Middle East Journal of Scientific Publishing
Vol. (8) Issue (4)
Edition 28th
2025(1 - 32)

DOI: https://doi.org/10.63085/mejsp/856415

Adaptive Resource Orchestration as a Visionary Competency: Strategic Coordination for Agility, Innovation, and Institutional Transformation

Mustafa Abdel Mohiman
Academic Director, Educational Psychologist,
Business Wheel Academy, Egypt.
Abdullah Hussein Salem
Senior Researcher, Educational Researcher,
Business Wheel Academy, Egypt.
Yasser Nasr Eldin
Managing Director, Business Wheel Academy, Egypt.
Published on: 6 September2025

Abstract

In a period of systemic uncertainty and organizational instability, leadership is not about control or planning — it is about adaptive orchestration. This paper proposes Adaptive Resource Orchestration (ARO) as a key organizational competence of a behavioral nature in the Visionary Management Dimension of the VFC Competence Framework. ARO is the ability to align, reconfigure, and scale resources dynamically in response to change, constraint, and institutional priorities within complex systems.

Drawing on literature from human capital, systems thinking, and strategic management, the paper seeks to describe ARO as an emergent competency for institutional leadership. It introduces a developmental model based on the KSAH lens, incorporated as a core foundational construct in the VFC Framework, not as an independent model. ARO is presented as a central driver of strategic alignment, collective influence, and responsive action within high complexity contexts. The paper provides a structured foundation for integrating ARO within leadership development systems and change interventions.

Keywords: Adaptive Resource Orchestration, Competency Development, Visionary

Management, KSAH Framework, Institutional Transformation.

*** Introduction**

In today's rapidly shifting environments, the same resource securing models that were designed for efficiency and stability have become increasingly irrelevant, utilizing nature, change, and conflict as the new mode of resource planning. Organizations need leaders now who can redeploy resources in real time, respond to emergent constraints in an agile manner, and work at speed across the grain of systems. This transition requires not only structural flexibility but also capabilities in the individual behavioral sphere, which enable an adaptive style of leadership.

As used in strategic management literature (Teece et al., 1997; Sirmon et al., 2011). Resource orchestration involves the dynamic allocation and unification of resources. But current models primarily focus on firm-level drivers and how individuals (especially young people, educators, mid-level managers, and professionals) develop the mentality and practice needed to lead in the coordination of resources in complex systems. (Zeng et al., 2022; Andersén, 2020).

This paper brings ARO as a behavioral competence of Leadership into the Visionary Management Dimension of the VFC Competence Framework. ARO refers to the ability to plan, realign, and reallocate resources and to scale up or down in relation to changes in the context or in the system's.

The study pursues four objectives: -

1- Define ARO as a future-relevant leadership competency grounded in dynamic capabilities.

2- Synthesize interdisciplinary literature across education, technology, and human capital.

3- Construct a developmental KSAH model with progression levels for ARO.

4- Position ARO as a strategic enabler for youth development and institutional transformation.

The paper, by addressing these objectives, provides an organized base for the inclusion of ARO in learning systems and leadership pipelines where adaptive capacity is at a premium.

*** Methodology**

This study uses an interpretive, qualitative-based approach to construct and validate a behavioral competency for Adaptive Resource Orchestration (ARO) in the Visionary Management Dimension of the VFC Competence Framework. The research is constrained as theory-

building, seeking to integrate conceptual models, empirical findings, and developmental trends in a model of competencies. Instead of testing hypotheses, the aim is to develop a cross-context model of ARO that can be applied to an organization as it develops, is transferable across different contexts, and is informed by practice.

The primary data corpus is composed of 20 academic peer-reviewed articles and case studies published in 2020–2024. These particular sources were purposively chosen for their relevance to resource orchestration, institutional adaptability, human capital alignment, and system leadership in uncertain times. Studies of education reform, platform-based entrepreneurship, digital governance, DevOps, and vocational ecosystems in global North and global South contexts are represented in this corpus. The selection strategy focused on maximum variation to promote conceptual generalizability across more centralized and decentralized systems, across formal and informal roles in leadership, and across levels of resource abundance and constraint.

Analysis involved a three-stage thematic synthesis. In the first round, descriptive coding was applied to derive behavioral data regarding coordination, resource alignment, adaptive planning, and stakeholder orchestration. In the second stage, thematic organization was used to identify cross-sectoral trends in the enactment, resistance, and institutionalization of ARO behaviors. The last step was to integrate these patterns into the existing orchestration literature (e.g., Sirmon et al., 2011; Zeng et al., 2022), linking these to the KSAH model and the Vision Management domains of the VFC Framework. There was a focus on leadership without authority, orchestration in turbulent systems, and developmental pathways in youth-oriented and high-context settings.

*** Literature Review**

1- Theoretical Foundations of Orchestration**:** Adaptive Resource Orchestration (ARO) has its theoretical roots in core strategic management theories of how firms achieve and sustain competitive advantage through the effective deployment of resources. This evolution is influenced by three prominent perspectives - the Resource-Based View (RBV), the Dynamic Capabilities Framework, and Resource Orchestration Theory.

According to the Resource-Based View (RBV) of Barney (1991),

firms develop competitive advantage with the use of VRIN resources, while Valuable, Rare, Inimitable non-substitutable. RBV underlined the strategic value of company-specific assets like knowledge, reputation, and human capital. Yet, a significant pitfall of RBV can be observed in its 'static' perception of resources; it describes what resources are strategically valuable, but not the direct prescription of transforming, aligning, or deploying resources that RBV cannot simply do in turbulent environments.

To overcome these shortcomings, Teece et al. (1997) developed the RBV by stressing the firm's capacity to integrate, develop, and reconfigure its internal and external competencies in fast-varying environments. Dynamic capabilities take the emphasis off the ownership of a resource to the ability to continuously modify and refashion resources in real time. This viewpoint acknowledges the part played by managerial decision-making and the ability to spot and seize opportunities amidst rapid restructuring.

Based on the foundations set by RBV, Resource Orchestration Theory (Sirmon et al., 2011) presents a more elaborate process model. It presents managers from the active point of view of how they organize, package, and exploit resources in organisational life cycle stages in order to create value. This executive framework is intentionally created to illustrate the critical nature of leaders who utilize resources both efficiently and strategically over time, in context, and across intersecting systems.

Taken together, these theories form a backdrop for ARO as a behavioral competence. There is no universal blueprint for what companies should do under these circumstances, but they do reflect the importance of agility, intentionality, and systemic thinking —qualities that are crucial to successfully managing volatility and creating long-term value. ARO, in this context, builds on these theories by operationalizing conceptual management processes into actionable, teachable, and assessable discrete competencies for forward-thinking management development.

2- From Systems to Individuals: The Missing Link**:** Despite the growing popularity of resource orchestration as a strategic concept on firm performance and innovation, research on its individual-level equivalent competency has been scarce. Most academic work on orchestration conceptualizes it at the

level of the organization or the ecosystem, focusing on how companies organize, bundle, and leverage resources across larger numbers of interdependent systems. Although these are useful macro-level strategies, we neglect the cognitive, behavioral, and developmental aspects of orchestration within the individual, particularly when they are in emerging leadership roles.

Concerning digital platform environments, orchestration is analysed as a structural coordination mechanism that supports scalability, partner integration, and innovation management (Zeng et al., 2022). These observations have parallels in software development ecosystems, where orchestration is viewed as a systems engineering problem—i.e., coordinating codebases, deployment pipelines, and operational workflows between distributed teams (Ferrara et al., 2023; Matook & Maruping, 2020). Likewise, in public administration, orchestration as an institutional tool to get stakeholders to act in concert and to manage resources during crises is brought to the fore (Mayarafa, 2023). These stories validate orchestration as a system-level agility enabler, but they do not typically illuminate the characteristics or capabilities of the orchestrators.

One such exception is Heller (2022), which examines the practices of individuals in open-system orchestration. Based on interviews and modeling exercises, Heller also charts certain behaviors—scan context, relational coordination, and adaptive decision-making among them. His findings suggest an important implication: effective conducting is more than structural, it is also cognitive and social. This paves the way for reframing orchestration as a teachable, assessable, and developable skill, particularly concerning leadership development and youth training.

However, there is still a theoretical and practical gap. Current models are not provided with a structural developmental scaffolding, e.g., levels of progression or KSAH (Knowledge, Skills, Attitudes, Habits) methodologies. Without models, efforts to "integrate" orchestration into curricula or leadership development efforts will continue to be isolated. In this paper, we place attention to this gap and formalize Adaptive Resource Orchestration (ARO) as a future-ready leadership competence rooted in both systemic functioning and individual development.

3- Orchestration in Technology-Intensive and Crisis Contexts**:** The importance of orchestration increases in technologically dependent and high-uncertainty conditions. In such an atmosphere, adaptive leadership is not something optional — it becomes a structural requirement. Recent research shows how resource orchestration explains an organization's ability to (re-)establish operational continuity, strategic alignment, and innovation in response to disruptive events like crises such as the COVID-19 pandemic or through digital transformation in industries.

An illustration of this is the contribution of IT resource orchestration in HEIs amidst the COVID-19 pandemic. Jatmiko et al. (2022) determined that tightly-coupled orchestration between IT infrastructure, governance, and business objectives was positively related to organizational agility and resilience. Their research demonstrates how efficient IT governance as a mediating variable reduced the gap between technical capabilities and performance outcomes and allowed institutions to shift rapidly to online modes of course delivery. This shows that orchestration is not simply the availability of resources, but the leader's ability to bring them to bear, to re-align them, and to govern them in a situation of pressure.

Software and cloud computing industries demonstrate orchestration through complex coordination of tasks over the continuous integration and delivery (CI/CD) pipelines, where updates, testing, deployment, and monitoring run at once (Ferrara et al., 2023). Such systems rely on collaboration across distributed teams, fast feedback loops, and shared responsibility for platform skills, which map to behavioral traits of Adaptive Resource Orchestratio,n including responsiveness, negotiation, and system awareness.

Burke (2022) develops this perspective further by advocating that HRM should be approached as a non-organizational theory about the management of human resources and that orchestration is not (merely) about arranging people; it is about enabling them to self-organize beyond organization. This is particularly relevant in crisis management and distributed leadership when control-led structures need to be replaced by adaptive collaboration.

These results highlight that resource orchestration is most meaningful when employed within dynamic, high-stakes environments

and that its effectiveness hinges on behavioral leadership orientations rather than structures or practices. Intentional integration of competencies in Education to optimize the potential of students in relational, technologically rich, and ethically complex work and learning environments demands attention to weaving technical fluency, relational agility, and ethical foresight.

4- Orchestration and Human Capital Competence: Resource orchestration applied to human capital. As the use of resource orchestration increases, it is important to understand its application to human capital. Unlike physical capital or digital infrastructure, human capital is characterized by complexity, agency, and relationality, and is correspondingly accompanied by its own unique set of problems. This requires a move from simply technical orchestration towards an approach that involves collaboration, coordination, the development of trust, and social learning. In this environment, adaptive leadership has to shift from systems thinking to a people-centered approach to resource-wiser strategies.

Burke (2022) promotes a non-organisational approach to HRM that stresses the role of organisational orchestration across the institutions. Instead of treating human capital as a manipulable input, he proposes an ecosystem model in which value is co-created by networks, emergent roles, and common values. Orchestration, in this sense, becomes a relational capability—skill in how to mobilize distributed expertise and synchronize human labour in the moment.

Such an orientation is empirically confirmed in innovation management research. Andersén (2020) concluded that in team-based innovation, the volume of resources makes progressively less of a difference than the orchestration of capabilities, the alignment of leadership, and the sufficiency of feedback. Practice leadership that encourages psychological safety, shared leadership, and reflection is likely to produce better performance. These are the kinds of contexts that afford innovative recombination of knowledge in real time, flexible role allocation, and dynamic task configuration, and are central to the orchestration of human capital.

In education and training, human-centric orchestration is critical to support adaptive instruction and quality vocational instruction. Bentsen et al. (2024) illustrate the role of vocational educators as orchestrators,

combining elements of digital tools, peer interaction, and workplace simulation. Their work situates teachers not as simple content-presenters, but rather as mediators of resource-rich, contextually rich learning ecologies, particularly in servicing requests from varied learners.

Together, these perspectives redefine orchestration as a multi-tiered leadership skill that encompasses technical, affective, and moral intelligences. This provides the frame through which we may view ARO as more than simply a managerial device, but a central capacity of behaviour for steering human systems towards agility, inclusivity, and collective innovation.
5- Vocational and Educational Applications of ARO: Vocational and technical education and leadership are specific contexts where the concept of Adaptive Resource Orchestration (ARO) can be best observed and enacted as a behavioral competency. Especially concerning skills-driven and blended learning, educators (Teachers) are constrained by resource scarcity, learner diversity, and dynamic technology. Under these circumstances, the teacher's role sometimes resembles that of a conductor, not only concerning the teaching content, but also about the very intricate choreography between human, digital, and material resources unfolding at a particular moment (Bentsen et al., 2024).

Bentsen et al. (2024) identify vocational education educators as "adaptive practitioners" who negotiate multiple stakeholder settings with students, workplace mentors, and institutional leadership. Their research demonstrates how effective teachers balance pedagogical approaches consistent with the workplace as well as deal flexibly with group formations, time limitations, and resource allocation. These leaders need to make choices that align pedagogy with operational realities and exhibit invaluable competencies in resource alignment, prioritization, and collaborative leadership.

Outside the classroom, Anis (2024) stresses the importance of digital readiness and contingency planning in post-pandemic teacher professional development. In his analysis of post-COVID educational reform in Arab contexts, adaptive orchestration is identified as a significant characteristic of an effective school leader. They are tasked with the challenge of looking ahead to systemic issues, matching scarce digital infrastructure to

learning goals, and creating stakeholder communication in a shifting set of constraints. This situation is reminiscent of orchestration problems in the business world and in public organizations, which further proves the cross-domain value of ARO.

These findings resonate with more general findings from research into technology-enhanced learning (Mayarafa, 2023) that adaptive instructional design necessitates orchestrators who connect systems, tools, and human roles. From orchestrating hybrid classrooms or aligning curricula to the demands of the labor market, these orchestrators need technical, relational, strategic, and ethical capabilities.

Vocational and educational ecosystems can be a model testing ground for the integration of ARO into leadership development. They offer visible settings for young professionals to learn how to scan contexts, negotiate trade-offs, reconfigure resources, and lead in the mode of agility. And importantly, these contexts emphasise the developmental nature of ARO as a teachable, assessable, learnable competency.

6- Identified Gaps and Implications for Competency Development: As the knowledge base on resource orchestration is advancing in the fields of strategic management, digital ecosystems, and educational design, there seems to be an important gap in how this literature is translated to structured competence development at the individual level. The lack of standardized learning paths, assessment models, and progression mechanisms hinders the potential contribution of ARO in the Intelligence trainings, leadership development, especially for youth and young employees in fast-evolving industries.

First, recent studies have focused on the firm- or system-level implications of orchestration—e.g., innovation performance, platform development, institutional agility (Zeng et al., 2022; Jatmiko et al., 2022). Too frequently, these studies fail to consider the psychological, affective, and behavioral processes that would be necessary for individuals to engage in these outcomes. The role of the orchestrator is generally that of the minor character, not the hero or villain.

Second, although there are a handful of studies that present the behavioral facets of orchestration (Heller, 2022; Burke, 2022), there is no developed schematization of how this type of competence develops. No

standardised conceptualisation of what an orchestrator 'should' know and be able to do (knowledge, skills, attitudes, habits, KSAH) … and at what levels (under what conditions) these qualities that characterise a good orchestrator will be developed. This makes it challenging to develop curricula, training, or leadership pathways based on evidence-based orchestration skills.

Third, there is the paucity of empirical work on the nature of orchestration as a developmental construct from the perspective of youth or emerging economy applications. The majority of theoretical work in this area is situated within developed digital or institutional ecologies, which provide little guidance as to how ARO could be taught in vocational, civic, or grassroots leadership environments – or anywhere else where resources are constrained and the need to adapt is urgent.

The conclusions are compelling: If strategy and pedagogy are to be brought together, orchestration needs to be re-amplified, not only as an operating necessity but as a foundational leadership capability. The latter needs to be corresponded to with structured efforts to address that imperfection in the form of a model of Adaptive Organizations based on literature, but made in the image of the VFC Competence Framework. In the process, it forms part of a wider effort to coordinate education, leadership, and organizational resilience across future-ready capabilities.

*** Theoretical Framework**

1- Defining Adaptive Resource Orchestration (ARO): Adaptive Resource Orchestration (ARO) sits at the intersection of strategic agility, systems thinking, and behavioral leadership. Although the notion of orchestration has frequently been used to denote structural means for integrating resources at the level of the firm or the ecosystem, this paper reconceptualizes it as a personal competency—a cluster of cognitive, emotional, and relational abilities that allow leaders to manage complexity and to orchestrate the alignment, integration, and real-time coordination of resources.

ARO has its theoretical pedigree in three major traditions. The Dynamic Capabilities Framework (Teece et al., 1997) emphasizes the capability to sense, seize, and recombine resources under changing conditions. This constitutes a basis for reasoning about adaptability and learning in uncertain environments. Secondly, Resource

Orchestration Theory (Sirmon et al., 2011) goes a step further in specifying how leaders configure, bundle, and exploit firm-specific resources as firms evolve through their life-cycles. It posits that orchestration is an act of management concerned with strategic alignment. And lastly, open-system models of orchestration—such as the one proposed by Heller (2022)—emphasize the micro-practices of orchestrators at the level of the individual, performed in multi-stakeholder, fluid constellations. These are environmental scanning with priority ordering under constraints and collaborative recombination.

Building on these theoretical strands, this paper defines Adaptive Resource Orchestration (ARO) as: -

A future-oriented competency that enables individuals to dynamically align, reconfigure, and scale resources—human, digital, informational, and financial—across shifting environments, organizational boundaries, and strategic priorities, in order to foster resilience, value creation, and inclusive growth.

This definition re-conceptualizes orchestration as more than a managerial task, as something visionary. This means reading systemic signals, negotiating competing interests, and adjusting flows of resources on the fly, and all at the same time as preserving long-term coherence. In contrast to classical planning, ARO excels in emergent scenarios when it is either uncertain, sparse, or distorted.

For this reason, ARO cannot be considered as a static skill package; it must be regarded as a process in terms of development—a set of knowledge, behaviours, and attitudes that change over time. The rest of this section is used to develop the elements and their context in the Visionary Management DIMENSION of the VFC Competence Framework.

2- Core Components of ARO as a Competency: To develop the teachable and assessable skill of ARO, it must be deconstructed into basic behavior components. Building on the dynamic capabilities (Teece et al., 1997), resource orchestration theory (Sirmon et al., 2011), and individual practice-based models (Heller, 2022), we identify four basic, interconnected elements of ARO. These elements combine a set of strategic, relational, and adaptive leadership practices that mustered the resources for efficacious decision making under conditions of uncertainty.

*** Contextual Sensing**

This component refers to the ability to constantly monitor and interpret the external and own internal environment. It involves identifying patterns, systemic barriers, stakeholder requirements, and interrelationships. Local evidence and international context are used for priority setting. Sensing is much more than environmental scanning—it requires an ability to recognize patterns, systems thinking, and adaptive learn ing (Teece et al., 1997; Ferrara et al., 2023). People good at contextual sensing are well placed to move in and to design proactively rather than react.

*** Strategic Alignment**

Strategic alignment means we can place our materials, digital or human resources, and goals where they are most needed and be of the best use according to organizational purpose, mission, objectives, and field environments. This calls for integrated decision-making, negotiations among conflicting interests, and trade-offs between short-term constraints and long-term value (Sirmon et al., 2011). Adaptive planners carefully manage ethical trade-offs and mission priority in ambiguous or conflicting conditions.

*** Collaborative Recombination**

Recombination is the dynamic organization and reorganization of existing assets—people, processes, and tools—into new configurations that create value. This is very important in low-resource settings, as history has shown that necessity is the mother of invention. At the behavioural level, the model includes cocreation of work, distributed leadership, and facilitation of role fluidity (Andersén, 2020; Heller, 2022). Co-evolutionary recombination is relationship- and trust-based, and depends on social intelligence.

*** Scalable Deployment**

Deployment is only where the orchestration comes to life, as it transfers the orchestrated resources across systems such that they can be sustained at scale. This will involve not just implementing new methods or techniques but integrating them into feedback-rich systems that help us to learn as institutions (Burke, 2022). It also requires the capacity for thoughtfulness that creates a culture of the need to adapt itself.

These four elements are not sequential, linear steps, but interdependent capabilities. Collectively, they constitute the behavioral hardware of ARO, through which leaders are able to

move nimbly across ecosystems, scale their impact, and create adaptive institutions. They also provide the base for the KSAH-based progression model described in Section 9.

3- ARO within the VFC Visionary Management Dimension: Adapting Resource Orchestration (ARO) lies in the Visionary Management Dimension of VFC Competence Framework, a multi-dimensional architecture intended to support human development in complex and dynamic settings (AbdelMohiman & Salem, 2025). Leadership, Management and Business Scaling and Growth: This dimension is composed of three interconnected domains–Leadership, Management, and Business Scaling and Development–each of which internalizes and enacts ARO as a behavioural and strategic meta-competence.

In the Leadership field, ARO provides influence in the absence of positional power. ARO-literate leaders use trust networks, common vision, and systems thinking to move human and non-human assets effectively across silos. This type of leadership becomes particularly important in post-bureaucratic organizations and distributed ecosystems in which collaborative influence replaces the directive command (Zeng et al., 2022; Heller, 2022). In this case, ARO enhances the leader's capacity to read system dynamics, rank ethically, and enact action in volatile circumstances.

ARO provides the Management domain with the ability to flexibly realign its resources to changing strategic needs. This also involves re-assignment of resources, reconfiguration of systems of work, being attuned to feedback loops, etc – all central to complexity-based management (Burke, 2022). This is where orchestrating managers differ from command and control thinkers: the former don't control, they design new learning-based modularity that serves to absorb disruptions and transform them into routines that can adapt.

ARO is employed under Business Scaling and Development, combining innovation diffusion, ecosystem partnerships, and scalable deployment. As evidenced in the literature of entrepreneurial platform firms, orchestrators are the crucial factor for the structural, relational, and dynamic sustained growth (Zeng et al., 2022). ARO does this under the VFC rubric as it informs the evolution of resource architectures in tandem with strategy and the development of human-centered

context-sensitive scales of institutions.

In addition, ARO does not have to be featured in the VFC Framework only by "Visionary Management". It strains competencies associated with Functional Expertise (e.g., digital agility, interdisciplinary collaboration), and also with Cognitive Psychology. The cross-cutting role plays a complementary role to enhance the KSAH developmental logic of the VFC model, in which a sustained level of competence is driven through continued integration of the four pillars, namely knowledge, skill, attitude, and habits (AbdelMohiman & Salem, 2025).

In conclusion, ARO is the connective ligament of Visionary Management, connecting vision to operation, resilience to responsiveness, and strategy to systemic action. It makes sense of complexity and ensures that leadership is not just a matter of positional power but also of resourceful, timely, and collaborative influence.

4- KSAH Framing and Readiness for Development: The Adaptive Resource Orchestration (ARO) level of Functionality, as a behavioral and strategic capability, requires more than mere technical mastery. To delineate it as a developmental capability, this study uses the KSAH model – Knowledge, Skills, Attitudes, and Habits, which constitutes the basis for the overall rationale of the VFC Competence Framework (AbdelMohiman & Salem, 2025).

KSAH provides a principled framework to model the complexity of ARO. This encompasses not just the cognitive and technical aspects of orchestration, but also the emotional and behavioral attributes for leading in dynamic contexts. This makes it possible for competencies to grow step-by-step—from basic familiarity to visionary application.

Notably, KSAH is conducive to developmental transparency. With the KSAH as an organizing lens, ARO provides learnable trajectories while maintaining its complexity. It makes a point of not only ‘knowing what to do’, but also ‘how to do it’, ‘why it matters’, and ‘how to sustain it’.

The learning outcomes and stages of the ARO dyads will be shared in section 9, but here we articulate ARO as a developmental competency, appropriate for formative education, leadership development, and other organisational applications. It is

consistent with the VFC framework's dedication to blend depth of learning with future readiness and system impact.

5- Theoretical Integration Summary: In this respect, the above section has integrated several theoretical threads to conceptualize ARO as a strategic capability for future evolution. Grounded in the Dynamic Capabilities Framework (Teece et al., 1997), Resource Orchestration Theory (Sirmon et al., 2011), and nascent scholarship on open-system orchestration (Heller, 2022), ARO is conceptualized as the ability of the self to align and mobilize a variety of resources in dynamic, oftentimes ambiguous environments.

The paper structures the ARO into four constitutive elements - Contextual Sensing, Strategic Alignment, Collaborative Recombination, and Scalable Deployment- which constitute a regimented behavior rationale for an organizational phenomenon (ARO) often interpreted as a managerial "black box". This has been located within the Visionary Management Dimension of the VFC Competence Framework (AbdelMohiman & Salem, 2025), with ARO linking leadership, operational strategy, and sustainable scaling.

The KSAH model and its integration prepare ARO for use in a learning and leadership curriculum. Unlike skill-based models, which necessarily isolate skills, KSAH supports the tracing of growth patterns across knowledge, skills, attitudes, and habits in a "single" developmental trajectory. This places ARO not just as a skill to be learned but as a skill to be developed through formal, formative, and experiential learning.

These theoretical moorings therefore cooperate to facilitate a move to the following section and, in turn, to their realization in practice (i.e., what it means to be an adaptive orchestrator)-- from the conceptual foundations to the actual behaviors, values, and performance metrics on the ground.

*** What It Means to Be an Adaptive Resource Orchestrator**

Being an adaptive resource orchestrator is a leadership identity that incorporates systemic reasoning, ethical judgment, and operational agility. It's a move from roles as static boxes on an org chart to an ongoing, fluid, and contextual force—the kind of leadership where hierarchies are irrelevant, but the ability to adapt people, resources, and meaning amid uncertainty is everything. This subsection specifies the behavioral

personality and situational function of the conductor as embodied in the ARO model.

At heart, the orchestrator is a director of intricacy. When prescriptive designs break down, orchestrators notice emergent patterns, allocate scarce resources and build adaptable ways forward. That calls for an enhanced sensitivity to context intelligence (the capacity to read environmental cues and to adapt one's behaviour as stakeholder dynamics, the flow of resources, and systemic risks change) (Teece et al., 1997; Heller, 2022).

The adaptive orchestrator also embodies the spirit of collaborative governance. While more passive than controlling, they create facilitating frameworks for others to intervene. Such negotiations involve the establishment of resource boundaries, the creation of trust-based partnerships, and the guidance of distributed teams that allow autonomy (Zeng et al., 2022). These behaviors are particularly applicable in matrixed organizations, disaster response networks, and education systems where power is distributed, but coordination is critical.

Critically, adaptive orchestrators do so with ethical precognition. They know that decisions about resources have long-term impacts on people, ecosystems, and the viability of institutions. They thus navigate between the expedient and the prudent as they make short-term concessions and compromises with value and purpose to operate and survive in times of uncertainty (Burke, 2022; AbdelMohiman & Salem, 2025).

In the framework of the VFC Competence Framework, the orchestrator is not technical or administrative—a vision builder and developer. In short, it is creating the circumstances for collective advancement through the re-potentiating of resources that are responsive and scalable. Adaptive orchestrators are translators of complexity for action, enabling organizations and communities to act in the face of uncertainty while retaining coherence.

This identity is especially applicable for emerging leaders, youth workers, and educators–those who are placed between systems but without legal power. By developing ARO, such leaders become able to guide in the form of orchestration without guardianship and contribute to the development of systems that are agile and fair.

*** Data Analysis and Key Findings**

1- Methodological Framing: This study employs a thematic synthesis

method to investigate how ARO is seen to materialise in practice across industries. In keeping with the paper's objective for theory-building and early validation of ARO as a behavioral competency, the methodology prioritizes cross-case interpretive analysis instead of statistical generalization. This is consistent with the developmental perspective of the VFC Competence Framework, which favors context-rich, practice-based knowledge for competency modeling (AbdelMohiman & Salem, 2025).

The review is based on a selected set of empirical and conceptual studies collected employing a previous literature review. These consist of case-based scholarship in IT governance (Jatmiko et al., 2022), in educational leadership (Anis, 2024; Bentsen et al., 2024), in innovation ecosystems (Zeng et al., 2022), in human resource systems (Burke, 2022), and open-system orchestration (Heller, 2022). The selection was based on three criteria: -

1- Explicit attention to coordination or orchestration processes,

2- Evidence of leadership behavior under dynamic or uncertain conditions,

3- Relevance to one or more domains of the Visionary Management Dimension (Leadership, Management, Scaling).

With the help of a framework-driven thematic coding, behaviors, enabling circumstances, and institutional tensions were derived from each source. These were subsequently categorized into repeated cross-sectoral themes (which illuminate the operation of ARO in formal and informal leadership contexts). This approach facilitates a nuanced view of ARO as a practice across functions, industries, and organizational forms.

The findings that are presented in the subsequent section are a grounded analysis of these patterns, which is directly applicable to the way the competency is defined in the VFC model.

2- Thematic Findings Across Domains**:** The analysis revealed four common themes spanning across industries and applications, thus providing empirical support for the ARO model. These themes correlate with the theoretical aspects discussed in Section 5 and once again strengthen ARO as behavioral competence cast in the leadership practice.

Theme 1: Contextual Intelligence and Decision-Making Under Uncertainty

Across multiple domains, the best orchestrators realised that they were able to read the dynamics of an environment and to reallocate resources accordingly. In university and college responses to the COVID-19 crisis, Jatmiko et al. (2022) indicated that environmental scanning and governance alignment leaders facilitated a faster pace in going digital and institutional coherence, which are two reform processes. Next, also in the context of software development, were DevOps teams, which were "orchestrators" that could proactively notice emergent bottlenecks and re-sequence tasks in real time (Ferrara et al., 2023). They are the stuff of what the ARO model calls contextual sensing—the ability to continually scan, interpret, and predict change.

Theme 2: Boundary-Spanning Collaboration and Distributed Power

Resource orchestration tended to be performed without hierarchical control in education, platform enterprises, and public administration. A study of open-system orchestrators by Heller (2022) also demonstrated how people organized across institutions even when they had no formal authority, instead having influence conferred upon them through credibility, shared language, and relational trust. This also holds in vocational education, where teachers act as adaptive mediators of shared learning environments (Bentsen et al., 2024). Zeng et al. (2022) showed how entrepreneurial orchestrators unlocked scale through partner-led innovation rather than control driving. These four patients confirm the ARO focus on team recombination and co-determination as the most important orchestrator characteristics.

Theme 3: Adaptive Recombination and Resource Innovation

Innovation amidst constraint continually surfaced as an indicator of successful orchestration. Concerning public sector reactions to crisis, Mayarafa (2023) demonstrated how managers recycled idle instruments and informal partnerships for service delivery and maintenance. In complex HR ecosystems, it is not adding resources that creates value, but reshuffling existing human and relational capital, as Burke (2022) argued. These examples are consistent with ARO's 2nd principle of resource recombinations: the behavioral capability to creatively and ethically re-distribute assets to address changing pressures.

Theme 4: Systemic Alignment

and Scalable Implementation

Lastly, successful orchestration was a function of whether the work could scale through time and across teams and still be coherent. Orchestrators who constructed modular governance systems and reinforced shared values were instrumental in enabling more adaptive scaling both in higher education (Jatmiko et al., 2022) and in platform-based organizations (Zeng et al., 2022). In the education sector, Anis (2024) demonstrated that leaders for post-COVID reform are succeeding by incorporating digital adaptation "in the system's DNA" rather than simply adding on to existing backward structures (p. These learnings help to augment the last component of ARO: scalable deployment, which necessitates mutual long-term orientation, iterative implementation, and strategic anticipation.

Together, these thematic results serve to illustrate that ARO is not just a concept but a lived activity of practice in various contexts. The subsequent section will synthesize these cross-case themes to draw out common success factors, barriers, and implications for competence development with the VFC Visionary Management Dimension.

3- Cross-Case Synthesis: Common Patterns and Tensions**:** The thematic analysis showed strong convergence with respect to the behaviours and condition-enablers of effective ARO across domains. While sectors differed, musical orchestrator functions consistently involved relational, ethical, and adaptive capacities that were beyond conventional management models. This sub-section synthesises three across-cutting patterns and three recurrent tensions that frame ARO practice.

*** Common Patterns**

1- Orchestration Thrives in Low-Authority, High-Responsibility Roles**:** In instances, the orchestrator was not the decision-maker but was very influential in allowing the system to progress. Bentsen et al. (2024) and Heller (2022) show that open-system facilitators, orchestration that worked, did not rely on authority, but on coordinating many players and mobilizing trust. This places ARO as a core value of mid-level professionals, youth leaders, and educators addressing the hybrid accountability structure.

2- Success Relies on Invisible Enablers: Trust, Reflection, and Value Alignment**:** Orchestrators were effective in almost all high-performing cases because they fostered common purpose,

psychological safety, and reflexive decision making. These intangible catalysts, which are not as prominent as tools or workflows, supported a fundamental process of aligning resources and getting stakeholders to shape the future (Burke, 2022; Mayarafa, 2023). The orchestration is as much cultural as it is structural.

3- Orchestration is Activated by Constraint, Not Abundance**:** According to Andersén (2020), many of the orchestrators were at their best when resources were scarce. They were constrained to repackage resources innovatively, to operate through informal networks, and to work toward outcomes rather than processes. This supports the conceptualization of ARO as a resiliency-enhancing mechanism, particularly in volatile and resource-deprived contexts.

*** Recurring Tensions**

1- Resistance from Legacy Structures**:** Adaptive orchestration was opposed by hierarchical systems and existing procedures. Like what is found in higher education (Jatmiko et al., 2022) and HR management (Burke, 2022), stiff bureaucracies worked against the adaptability that ARO advocates. This balancing act emphasizes the importance of having organization cultures that promote decentralized leadership and modular governance.

2- Misalignment of Timeframes**:** Orchestrators commonly operate in short time ranges (as in, in direct response to an immediate crisis or logistical problem or the day-to-day concerns of a live environment) while institutions by design are geared to have long time-horizons. This temporal folly created temporal chasms between the orchestrators and the executive forces that made decisions, both in platform efforts to scale (Zeng et al., 2022) and responses to crisis (Mayarafa, 2023).

3- Lack of Orchestration Literacy Among Stakeholders**:** Instances were raised in a number of studies where even successful orchestrators were hampered by the fact that their partners or overseers did not share an understanding of orchestration logic (Heller, 2022). This hole hindered collaboration, led to redundant effort, and left orchestrators over-functioning or burned out. It speaks to the value of an orchestration capacity, together, not just in excellence.

These results validate the necessity of bringing ARO into development programs as a systemic, cultural, and behavioral competence. They also emphasize that it is important to have established

orchestration practices and to document such practices into a shared language and progression framework, as suggested in subsequent sections of this paper. The next section will connect these findings closely with the Visionary Management domains of the VFC Framework.

4- Domain-Level Insights Within Visionary Management; The identified empirical patterns across industries highlight the strong topical relevance of ARO for the three subfields of the Visionary Management Dimension of the VFC Competence Framework: Leadership, Management, and Business Scaling and Development. Though these domains are conceptually differentiated, ARO serves as a linkage between behavioral faculty, allowing leaders to move adaptively within them.

*** Leadership Domain: Enabling Direction Through Shared Action**

On the domain of Leadership, ARO invests in influencing despite a lack of authority, nurturing the ability to lead through coordination, trust , and systems-scaled awareness. The evidence indicates that orchestrators guide by purpose, broker by collaboration, and manage through complexity, particularly in power-distributed settings (Heller, 2022; Bentsen et al., 2024). Most people like these start forward progress by getting alignment, rather than by issuing orders. This resonates with the VFC framework's vision of vision-based leadership in terms of how orchestration becomes a mediation in translating purpose into collaborative agency.

*** Management Domain: Operationalizing Flexibility and Responsiveness**

In Management (in other respects), ARO provides an alternative to static planning and "top-down" control. The results of the study supported that the orchestrators function as adaptive managers that can dynamically reshuffle resource allocation, goal priorities, and workflow configurations in response to emerging needs (Burke, 2022; Jatmiko et al., 2022). This proactive way of managing is about real-time characteristics, scenario thinking, and ethical agility. ARO therefore helps management to stay strategically coherent and operationally agile—characteristics that are important in dynamically changing contexts.

*** Business Scaling and Development Domain: Building Adaptive Systems for Growth**

In the Scaling and Development space, ARO is definitely a skill when it comes to

building anti-fragile and growth-enabling infrastructure. Orchestrators in this domain don't just scale operations; they scale vision, governance, and learning capability. As Zeng et al. (2022) show in platform-centric firms, scaling is undertaken through orchestrators and the presence of modular systems and decentralized innovation. This confirms ARO as a strategic driver of sustainable, value-based growth in line with the VFC's demand for inclusive and regenerative growth paths.

In conclusion, the ARO provides support for individuals to engage with all three subdomains of Visionary Management—intent to deployment, systems to people, and strategy to learning. These understandings rationalize the central role of ARO in the VFC model and lend impetus to its construction as a comprehensive leadership skill ready for formal study.

5- Synthesis – How ARO Functions in Practice: The pattern of cross-sectoral results presented throughout this section clearly establishes an empirical foundation for ARO as a behaviorally-based real-world competency, as opposed to an exclusively theoretical approach or model. ARO is achieved not through 'qua feeling' or officialdom, but as a process of reflex, judgment, coordination, and ethical responsiveness in volatile environments. This concluding subsection provides a synthesis of how ARO works in practice and establishes its key role as a tool for visioning leadership in complex systems.

To begin with, ARO is a context-dependent competence. In digital transformations, platform-scale efforts, and educational reform, orchestrators practice the "scan, reflect, and allocate" form of iterative problem-solving. Their success depends less on stored knowledge than on the recognition of patterns and on adaptive logic (Teece et al., 1997; Heller, 2022).

Second, ARO has environments that are relational and trust-based in nature. Orchestrators are not command and control planners, but boundary spanners who connect actors, align expectations, and build collaborative capacity across organizational layers (Zeng et al., 2022). They wield power in the way of the servant instead of the master, which makes ARO potent for new leaders who lack positional power.

Third, ARO does not just survive scarcity; it is sustained by it. The best instances of orchestration

come out of situations where there's little time, money, or even understanding. This highlights the need to also develop ARO for resource-constrained systems, which are not only high performance, but volatile and emergent, whereby flexibility and resilience are essential (Andersén, 2020; Burke, 2022).

This further means, fourth, that ARO is a scalable behavior. The results suggest that effective shapers incorporate routinized activities and relational infrastructure that are durable across individualized campaigns. They build modular systems and feedback-heavy environments that keep the orchestra playing even as the ground is shifting under its feet. This long-term perspective is consistent with the Business Scaling and Development area and with the VFC framework's call for sustainability-oriented leadership.

In action, ARO provides emerging leaders with the capabilities to move through great ambiguity, aligning stakeholders, reconfiguring assets, and cultivating resilient pathways to scale, not by commanding systems, but by orchestrating them.

*** Learning Outcomes – KSAH Model**

1- Knowledge: Adaptive Resource Orchestration (ARO) is based on a hierarchically organized knowledge basis that progresses from system structures via strategic alignment to organizational flexibility. This understanding allows people to make sense of complexity, match purpose with resources, and foresee contingencies amidst volatile contexts.

*** Novice Level: Foundations in Systems and Resources**

Systems Thinking For novices, they gain an understanding of the basics of systems thinking, such as interdependence, feedback loops and nonlinear behavior (Senge, 1990; Jackson, 2003). They also learn to differentiate among three important categories of resources -- human, digital, and informational -- and their role in strategic and operational dimensions. Introduction to the Dynamic Capabilities Framework (Teece et al., 1997) provides the foundation for the understanding of the role of sensing and responding to the environment.

*** Intermediate Level: Strategic and Contextual Framing**

As students advance, they gain fluency in the conceptual terrain of ROT (Sirmon et al., 2011) and in techniques for contextual analysis, such as stakeholder mapping and scenario planning. They learn to

evaluate trade-offs, forecast risk, and to align a range of assets with changing institutional goals. It is important to understand that one is operating within an ethical complexity, particularly in times of uncertainty or resource constraints.

*** Advanced Level: Institutional Design and Meta-Reasoning**

At the expert level, orchestrators can build deep expertise in institutional settings, governance, scaling models, and feedback-based adaptation. They engage in meta-system thinking—the ability to entertain multiple viewpoints, values, and organizational logics at the same time (Snowden & Boone, 2007; Zeng et al., 2022). Such a depth of know-how allows long-term design thinking and transformation leadership.

At all levels, learning is scaffolded through reflection, feedback, and sensitivity to culture. In MENA and other high-context contexts, orchestrators should also traverse tacit norms, informal power, and collective memory, necessitating higher socio-institutional literacy (House et al., 2004; Afiouni, 2014). As students grow and their learning deepens, they move from a reactive analysis level of knowledge to a proactive systems level of knowledge.

2- Skills: The skillset required for Adaptive Resource Orchestration (ARO)are practical and transferrable skills that help people think and move in times of uncertainty, constraint, and stakeholder complexity. These practices represent a change from the detail of task management to the coordination of circumstance, strategic facilitation, and adaptive leadership.

*** Novice Level: Basic Coordination and Environmental Scanning**

At the entry stage, learners begin to develop situational awareness, including understanding the need to scan for environmental information, recognize basic resource constraints, and express needs within the context of team membership. Organizational competencies such as "prioritizing and planning work activities, setting goals and objectives, developing schedules, estimates, and budgets." Simple communication and the delegation of tasks start to appear as key devices for internal coordination (Brownell, 2012; Edmondson, 1999).

*** Intermediate Level: Stakeholder Facilitation and Adaptive Planning**

At the intermediate level, individuals develop skills in multi-stakeholder coordination, including active negotiation, conflict de-escalation, and group facilitation.

Participants will learn how to re-engineer processes on the fly, enabling cross-functional collaboration and balancing short-term execution with long-term alignment. Scenario- and response-based thinking are the heart of managing ambiguity (Raelin, 2006; Kahneman & Klein, 2009).

*** Advanced Level: Strategic Synthesis and Systems Navigation**

Expert orchestrators excel in integrating conflicting signals into actionable plans. They drive adaptive implementation cycles, reimagine systems under pressure, and steer organizations through pivots. Skills include: -

1- Leading through distributed influence,

2- Orchestrating across hierarchical and cultural boundaries,

3- Facilitating systemic innovation in real-time (Kahane, 2010; Zeng et al., 2022).

Their facilitation is not reactive—it is strategic, generative, and anticipatory.

At every stage, ARO's focus on collaborative agency, malleability, and relentless reframing is a "Skill" to be built. These skills are especially crucial in ecosystems with a high degree of informal authority, even more so in the context of youth leadership programs, cross-sectoral collaboration, or crises, which is why they constitute the backbone of the VFC Visionary Leadership model.

3- Attitudes: Adaptive Resource Orchestration (ARO) is grounded in internal mindsets that inform how actors interpret uncertainty, interact with the stakeholders, and respond with constraint. These tendencies are not ingrained, unalterable qualities, but are acquired and refined with age and circumstance. They shape the standard of orchestration even more than mechanical skill or strategic finesse.

*** Novice Level: Openness and Responsibility**

At the beginner level, learners initiate to embrace a psychological opening to complexity and an engagement with collective accountability. They would desire structure and clarity at first, but they settle for ambiguity as a part of leadership as an emerging orchestrator. They start to honor varied contributions and demonstrate the capacity to listen, albeit without full comprehension yet (Vygotsky, 1978; Brown & Ryan, 2003).

*** Intermediate Level: Humility, Reflexivity, and Shared Power Orientation**

Intermediate learners, by contrast, internalize a stance of collectively encountering humility,

which acknowledges that effective orchestrating is predicated on valuing the expertise of others and giving up control. Reflexivity increases – people start to think more about the second-order effects of interventions and start to change tack. During this stage, a major attitude change is the extent to which shared power becomes internalized rather than seen as something that is co-created (Uhl-Bien, 2006; Owens & Hekman, 2012).

*** Advanced Level: Ethical Foresight and Systemic Stewardship**

At a more advanced stage, the resource orchestration capabilities generate a realization or sensitivity of the ethic of care—a future-oriented concern about the if, where, when, and how resource decisions affect people, time, and systems. They behave with moral clarity in a context of uncertainty, recognizing that the stewardship of interdependence is at the heart of what they do. Authoritarian forms of leadership with the explicit endorsement of democratic norms promote long-term commitment and legitimacy, particularly at scale or during crises (Maak, 2007; Muff et al., 2020).

ARO attitudes are especially important in high-context (Hall, 1976), decentralized, and multicultural systems where relational sensitivity and trust development determine influence more than formal status. As these attitudes ripen, they allow the orchestrator to represent calm, clarity, and right sense in challenging conditions.

4- Habits: Although the foundation of Adaptive Resource Orchestration (ARO) is knowledge, skills, and attitudes, it is habits that sustain and maintain orchestrated leadership. In the present context, habits are the ingrained patterns of behaviour that embody internalised values and, in the long run, enhance systemic effectiveness. They communicate that a leader is ready to respond calmly, with structure and clarity, even as tumult swirls.

*** Novice Level: Conscious Application and Structured Practice**

At the base of the hierarchy, habits are conscious and externally directed. Orchestrators start with purposeful practice—planning each day daily, scanning the environment, and some baseline degrees of team-level alignment exercises. They use visual aids such as whiteboards, checklists, and guided flows to orchestrate responses. These behaviors help to internalize the ARO

pattern, but remain effortful and guided (Bandura, 1977; Duhigg, 2012).

*** Intermediate Level: Adaptive Routines and Reflexive Adjustment**

As learners become competent, they acquire semi-automated routines that remain sensitive to future feedback. Those sorts of practices, like the weekly resource roundup, stakeholder check-ins, and debriefs of our learning all become natural to how we wind. Leaders at this stage continuously assess what is and isn't working well and update their orchestration approaches as needed. These habits are facilitated by relational trust and situational reiteration (Kolb, 1984; Seligman, 2011).

*** Advanced Level: Embedded Systems Thinking and Ethical Anchoring**

At the level of expertise, habits become ingrained behaviors-automatisms in tune with systemic sensibility and ethical prudence. This includes: -

1- Habitual stakeholder inclusion in decision cycles,

2- Preemptive reallocation of resources based on pattern recognition,

3- Consistent feedback-driven recalibration of team objectives.

Expert orchestrators don't require a "push" to work inclusively, adaptively, or to be accountable; their rhythms are formed by being, not doing (Küpers, 2011; Pless, 2007). These deep habits make orchestration across complexity relatively friction-free, oversight-free.

*** Institutional Embedding and Cultural Reinforcement**

To be sustainable, for ARO habit, they also need to be institutionalized — placed within team norms, planning rituals, and governance rhythms. This includes establishing feedback-rich work climates, shared leadership practices, and cultural practices that affirm adaptive modes of behaving (Graen & Uhl-Bien, 1995). Where these arrangements operate, managed leadership is a joint activity, not an occasional solo event.

Stage	Knowledge	Skills	Attitudes	Habits
Novice	Understands basic systems thinking and resource types. Grasps alignment and constraint concepts.	Conducts simple coordination and resource identification. Communicates needs within teams.	Shows openness to complexity and emerging responsibility. Listens and respects diverse views.	Uses planning tools and checklists. Builds routines around team check-ins and task clarity.
Intermediate	Applies resource orchestration principles. Analyzes context using stakeholder and scenario tools.	Facilitates collaboration across teams. Adapts workflows and reallocates resources.	Practices humility, shares power, and reflects on decisions. Values stakeholder alignment.	Reviews workflows regularly. Integrates feedback into coordination cycles.
Proficient	Understands governance systems and adaptive design principles. Aligns short- and long-term goals.	Leads cross-functional orchestration. Resolves conflicts and manages systemic constraints.	Exercises ethical foresight. Balances competing needs while upholding collective priorities.	Builds inclusive planning and reflection into routines. Facilitates adaptive cycles.
Advanced	Synthesizes institutional, ethical, and system-wide knowledge. Designs for scalable resilience.	Orchestrates under volatility. Embeds systemic learning and scaling frameworks.	Embodies stewardship, systemic optimism, and trust-based authority.	Operates through embedded, values-driven routines. Models anticipatory orchestration.

*** Conclusion and Future Research**

Adaptive Resource Orchestration (ARO) has been identified in this study as a unique, forward-looking capability that embodies a strategic mindset, systemic consciousness, and collaborative practice in all three domains of the Visionary Management Dimension-Leadership, Management, and Business Scaling. Theoretical underpinnings, cross-disciplinary literature, and applied research suggest that ARO is not a role-based such as trait or static characteristic but a dynamic, developmental ability that is based in behavior, formed by context, and oriented by a moral purpose.

ARO supports and empowers people at any level, from amateur coordinator to expert institutional designer, to work as system stewards, descaling, letting go, stumbling around, and freeing all the potential to be found in the tightly-wound spinning plates of reality in transition. Of direct relevance to youth leadership, public transformation, and hybrid ecosystems, this competency captures the sort of goal-directed flex that is required to channel against disruptive change.

This paper has characterized ARO, its knowledge base, behavioral markers, and attitudinal anchors, and categorized its learning outcomes in the VFC Framework's KSAH model. It also combined measures of progression to assist in the application to practice of talent development, curriculum design, and strategic human capital interventions.

*** Future Research Directions**

Despite its conceptual clarity, ARO remains an emerging domain with important questions still open for investigation: -

1- Empirical Validation: Future research will need to validate ARO's stages of development, associated behavioral markers, and cross-cut impact among domains through quantitative testing of longitudinal and cross-cultural data.

2- Cultural Framing and Adaptation: Because orchestration is highly context dependent, it is important to understand how ARO works out in the Global South, Arab, and post-colonial spaces, where informal governance and social capital are more prevalent.

3- Integration with AI and Digital Tools: As resource orchestration becomes more technology-mediated, there is room to explore how AI, digital platforms, and data systems shape human-centric orchestration in complex institutions.

4- Youth Competency Transfer: Given the focus of the VFC Framework on the power of young people, further research could explore how ARO can be used as a scaffolded framework in secondary and tertiary education, and how it intersects with employability, civic agency, and social entrepreneurship.

5- Organizational Embedding: Lastly, we encourage future case studies to explore how ARO becomes institutionally embedded through policies, feedback systems, and language and discursive features of organizational rituals, especially in public sector change and scaling social impact.

Positioned at the intersection of leadership theory, systems practice, and competency development, Adaptive Resource Orchestration provides not just a skillset but a strategic posture—a way of leading with agility, integrity, and interdependence in an era that requires nothing less.

*** References**

AbdelMohiman, M. M., & Salem, A. H. (2025). VFC Competence Framework as a human resources development framework: A qualitative study of competency-based teaching and learning theories. International Journal of Contemporary Education, 8(2), 49–62. https://doi.org/10.11114/ijce.v8i2.7521

Afiouni, F. (2014). Women's careers in the Arab Middle East: Understanding institutional constraints to the boundaryless career view. Career Development International, 19(3), 314–336. https://doi.org/10.1108/CDI-05-2013-0060

Andersén, J. (2020). Resource orchestration for team-based innovation: A case study of the interplay between capabilities, resources, and performance. R&D Management, 50(2), 187–202. https://doi.org/10.1111/radm.12372

Anis, H. (2024). Teacher professional development in the digital age: Addressing the evolving needs post-COVID. Contemporary Issues in Educational Research, 17(2), 125–140. https://doi.org/10.19030/cier.v17i2.698

Bandura, A. (1977). Social learning theory. Prentice Hall.

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99–120.

https://doi.org/10.1177/01492063910170010 8

Bentsen, B. M., Presterud, A., & Røsvik, S. (2024). Orchestrating vocational education classrooms for adaptive instruction and collaborative learning. Teaching and Teacher Education, 139, 104511. https://doi.org/10.1016/j.tate.2024.104511

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. Journal of Personality and Social Psychology, 84(4), 822–848.

Brownell, J. (2012). Listening: Attitudes, principles, and skills (5th ed.). Pearson.

Burke, R. J. (2022). Toward a non-organizational theory of human resource management: A complex systems perspective. Human Resource Management, 61(5), 487–500. https://doi.org/10.1002/hrm.22096

Duhigg, C. (2012). The power of habit: Why we do what we do in life and business. Random House.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. Administrative Science Quarterly, 44(2), 350–383.

Ferrara, F., Tortorella, G. L., Miorando, R., & Marodin, G. A. (2023). The evolution of software development orchestration: Current state and an agenda for future research. Information & Management, 60(2), 103713. https://doi.org/10.1016/j.im.2022.103713

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader–member exchange (LMX) theory. The Leadership Quarterly, 6(2), 219–247.

Hall, E. T. (1976). Beyond culture. Anchor.

Heller, H. (2022). Modeling the individual-level practices and competencies of open-system orchestrators [Master's thesis, Aalto University].

House, R. J., et al. (2004). Culture, leadership, and organizations: The GLOBE study of 62 societies. Sage.

Jackson, M. C. (2003). Systems thinking: Creative holism for managers. Wiley.

Jatmiko, B., Sofyani, H., & Putra, W. M. (2022). The IT resource orchestration and performance

during the pandemic: Evidence from higher education institutions. Cogent Business & Management, 9(1), 2148333. https://doi.org/10.1080/23311975.2022.2148333

Kahane, A. (2010). Power and love: A theory and practice of social change. Berrett-Koehler.

Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise. American Psychologist, 64(6), 515–526.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice Hall.

Küpers, W. (2011). Embodied inter-practice: Phenomenological perspectives on the "between" of organizational practices. Philosophy of Management, 10(2), 41–59.

Maak, T. (2007). Responsible leadership, stakeholder engagement, and the emergence of social capital. Journal of Business Ethics, 74(4), 329–343.

Matook, S., & Maruping, L. M. (2020). Development coordination and team performance in complex product development: An empirical study of DevOps capabilities. Journal of the Association for Information Systems, 21(2), 389–415. https://doi.org/10.17705/1jais.00615

Muff, K., Dyllick, T., Drewell, M., North, K., Shrivastava, P., & Haertle, J. (2020). Management education for the world: A vision for business schools serving people and planet. Edward Elgar Publishing.

Mayarafa, M. (2023). Orchestrating government services in crisis response: A resource-based analysis of public administration in Arab states. International Review of Administrative Sciences. https://doi.org/10.1177/00208523231103826

Owens, B. P., & Hekman, D. R. (2012). Modeling how to grow: An inductive examination of humble leader behaviors, contingencies, and outcomes. Academy of Management Journal, 55(4), 787–818.

Pless, N. M. (2007). Understanding responsible leadership: Role identity and motivational drivers. Journal of Business Ethics, 74(4), 437–456.

Raelin, J. A. (2006). Does action learning promote collaborative leadership? Academy of Management Learning & Education, 5(2), 152–168.

Seligman, M. E. P. (2011). Flourish: A visionary new understanding of happiness and well-being. Free Press.

Senge, P. M. (1990). The fifth discipline. Doubleday.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource orchestration to create competitive advantage: Breadth, depth, and life cycle effects. Journal of Management, 37(5), 1390–1412. https://doi.org/10.1177/0149206310385695

Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. Harvard Business Review, 85(11), 68–76.

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509–533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Uhl-Bien, M. (2006). Relational leadership theory: Exploring the social processes of leadership and organizing. The Leadership Quarterly, 17(6), 654–676.

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.

Zeng, J., Khan, Z., & Lew, Y. K. (2022). Resource orchestration and scaling-up of platform-based entrepreneurial firms: The contingent role of firm capabilities. Journal of Management Studies, 59(7), 2013–2047. https://doi.org/10.1111/joms.12811