2018). Agile capabilities refer to the specific skills, practices, and organizational attributes that enable a company to successfully implement agile methodologies. These capabilities may include effective communication, continuous feedback loops, cross-functional collaboration, iterative development, and the ability to respond quickly to change. They are closely tied to an organization's capacity to sense and respond to external shifts in the environment (Roberts and Grover, 2012; Teece *et al*., 2016). Therefore, agile drivers and agile

capabilities are interconnected elements within an agile framework. Furthermore, researchers have found a strong positive relationship between drivers and capabilities (Fawzy and Saad, 2023). This relationship between agile drivers and agile capabilities rests in the fact that the drivers require the development and development of specific capabilities within an organization (Hoek *et al*., 2001). Capabilities are a pool of individual agile capabilities which works together through compensation and improvement to drive the organization forward to agile standing (Park *et al*., 2023). This movement leads to actions undertaken by agile organizations to efficiently steer and adapt to their environment. Consequently, these individual acts develop into agile practices, ultimately resulting in enhanced organizational agility performance and outcomes such as the introduction of new products or modifications to procedures (Leite and Braz, 2016). The interconnectedness between agile capabilities and practices is crucial for the effective incorporation of agile methodologies within an organization. In the context of agile frameworks, it is postulated that capabilities act as drivers for practices (Zitkiene and Deksnys, 2018). To summarize, the associations among Drivers, Capabilities, and Practices are complex and deeply interconnected. Based on the preceding discussion, these chain relationships are illustrated in Figure 1.

< Insert Figure 1 >

2.2 Business Intelligence and Agility

Business intelligence (BI) is a set of processes that collect data from different sources, clean and merge data, as well as present the findings in a way that can help decision-makers in businesses make better decisions (Mariani *et al*., 2018). Furthermore, the term is characterized as a cooperative mechanism or system by which a firm can search and absorb information from a volatile environment to determine a possible chance while minimizing the risks associated with uncertainty (Cheng *et al*., 2020). Researchers identify three major uses of BI. First, BI integrates a wide range of data into a single repository, providing a single enterprise-wide view via management dashboards and reports (Long *et al*. 2012). Second, BI transforms data into information that is valuable for managers to evaluate options (Acar *et al*., 2010). Third, BI delivers the capacity to identify the root cause of problems by providing information drill down (Hocevar

et al. 2010). Moreover, Dughi (2022) lists some benefits offered by utilizing BI tools in supply networks, including easy data collection and sharing for remote teams, real- time data analysis, low upfront and total ownership costs, and improved collaboration. Therefore, BI supports managerial decision-making in rapidly changing environments by providing insights derived from data analysis (Isik *et al*. 2013). In addition, Sangari and Razmi (2015) identified key competencies essential for BI success, categorizing them into three dimensions: managerial, cultural, and technical competencies. Furthermore, he defined BI competences as the ability of the organization to produce business intelligence services and programs and to use them to make decisions efficiently and effectively. Shanks *et al*. (2010) established that BI use in an organization assists managers in taking value creating actions by relying on facts or information provided by BI query and reporting. Therefore, researchers emphasize the role of BI in offering early insights into business possibilities and disruptions through data-driven decision-making and information exchange (Chen and Siau, 2020).

Hence the value of organizational agility is derived from two dimensions: the ability to sense or detect environmental changes and the ability to respond to them (Chen *et al*., 2012). BI supports this dual function by enhancing an organization's capacity to perceive and react to environmental shifts (Roozitalab and Sayadi, 2018; Chen and Lin, 2021). Tominc *et al*. (2023) pointed out that BI is one tool that has the potential to become a critical enabler of agility. Furthermore, the BI's role in organizational agility can also be found in the existing IS research on the topic (Mikalef and Pateli, 2017; Chen and Siau, 2020). Hence, scholars and practitioners have paid close consideration to the themes of agility and business intelligence (Skyrius and Valentukevičė, 2020; Cheng *et al*., 2020; Obidat *et al*., 2023; Jafari *et al*., 2023). Overall, BI contributes to organizational agility by improving data-driven sensing and responsive capabilities, positioning it as a foundational technology for achieving agility in dynamic environments (Roozitalab and Sayadi, 2018; Chen and Lin, 2021).

2.3 Theoretical Framework and Hypotheses

Since competition in the modern business environment has shifted from individual organizations to supply chains (Cabral *et al*., 2012), improving supply chain competitiveness has become increasingly critical to business success. Information technologies, particularly BI, play a

vital role in enhancing supply chain performance by enabling data-driven decision-making, promoting integration across stakeholders (Towers *et al*., 2020), and supporting user-friendly analytics tools such as customizable dashboards and interactive reports—even for non-technical users (Toorajipour *et al*., 2021). The importance of IT, including BI, in supporting logistics efficiency and fostering coordination across all supply network participants has been widely acknowledged (Tozin and Amaro, 2022).

In today's constantly changing environment, agility in supply chain is identified as a key element of competitiveness (Li *et al*., 2008; Alfalla-Luque *et al*., 2023) enabling firms to gain strategic advantage by responding effectively and promptly to market volatility and other uncertainties (Gligor and Holocomb, 2014; Dubey *et al*., 2018; Alfalla-Luque *et al*., 2023). Kaur, (2021, p. 47) stated that "increasing business intelligence competence of the company will enhance the performance of the company response speed and agile performance". Building on this insight, this study investigates the impact of BI competence on the chain of relationships within the adopted agility framework in the context of a supply network as presented in Figure 1.

Drawing from prior literature on the interconnections among agility domains, and the established role of BI in supporting agility, this paper proposes a theoretical framework to investigate the impact of BI within the adopted agility framework as depicted in Figure 2. At its core, the framework conceptualizes agility drivers as stimuli that influences agility capabilities, which in turn determines the adoption of agility practices within organizations. However, the integration of BI competence introduces an additional layer of complexity to this framework. Specifically, BI competence is theorized to moderate both the relationship between agility drivers and capabilities, and the link between capabilities and practices. To account for contextual variation, the model also includes industry type as a control variable, recognizing that industry-specific characteristics—such as competitive intensity and technological dynamism—may shape how agility practices are implemented (see Oliveira *et al*., 2014).

< Insert Figure 2 >

Based on the proposed theoretical framework, this paper put forward the following alternative hypotheses:

Ha1: Supply network agility drivers positively influence supply network agility capabilities, defined in terms of alertness and response capability.

Ha2: Supply network agility capabilities positively influence supply network agility practices, defined in terms of alertness, accessibility, decisiveness, swiftness, and flexibility.

The extent to which BI competence moderates the relationship between agile drivers and agile capabilities, as well as the relationship between agile capabilities and agile practices within organizations. The rationale for examining this moderating effect is fivefold. First, understanding how BI competence moderates the relationships between core organizational factors can reveal whether the effectiveness of those factors depends on an organization's level of BI maturity; this deeper understanding can inform strategic decision-making and resource allocation. Second, BI competencies may affect how other organizational drivers, capabilities, and practices interact with each other. Understanding these moderating effects can help organizations allocate resources more effectively, focusing investments on areas where BI competencies can amplify the impact of other initiatives. Thirdly, including BI competencies as a moderator variable in statistical models can enhance their predictive power. By accounting for the moderating effect of BI competencies, researchers can develop more accurate models that better reflect the complex interplay between organizational factors and outcomes. Fourthly, knowledge of how BI competencies moderate relationships between different organizational factors can guide the development of targeted interventions aimed at enhancing organizational performance. For example, organizations may focus on improving BI competencies to maximize the effectiveness of existing strategies or initiatives. Fifthly, several frameworks for understanding organizational agility highlight the importance of information processing capabilities, such as BI competencies. Investigating the moderating role of BI competencies can provide empirical validation of these frameworks and help refine our theoretical understanding of the mechanisms through which organizational agility is achieved.

It is essential for an agile organization to embrace agility practices, incorporating specific methodologies that develop agility (Rahimi et al., 2020). The latter implies selecting and implementing practices affiliated with organizational goals and addressing identified agility

drivers. Actions may include reforming workflows, adopting iterative and incremental development, and underlining collaboration and transparency. As a result, the organization shifts into an agile state and is portrayed by the successful incorporation of agility into its core identity. This demands a cultural shift where agility is not simply a set of practices but a universal mindset throughout the organization (Suresh, 2022). The process involves nurturing a culture of agility by fostering values such as adaptability, collaboration, transparency, and customer focus (Abbaszadeh et al., 2023).

The moderating role of BI competence can be understood through its influence on how information and insights are used within the organisation. BI competence enhances coordination, data-driven decision-making, and communication across functions, which are all essential for turning agile capabilities into tangible practices. This explains why its moderating effect is stronger at the capability–practice stage, where information use and collaboration are critical, than at the driver–capability stage, which is primarily shaped by external market pressures. Accordingly, we expect BI competence to play a greater role in enabling the effective execution of agility rather than its initial formation.

In summary, examining the moderating effect of BI competence offers valuable insights into how organizations can leverage their information processing capabilities to strengthen the impact of other organizational factors and enhance overall performance. Accordingly, this study proposes two additional alternative hypotheses as follows:

Ha3: Business Intelligence (BI) competence moderates the relationship between supply network agility drivers and supply network agility capabilities, such that higher BI competence strengthens this relationship.

Ha4: Business Intelligence (BI) competence moderates the relationship between supply network agility capabilities and supply network practices, such that higher BI competence enhances the translation of capabilities into effective agile practices.

3. Methodology

3.1 Data collection

This study focused on Jordanian companies operating within the manufacturing sector. A targeted sampling approach was adopted. The population comprised all manufacturing firms registered with the Amman Chamber of Industry that are classified as large and have operated for more than five years. This yielded a total population of 200 companies. To ensure clarity and minimize ambiguity, the questionnaire was carefully designed to avoid vague concepts and phrased using straightforward, accessible language. A structured questionnaire was used to collect data and test the hypotheses, helping to mitigate social desirability bias. Confidentiality was assured to participating companies and individual respondents. The questionnaire included a cover letter outlining the study's relevance and contribution to the field of organizational agility.

A single representative from each firm was selected to complete the questionnaire. To maximize engagement and improve response rates—given the general tendency of firms in Jordan to overlook email or postal surveys—the questionnaires were delivered and retrieved through direct contact with the participating organizations. A total of 157 questionnaires were completed and returned, yielding a valid response rate of 71.36%. After data cleaning and coding, these responses were used for subsequent analysis. Table I summarizes the respondents' demographic and organizational characteristics.

Structural equation modeling (SEM) was employed to assess the proposed model, using the SmartPLS 3.0 software. Partial Least Squares SEM (PLS-SEM) was chosen due to its advantages in exploratory and confirmatory research settings, its ability to handle complex models with smaller sample sizes, and its robustness to non-normal data distributions (Hair et al., 2013; Kock, 2015). Compared to covariance-based SEM (CB-SEM), PLS-SEM is better suited for studies focused on theory development and model prediction (Azila-Gbettor and Abiemo, 2021). The final sample size of 157 met the recommended threshold of at least 150 observations for SEM analysis (Anderson and Gerbing, 1988; Ding *et al*., 1995; Kline, 2004).

< Insert Table I >

3.2 Measurement

The study adopts the firm as the unit of analysis, focusing on how manufacturing firms develop and apply agility within their wider supply network environments. Thus, while data were collected from individual firms, the conceptual framing reflects the inter-organisational context in which these firms operate.

To measure the variables under investigation, this study employed a structured questionnaire based on previously validated scales, adapted to the research context. All items were measured using a five-point item-specific Likert scale. Agility drivers in the supply network were conceptualized following Darvishmotevali *et al*. (2020) as environmental uncertainties that influence strategy formulation and implementation, thereby impacting organizational creativity and agility. Accordingly, this study adopts items from Chen and Paulraj (2004), Liang *et al*. (2010) to assess supply chain environmental uncertainty, as detailed in Appendix A. To measure supply network agile capabilities, thus study employed the instrument developed by Li *et al*. (2008, 2009) which includes 12 items capturing timeliness and flexibility. These items assess six agile capabilities categorized into two components: the first emphasizing alertness capabilities, and the second highlighting response capabilities (Li et al., 2009) as detailed in Appendix A.

Each of the three dimensions of supply network BI competence—managerial, technical, and cultural—was assessed using specific measurement scales presented in Appendix A. Managerial competence was measured through seven items that captured respondents' perceptions of the efficiency and effectiveness of various attributes of the BI process within the supply network. These attributes were derived from prior BI literature, particularly the works of Lönnqvist and Pirttimäki (2006), Jourdan *et al.* (2008), Power (2008), and Petrini and Pozzebon (2009). Technical competence was assessed using nine items, reflecting the effective use of tools and technologies associated with BI. These items aligned with technical definitions found in works by Kudyba and Hoptroff (2001), Giovinazzo (2002), Herschel and Jones (2005), and Lin et al. (2009). Regarding cultural competence, it was measured using eight items that examining beliefs about BI's application in supply chain management activities and its strategic value in realizing success, as informed by previous studies (Curry and Moore, 2003; Li and Lin, 2006, Fawcett *et al*., 2007; Choo *et al*., 2008).

For each of the five dimensions of supply network agile practices—Alertness, Accessibility, Decisiveness, Swiftness, and Flexibility—measurement scales were adopted from established

studies (Tachizawa and Gimenez, 2010; Martinez-Sanchez and Lahoz-Leo, 2018) and are detailed in Appendix A.

3.3 Analytical strategy

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed hypotheses, following the methodological guidelines of Sarstedt *et al*. (2022). Again, PLS-SEM is particularly suited for prediction-oriented research and theory development (Urbach and Ahlemann, 2010). The model evaluation follows a two-step approach as recommended by Henseler *et al*. (2009): (1) assessment of the measurement model, and (2) assessment of the structural model. In the measurement model, internal consistency reliability, convergent validity, and discriminant validity are evaluated, and the relationships between latent variables and their corresponding manifest indicators are examined. In the structural model, bootstrapping procedures are employed to determine the statistical significance of path coefficients and assess the explained variance (R^2) of the dependent constructs.

To assess the potential impact of common method bias (CMB), procedural and statistical remedies were applied. Procedurally, the questionnaire assured respondents of anonymity, used clear and neutral wording, and separated measurement items for predictors and outcomes to reduce evaluation apprehension and consistency motives. Statistically, Harman's single-factor test indicated that no single factor accounted for the majority of variance, suggesting that CMB was not a major concern. In addition, a full collinearity assessment (VIF values < 3.3) confirmed the absence of serious multicollinearity or single-source bias. These steps collectively suggest that CMB is unlikely to have significantly influenced the study's results (for example, see Chow *et al*., 2008; Podsakoff *et al*., 2003).

4.0 Results

4.1 Examining fitness of the measurement model

In the measurement model, convergent validity is being tested by examining factor loadings, composite reliability (CR) and the average variance extracted (AVE) as per the recommendation of Hair et al. (2017). The next stage is to test the discriminant validity of the

model to compare the correlation between constructs as well as the square root of the AVE from that construct (see; Fornell and Larcker, 1981; Darwish *et al*., 2016).

Braunscheidel and Suresh (2009) point out that PLS does not use fit indices, unlike covariance-based SEM. Accordingly, the good model fit in PLS is established with a significant path coefficient, acceptably high R-square values and internal consistency/construct reliability should be greater than 0.70 for each construct (Gefen et al., 2000). Table II showed the summary results of convergent validity analysis for all the constructs. Cronbach's alpha minimum value of 0.70 was considered acceptable for current scales, and value 0.60 is deemed suitable for newly developed scales (see Nunnally, 1978). The existing Cronbach's alpha values ranged from 0.732 to 0.921, implying a higher bound estimate of reliability (Gefen *et al*., 2000). The Composite Reliability (CR) values were greater than 0.60, factor loadings were significant and above 0.60, which shows sufficient convergent validity (Fornell and Larcker, 1981), and the cut-off values of rho_A were greater than 0.70, indicating adequate composite reliability (Dijkstra and Henseler, 2015).

Following the assessment of loadings and composite reliability, the next step is to evaluate convergent and discriminant validity of the measurement model. Convergent validity is assessed using Average Variance Extracted (AVE), as recommended by Fornell and Larcker (1981), who suggest that the AVE should be equal to or exceed 0.50. In this study, AVE values ranged from 0.521 to 0.879, all of which surpassed the recommended threshold, thereby confirming that the measurement model satisfies the criterion for convergent validity.

The subsequent task is to examine discriminant validity of the measurement model. In determining discriminant validity, the current study used both Fornell and Larcker's (1981) criterion and Chin's (1998) cross-loading criterion as recommended by Henseler *et al*. (2009). Table III demonstrates the square root of the AVE of the latent constructs supersedes the correlations of other variables which fulfilled the suggested criteria of Fornell and Larcker (1981), which show sufficient levels of discriminant validity. In summary, the results confirm that the measurement model is both reliable and valid, as presented in Figure 3.

< Insert Table II >

< Insert Table III >

< Insert Figure 3 >

4.2 Assessing the Structural Model

Before proceeding with the analysis, there are no significant correlations between the control variable (type of manufacturing) and agility practice dimension used in the study. Coefficient of determination (R^2), effect size (f^2), t-values and out sample prediction (Q^2 > zero) were determined to evaluate the structural model (Hair *et al*., 2019) as shown in Table IV. T-values were identified based on 5000 bootstrapping procedures (Hair *et al*., 2019). Accordingly, the results shown in Table IV revealed the good predictive relevance of model (Shmueli *et al*., 2019). Table IV showed that the impact of agile drivers on agile capability (Ha1) was supported ($\beta = 0.607$, $p < 0.000$), whereas the effect of agile capability on agile practices (Ha2) was supported ($\beta = 0.676$, $p < 0.000$).

< Insert Table IV >

The next step is to test the moderating effect of BI competence as proposed. Figure 4 illustrates the moderation analysis by applying the approach of PLS product indicator (Chin *et al*., 2003) to examine the moderation effect of BI competence on the relationship between Driver, Capability and Practices constructs. According to Henseler and Fassott (2010), if there is a significant interaction effect, then it confirms the significance of the moderator as shown in Figure 5. To test the moderation effect of BI competence on the relationship between Agile Driver and Agile Capability, the value of standardized path coefficient was – 0.118 for the interaction term (moderator effect 2), which is not significant ($p < 0.231$, $t = 1.199$). Furthermore, the confidence interval did establish zero value (- 0.335, 0.053). In addition, at 1SD above and below the mean score, BI competence did not weaken or strengthen the relationship between Agile driver and agile capability as shown in Figure 5 (Moderation effect 2). Hence, Ha3 was not supported, which also was evident by the insignificant effect on R^2. However, testing the moderation effect of BI competence on the relationship between Agile Capability and agile Practices (Ha4), the analysis

reveals a significant effect on the relationship. The results reveals that the value of standardized path coefficient was – 0.135 for the interaction term (moderation effect 1), which is significant ($p < 0.011$, $t = 2.548$). Furthermore, the confidence interval for the interaction term did not include zero (−0.239, −0.031), indicating statistical significance. In addition, when tested at one standard deviation above and below the mean, BI competence was found to strengthen and weaken, respectively, the relationship between Agile Capabilities and Agile Practices, as illustrated in Figure 5 (Moderation Effect 1). Hence, hypothesis Ha4 was supported, demonstrating a significant impact on R^2, which increased from 0.456 to 0.646. The corresponding results are reported in Table V. Although, the moderation effect of the BI competence on the relationship between Agile Driver and Agile capability was insignificant, Table V also reveals that BI competence, when treated as an independent variable, significantly predicts Agile Capabilities, as shown in Figure 6.

< Insert Table V >

< Insert Figure 4 >

< Insert Figure 5 >

< Insert Figure 6 >

Although the interaction term for Ha4 shows a negative and significant coefficient ($\beta = -0.135$, $p < 0.011$), the plotted simple slopes (Figure 5) indicate that the relationship between agile capabilities and agile practices is stronger at higher levels of BI competence. This pattern arises because the latent variable scores in the PLS product-indicator approach are mean-centred, which can invert the sign of the interaction coefficient without altering its substantive meaning. Accordingly, the interpretation remains consistent with our theoretical expectation that BI competence enhances the translation of capabilities into agile practices.

5. Discussion and Conclusion

The primary objective of this study was to investigate how BI competence moderates the relationships among agile drivers, agile capabilities, and agile practices within manufacturing companies in Jordan, as structured by established agility frameworks. To achieve this, the analysis initially focused on confirming the interconnectedness of these three agile constructs. Hypotheses Ha1 and Ha2 were proposed, asserting that agile drivers affect agile capability, and agile capability,

in turn, affects agile practices. The results of the tests supported H1, indicating that agile drivers indeed influence agile capability. Similarly, the test results for H2 affirmed that agile capability has an impact on agile practices.

Having established the chain of relationships, the study then aimed to assess the moderating role of BI competence. Two additional hypotheses (Ha3, Ha4) were deducted to explore this moderating effect. While the test for Ha3 did not confirm that business intelligence competence moderates the relationship between agile drivers and agile capabilities, further analysis suggested that BI competence can be regarded as an independent variable in predicting agile capability. On the other hand, the test for Ha4 validated that business intelligence competence does moderate the relationship between agile capabilities and agile practices. This implies that BI competence, when coupled with developed capabilities, shapes the type of agile practice an organization should adopt to enhance overall agility.

The role of BI in fostering agility is well-documented in the information systems literature (Mikalef and Pateli, 2017; Chen and Siau, 2020), with both scholars and practitioners increasingly focusing on the intersection of BI and organizational agility (see, for example, Skyrius and Valentukevičė, 2020; Cheng *et al*., 2020; Alshawabkeh, 2023; Obidat *et al*., 2023; Jafari *et al*., 2023). Tominc *et al*. (2023) underscore the transformative potential of BI, positioning it as a powerful tool for enabling agility. This aligns with previous research suggesting that BI enhances an organization's capacity to sense and respond to dynamic and volatile environmental conditions (Roozitalab and Sayadi, 2018).

Our findings reinforce this perspective and provide more nuanced insights by revealing that BI competence—particularly when integrated with well-developed agile capabilities—helps shape and guide the adoption of agile practices. In essence, BI competence acts as a strategic catalyst that amplifies the organization's ability to translate sensing and response capabilities into concrete, agile operational behaviors. This insight extends existing studies, such as Chen and Lin (2021), by demonstrating that it is not simply the presence of BI systems but the competency in leveraging them that determines their effectiveness in enhancing agility.

The results for H3 and H4 offer useful theoretical insight. BI competence does not appear to strengthen the link between environmental pressures and capability building, likely because capability development depends on longer-term, resource-intensive changes such as investment

and restructuring, where BI's informational role is limited. In contrast, BI competence enhances the translation of capabilities into agile practices by improving information sharing, coordination, and data-driven decision-making. This suggests that BI functions more as a translational capability, helping firms put agility into action rather than shape its initial formation.

The finding that BI competence strengthens the link between agile capabilities and agile practices, despite the negative sign of the interaction term, reflects its role as a translational dynamic capability—facilitating the conversion of existing capabilities into effective operational behaviours. By contrast, the absence of moderation for Ha3 suggests that BI competence does not shape the early stage of capability formation driven by environmental uncertainty. This pattern implies that BI competence functions more as an executional and coordinating mechanism than as a strategic sensing capability, operating most effectively once core capabilities are already established.

Furthermore, this study makes an important theoretical contribution by validating the sequential link between agile drivers, agile capabilities, and agile practices. It adds depth to existing agility frameworks by incorporating the moderating role of BI competence into these chain relationships. By empirically testing how BI competence shapes the strength of these linkages, the study refines our understanding of the internal mechanisms through which organizational agility is realized. It emphasizes that BI is not only a technological enabler but also a dynamic capability that influences the configuration and impact of agility-enhancing processes. In doing so, the research advances the theoretical conversation on agility by integrating perspectives from IS literature with strategic management and organizational behavior, providing a more holistic view of how organizations in emerging markets, such as the Jordanian manufacturing sector, can leverage information competencies to achieve and sustain agility in unique institutional contexts.

Our findings extend the dynamic capabilities view by clarifying where and how BI competence operates within capability development. While earlier studies have mainly described BI as a tool that supports sensing and seizing opportunities, our results show that BI competence plays a stronger role in the transformation stage, helping organizations turn developed agile capabilities into concrete agile practices. In this way, BI competence functions as a translational dynamic capability, bridging the gap between potential and realized agility. This perspective deepens our

understanding of dynamic capabilities by explaining how digital competencies not only support the creation of capabilities but also shape their sustainable practical use and execution.

5.1 Implications for theory

This study offers several important theoretical implications to the literature on organizational agility and business intelligence. Firstly, it employs the perspective of organizational agility to both theoretically argue and empirically test the role of BI competence in shaping key dimensions of agility—namely, drivers, capabilities, and practices. By positioning BI competence as an organizational-level capability that influences agility, the study establishes a theoretical foundation for understanding BI not merely as a technological tool, but as a strategic enabler of adaptive performance. As the first empirical study to examine the moderating effects of BI competence within the agility framework, this work opens a new line of inquiry and sets the stage for future empirical investigations into the role of BI in dynamic capability development.

Second, the study introduces an alternative conceptual lens, proposing that BI competence can meaningfully influence the practice dimension of organizational agility. This perspective advances current thinking by moving beyond linear, direct-impact models and instead illustrating how BI competence modifies the strength of relationships within the agility framework. It therefore extends traditional agility models by integrating BI competence as a contingent factor that enhances or constrains agile outcomes.

Third, the research extends existing studies in the BI domain by offering new insights into how BI competence can be systematically embedded within agility frameworks. While prior research has emphasized the direct benefits of BI for decision-making or performance, this study connects BI competence to the dynamic interplay of agility's foundational elements, offering a more comprehensive theoretical view.

Fourth, this study contributes to the contextual understanding of organizational agility by grounding the analysis in the Jordanian manufacturing sector—an emerging market characterized by institutional fluidity, resource constraints, and increasing digitalization. Through demonstrating how BI competence functions as a moderating mechanism in this context, we enrich our understanding of how agility frameworks operate outside of mature Western economies. This

highlights the importance of context-sensitive theorizing, suggesting that the development and enactment of agile capabilities and practices are shaped by both internal competencies and external environmental conditions. As such, the study informs future research in similar emerging or transition economies.

5.2 Implications for practice

Beyond its contributions to theory, this study offers valuable practical implications for managers and decision-makers seeking to enhance organizational agility. The findings provide insights into how BI competence interacts with agility constructs—drivers, capabilities, and practices—to foster stronger organizational responsiveness and adaptability. First, the study highlights the need to integrate BI competence into agility frameworks to unlock its full strategic value. Managers should view BI not merely as a data tool but as a dynamic capability that can amplify agility-related outcomes when properly developed and aligned with organizational goals. Second, the results emphasize the importance of building BI competence across managerial, technical, and cultural dimensions. Organizations are encouraged to invest in training and development initiatives that cultivate these competencies at all levels, ensuring that staff can effectively interpret and apply Third, understanding how BI competence moderates the relationships between agile drivers and capabilities—and between capabilities and practices—can help organizations prioritize their digital transformation efforts. Rather than adopting agility practices in isolation, firms should focus on strengthening their BI infrastructure and fostering a data-driven culture that supports agile decision-making. Finally, by strategically leveraging BI tools and competencies, organizations can improve the timeliness and relevance of their decisions, better anticipate market shifts, and respond more effectively to uncertainty—ultimately enhancing their competitive position in volatile business environments.

The findings suggest that the value of BI competence lies primarily in the action phase of agility, where firms translate established capabilities into operational practices. Managers should therefore view BI not simply as a technology investment but as an executional resource that enables agile capabilities to produce tangible outcomes. The results also indicate that the return on investment in agile capabilities is not automatic; it depends on having sufficient BI competence to inform and coordinate daily operations. Consequently, firms should align BI development with capability-

building initiatives, ensuring that new capabilities are supported by data-driven processes, decision tools, and a culture of information sharing that enable their effective use.

5.3 Limitations and Future Research

This study has several limitations that suggest useful directions for future work. First, the research is based on cross-sectional data, which restricts examination of how BI competence and agility evolve over time. Longitudinal studies could provide deeper insight into the dynamic effects of BI competence, particularly during periods of disruption. Second, while the findings highlight BI competence as a key enabler and moderator of agile practices, the cross-sectional design limits causal inference. Future studies could apply longitudinal or experimental methods and draw on multiple respondents to validate the relationships observed here.

Third, the data were collected from Jordanian manufacturing firms, which may constrain the generalisability of results. Replicating the study across sectors and national contexts would clarify whether the findings are context-specific or more widely applicable. Finally, BI competence was conceptualised as comprising managerial, technical, and cultural dimensions but was modelled as a single construct for simplicity. Future research should examine these dimensions separately, as the cultural element such as trust and information sharing may play a strong role in shaping agile practices.

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Appendix A.

Section (1).

1. **Job title/position of the respondent**:

a. Employee ☐

b. Supervisor. ☐

c. Managerial. ☐

2. **Sex**

a. Male. ☐

b. Female. ☐

3. **Age:**

a. Less than 30 years. ☐

b. 30- Less than 40 years. ☐

c. 40 years and above. ☐

4. **Education level:**

a. Diploma and less ☐

b. Bachelor ☐

c. Postgraduate ☐

5. **Experience in the industry:**

a. 0- less than 3 years ☐

b. 3- Less than 5 years. ☐

c. 5- Less than 10 years. ☐

d. 10- Less than 15 years ☐

e. 15 years and above. ☐

Section (2): Agility practices					
Alertness (APAL)	**Strongly disagree (1)**	**Disagree (2)**	**Moderate (3)**	**Agree (4)**	**Strongly agree (5)**
Our firm quickly detects changes in our environment (APAL1)					
Our firm can promptly identify opportunities in its environment (APAL2)					
Our firm can rapidly sense threats in its environment (APAL3)					
Our firm notice changes in our environment quicker than our main competitors (APAL4)					
Accessibility (APAC)					
My company can access the information it needs to deal with changes in its environment (APAC1)					
My company obtains the information we need to address opportunities in our environment (APAC2)					
My company can acquire the information it needs to respond to threats in its environment (APAC3)					
My company receives the information we demand from our suppliers (APAC4)					

My company always obtains the information we request from our customers (APAC5)					
Our suppliers are quick to share relevant information with us (APAC6)					
Our suppliers are always fast to provide us the information we request (APAC7)					
Decisiveness (APDE)					
My company can make resolute decisions to deal with changes in its environment (APDE1)					
My company can make definite decisions to address opportunities in our environment (APDE2)					
My company can make firm decisions to respond to threats in its environment (APDE3)					
In our firm we have processes in place to facilitate decision-making (APDE4)					
Our supply managers are empowered to make decisions within their area of expertise (APDE5)					
My company is resolute at making decisions regarding supply network operations (APDE6)					
Swiftness (APSW)					
My company can promptly realize changes to our supply network operations (APSW1)					

My company is fast at implementing supply network changes/decisions (APSW2)					
My company is fast at executing supply network operations (APSW3)					
My firm can quickly reconfigure supply network resources to respond to changes in the environment (APSW4)					
To address opportunities in our environment, my company can rapidly reorganize our supply network resources (APSW5)					
My company can swiftly reconfigure supply network resources to deal with threats in our environment (APSW6)					
Flexibility (APFL)					
When needed, my company can adjust our supply network operations to the extent necessary to execute our decisions (APFL1)					
My company has a wide range of adjustments that we can make to our supply network operations (APFL2)					
My company can increase its short-term capacity as needed (APFL3)					
My company can usually meet an increase in order-size (APFL4)					
My company can adjust the specification of orders as requested by our customers (APFL5)					

My company can adjust/expedite its delivery lead times (APFL6)					
My company quickly reconfigures supply network operations to address changes in the environment (APFL7)					
My company rapidly adjusts supply network operations to respond to opportunities in the environment (APFL8)					
My company swiftly alters supply network operations to react to threats in the environment (APFL9)					

Section (3): BI Competence within supply networks					
Managerial competence (BIMC)					
We have well-defined procedures and methods to constantly collect information and knowledge about our supply network operations (BIMC1)					
We have well-defined procedures and methods to constantly collect information and knowledge about the external business environment (e.g. customers, markets, competitors, technologies, and industry trends) which is relevant to our supply network activities and decision making (BIMC2)					
We have well-defined procedures and methods to integrate, analyze, and organize supply network information and knowledge (BIMC3)					
We have well-defined procedures and methods to effectively distribute and disseminate supply network information and knowledge as well as the results of subsequent analyses (BIMC4)					
We constantly monitor our supply network performance (BIMC5)					
We have easy and timely access to required information and knowledge when making supply network decisions (BIMC6)					

Our supply network decisions are mostly made based on accurate, valid, and reliable information and Knowledge (BIMC7)					
Technical competence (BITC)					
We continually invest in technological infrastructure that supports information/knowledge management in our supply networks (BITC1)					
We effectively use appropriate tools and technologies that support the collection of information and knowledge about our supply network operations (BITC2)					
We effectively use appropriate tools and technologies that support the collection of information and knowledge about the external business environment (e.g. customers, markets, competitors, technologies, and industry trends) which is relevant to our supply network activities and decision making (BITC3)					
We effectively use appropriate tools and technologies that support integrating, analyzing, and organizing supply network information and knowledge (BITC4)					
We effectively use appropriate tools and technologies that support the distribution and dissemination of supply network information and knowledge as well as the results of subsequent analyses (BITC5)					
We are equipped with computerized decision support systems (DSS) that enable us to make supply					

network decisions more effectively and efficiently (BITC6)					
We effectively use computerized supply network performance management systems (BITC7)					
We effectively use appropriate tools and technologies to support the communications between our company and its supply networks (BITC8)					
Our company is linked to its supply networks partners through integrated information technologies/systems (BITC9)					
Cultural competence (BICC)					
We believe that information and knowledge are effectively used in most aspects of our supply networks Management (BICC1)					
We highly recognize the value and utility of information and knowledge in achieving strategic and operational success in our supply networks (BICC2)					
Information and knowledge are viewed as a strategic asset in our supply networks (BICC3)					
There are effective information and communication flows in our supply network (BICC4)					
There is mutual trust between our company and its supply network partners to share relevant information and knowledge (BICC5)					

We are committed and willing to share relevant information and knowledge with our supply network partners (BICC6)					
We work closely with our supply network partners in making supply decisions (BICC7)					
We work closely with our supply network partners in supply network-related, problem-solving and other information-based activities (BICC8)					

Section (4) Supply network agile capabilities:					
Alertness Capabilities (AC)					
Detecting strategic opportunities/challenges in a timely manner (e.g. new competitor movement, new economic tendency, new technology, and new market) (AC1)					
Using many channels to keep aware of strategic opportunities/challenges (AC2)					
Detecting changes in supply/demand in a timely manner (AC3)					
Using many channels to keep aware of changes in supply/demand operational success in our supply network (AC4)					
Detecting changes in supply network daily execution in a timely manner (AC5)					
Using many channels to keep aware of changes in supply network daily execution (AC6)					
Response Capabilities (RC)					
Reconfiguring supply network resources in a timely manner to respond to strategic opportunities/ challenges (RC1)					

Reconfiguring supply network resources in a flexible manner to respond to strategic opportunities/challenges (RC2)					
Reconfiguring supply network resources in a timely manner to respond to changes in supply/demand (RC3)					
Reconfiguring supply network resources in a flexible manner to respond to changes in supply/demand (RC4)					
Reconfiguring supply network resources in a timely manner to respond to changes in daily supply network execution (RC5)					
Reconfiguring supply network resources in a flexible manner to respond to changes in daily supply network execution (RC6)					
Section (5) Supply network agile driver:					
Agile Drivers (AD)					
The suppliers inconsistently meet our requirements (AD1)					
The suppliers produce materials with inconsistent quality (AD2)					
Our master production schedule has a high percentage of variation in demand (AD3)					
Our demand fluctuates drastically from week to week (AD4)					

Our supply requirements vary drastically from week to week (AD5)					
Our industry is characterized by rapidly changing technology (AD6)					
As compared to other industries, our industry has a higher capacity for growth (AD7)					
Our industry is more complex to operate in as compared to other industries (AD8)					
Our customers regularly ask for new products and services (AD9)					
Competition is ever changing in our market (AD10)					
Our supply requirements vary drastically from week to Week (AD11)					

Figure 1: Agile Chain Relationships

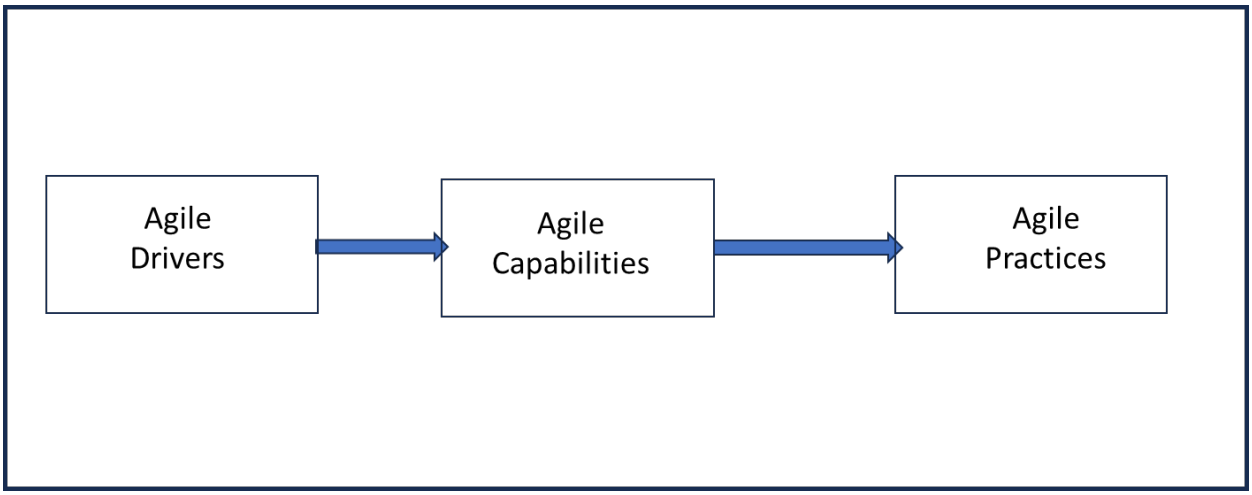


Figure 2: Proposed Theoretical Framework

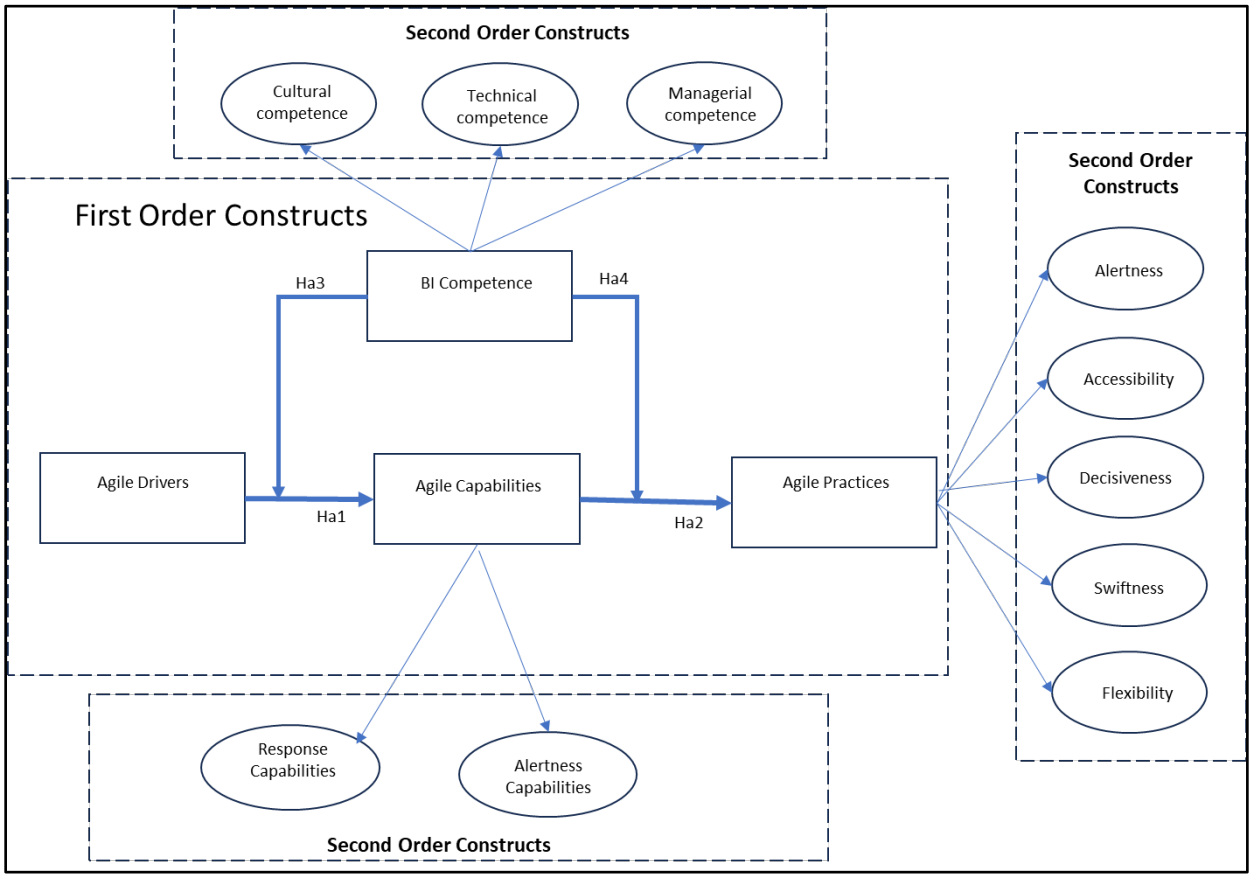


Figure 3: Measurement Model Results

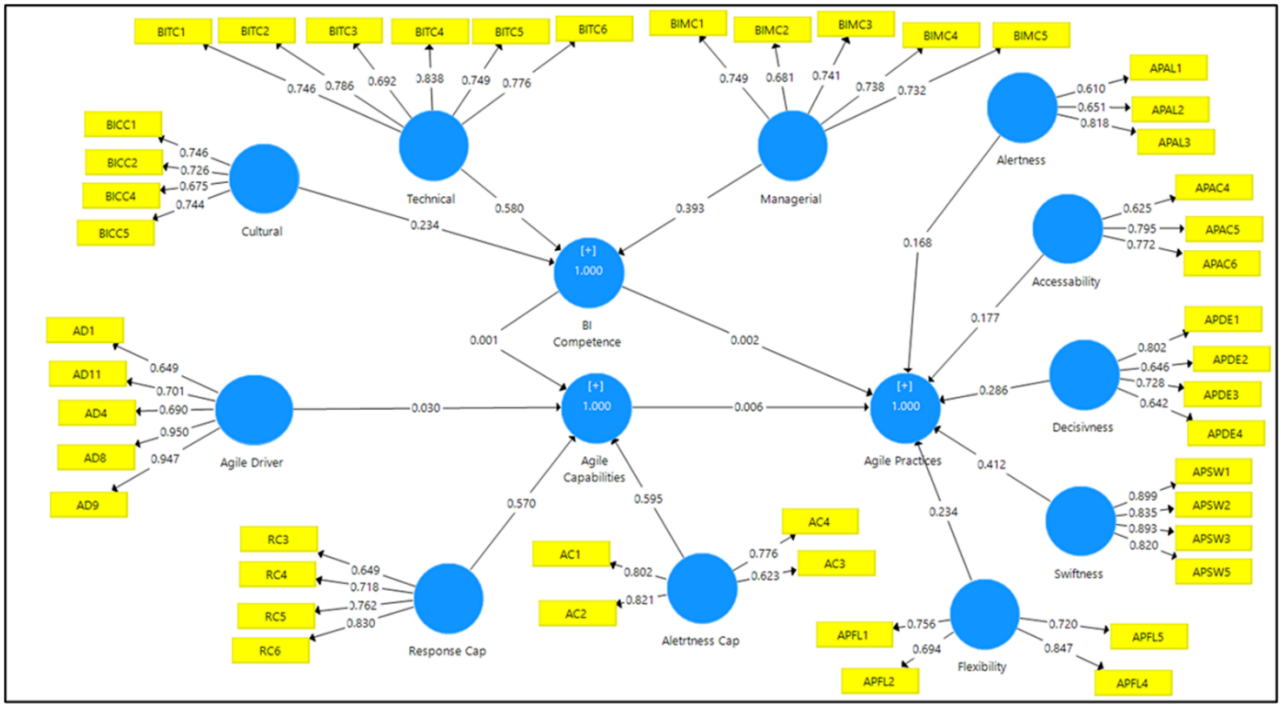


Figure 4: Moderation Effect of BI Competence

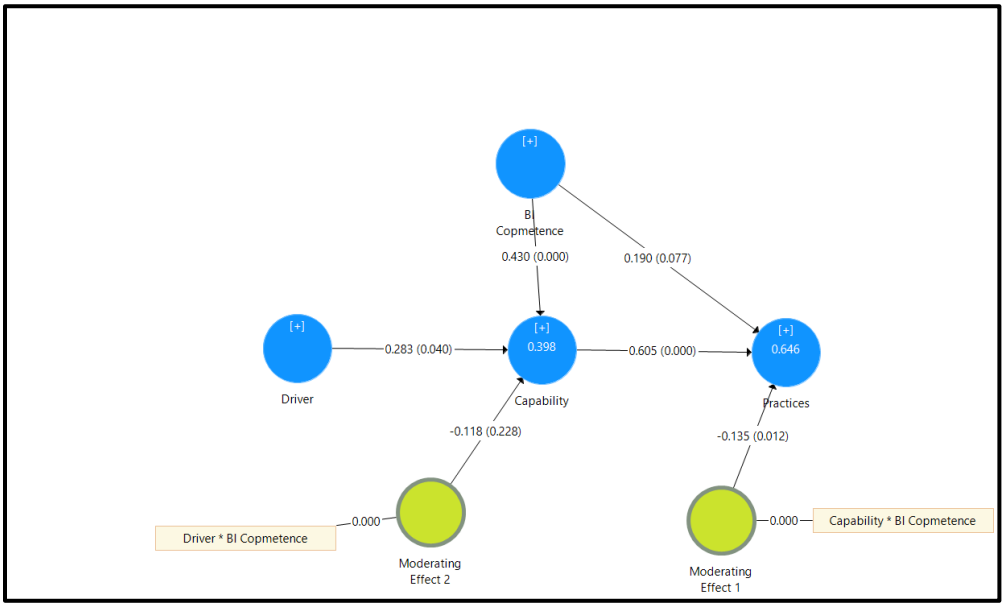


Figure 5: Interaction effects of BI competence

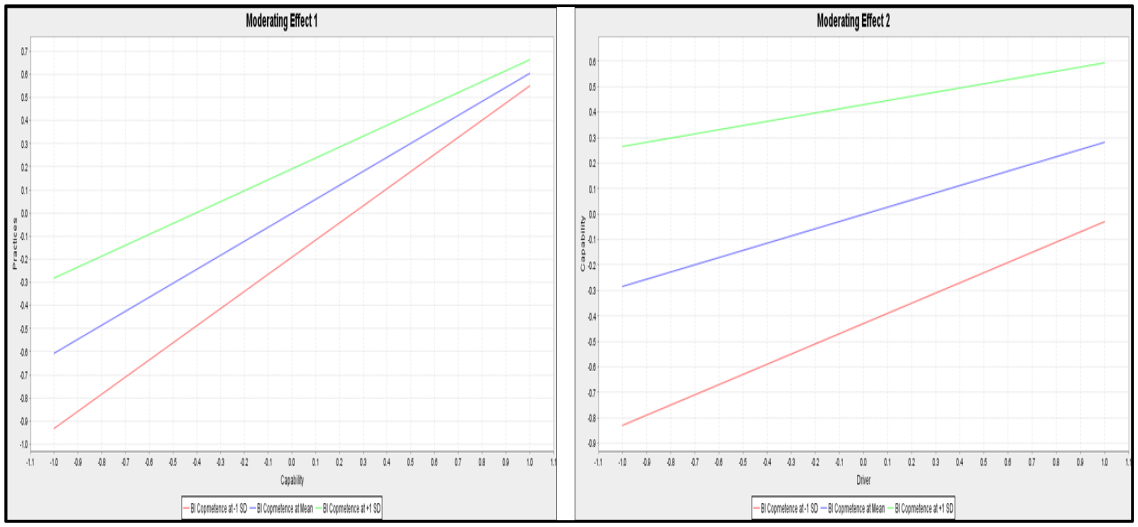


Figure 6: BI Competence as an independent variable

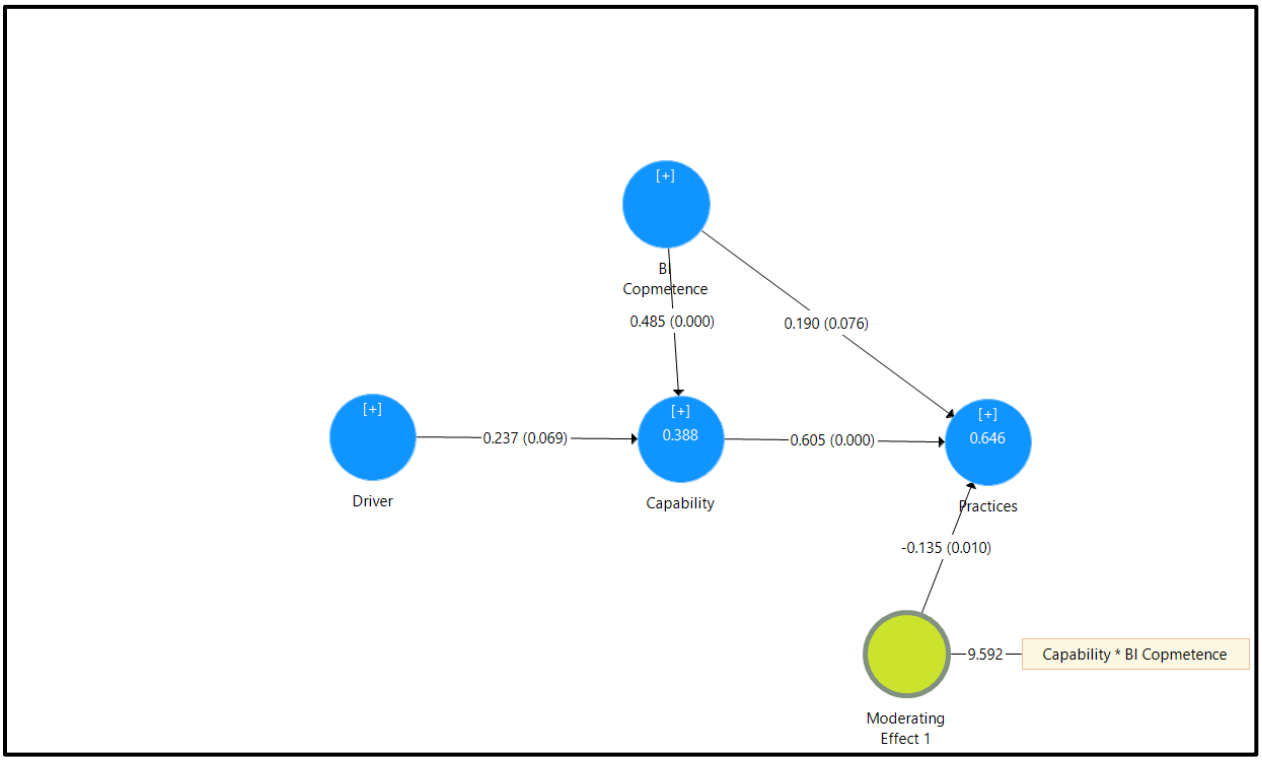


Table I: Respondent Demographics

Characteristic		Frequency	%
Position			
	Plant manager	42	26.75%
	Operations manager	51	32.48%
	Supply chain/network or Logistics manager	35	22.29%
	Procurement/purchasing manager	29	18.47%
	Total	157	100.00%
Experience in the industry			
	less than 3 years	41	26.11%
	3- Less than 5 years	70	44.59%
	5 years and above	46	29.30%
	Total	157	100.00%
Industry Type			
	Pharmaceutical and Medical Industries	18	11.46%
	Plastic & rubber industries	15	9.55%
	Chemical & cosmetics industries	12	7.64%
	Engineering and Construction industries	7	4.46%
	Wood and furniture industries	12	7.64%

	Packaging, paper and carton industries	12	7.64%
	Food and Beverages	18	11.46%
	Leather and knitting industries	13	8.28%
	Mining industries	15	9.55%
	Textiles Leathers and Clothing	35	22.29%
	Total	157	100.00%

Table II: Convergent validity

Dimension, and items	Deleted Item	Factor Retained Items (Loading Factor Range)	Cronbach	CR	AVE	rho_A
Agile Drivers (AD1 to AD11)	2, 3, 5, 6, 7, 10	(0.649 to 0.950)	0.789	0.882	0.521	0.801
Agile Capabilities-Alertness (AC1 to AC6)	5, 6	(0.23 to 0.821)	0.845	0.885	0.621	0.752
Agile Capabilities-Response (RC1 to RC6)	1, 2	(0.649 to 0.830)	0.732	0.866	0.589	0.822
Supply Network Agility Practices-Alertness (APAL1 to APAL4)	4	(0.610 to 0.818)	0.821	0.887	0.754	0.799
Supply Network Agility Practices-Accessibility (APAC1 to APAC7)	1, 2, 3, 7	(0.625 to 0.795)	0.891	0.824	0.879	0.804

Supply Network Agility-Practices-Decisiveness (APDE1 to APDE6)	5, 6	(0.642 to 0.802)	0.749	0.788	0.587	0.796
Supply Network Agility Practices-Swiftness (APSW1 to APSW6)	4, 6	(0.820 to 0.899)	0.822	0.891	0.766	0.856
Supply Network Agility Practices-Flexibility (APFL1 to APFL9)	3, 6, 7, 8, 9	(0.694 to 0.847)	0.879	0.887	0.625	0.877
BI Managerial Competence (BIMC1 to BIMC7))	6, 7	(0.681 to 0.749)	0.785	0.799	0.574	0.728
BI Technical Competence (BITC1 to BITC9)	7, 8, 9	(0.692 to 0.838)	0.921	0.857	0.733	0.851
BI Cultural Competence (BICC1 to BICC8)	3, 6, 7, 8	(0.675 to 0.746)	0.805	0.789	0.699	0.722

Table III: Discriminant validity

Constructs	AD	AC	RC	APAL	APAC	APDE	APSW	APFL	BIMC	BITC	BICC
Agile Drivers (AD)	***0.722***										
Agile Capabilities-Alertness (AC)	0.231	***0.788***									
Agile Capabilities-Response (RC)	0.524	0.277	***0.767***								

Supply Network Agility Practices-Alertness (APAL)	0.042	0.324	0.189	***0.868***							
Supply Network Agility Practices-Accessibility (APAC)	0.023	0.028	0.077	0.147	***0.937***						
Supply Network Agility Practices-Decisiveness (APDE)	0.222	0.098	0.064	0.257	0.562	***0.766***					
Supply Network Agility Practices-Swiftness (APSW)	0.056	0.072	0.054	0.078	0.176	0.254	***0.875***				
Supply Network Agility Practices-Flexibility (APFL)	0.125	0.248	0.458	0.574	0.621	0.547	0.334	***0.791***			
BI Managerial Competence (BIMC)	0.354	0.081	0.055	0.078	0.022	0.157	0.238	0.274	***0.677***		
BI Technical Competence (BITC)	0.487	0.541	0.351	0.344	0.013	0.058	0.354	0.527	0.218	***0.856***	

BI Cultural Competence (BICC)	0.521	0.471	0.521	0.034	0.027	0.079	0.057	0.043	0.318	0.488	***0.836***

Table IV: Results of H1 and H2

Hypothesis	β	SE	t-values	f^2	R^2	Q^2	Decision
Ha1	0.607	0.08	9.480***	0.584	0.369	0.193	Accepted
Ha2	0.676	0.07	7.802***	0.839	0.456	0.182	Accepted
Notes: *p < 0.05; **p < 0.01; ***p < 0.001							

Table V: Path coefficients and t statistics

Hypothesis	**Paths**	**Path coefficients**	**t-values (p-values)**	**CI.95**		**Decision**
				2.5%	97.5%	
Ha3	Driver -> Capability	0.283	2.020 (0.043)	0.039	0.594	
	BI Competence -> Capability	0.283	3.553 (0.043)	0.166	0.638	
	Interaction term -> Capability	-0.118	1.199 (0.231)	-0.335	0.053	Reject the alternative hypothesis
Ha4	Capability -> Practices	0.605	5.559 (0.000)	0.340	0.763	
	BI Competence -> Practices	0.190	1.774 (0.076)	0.025	0.441	
	Interaction term -> Practices	-0.135	2.548 (0.011)	-0.239	-0.031	Accept the alternative hypothesis

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