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Business Ecosystem in Supply Chain

Changes and Prospects

DEMOCRITUS UNIVERSITY OF THRACE

Dimitrios J. DIMITRIOU

Professor Associate, Dept. of Economics, DUTh

DEPARTMENT OF ECONOMICS
https://econ.duth.gr/en/the-department/

September 29th, 2021

Profile Dimitrios J. DIMITRIOU

Dimitriou holds Doctorate in Transport demand forecasting; MSc in Infrastructures Environmental Planning; MSc in Transport Planning & Management; and Diploma (equivalent to 4 years BA & 1 year MSc) in Civil Engineering (sector of transportation).

He has long experience (25 years) in field of transportation, delivered many projects in planning, operation, management, business development and economics.

He is Professor Associate in Quantitative Analysis and Management of Transport Infrastructures, providing dedicated courses and research in subjects of transport economics, decision making and risk assessment in Dept. of Economics, Democritus University of Thrace and other Universities in Greece and Europe.

He has published over 250 papers in referred journals, scientific and professional editions, international conferences and he has elected in executive positions in professional associations and committees of expert.

He was the Chairman of the BoD in Athens International Airport (5 years). He occupied many executive positions and he provided advisory in Transport Authorities, Enterprises and Investors for investments in large projects.

In 2017/18 awarded for the Professional Achievements by the British Council and he has elected in prestigious positions in professional associations and forums.

Ecosystem – Definitions

Key definitions

- the term *ecosystem* occurs 13 times more frequently now than it did a decade ago.
  But like any buzzword, it's often overapplied.
- the term has been used to refer to everything from
  - a country ("China is the second strongest ecosystem…")
  - a support function ("the HR ecosystem"),
  - a portfolio of products ("the xCompany ecosystem is made up of 5 products"),
  - a bundle of services intended to make people happy ("a happiness ecosystem")
  - even to a faction of services delivered to a specific spatial area (FAU ecosystem)

- Behind this semantic overstretch, however, lies a substantive *new* phenomenon:
  - the rise of dynamic, multicompany systems as a new way **of organizing economic activity.**
  - 7 of the world's 10 largest companies, all using technology to disrupt not only their sectors but broad swaths of the economy, **now depend on such systems**, and ecosystems thinking is more prominent in faster-growing companies across the S&P500 (e.g. google, amazon, etc).

- Ecosystems are attractive partly because of the new possibilities they create for products and services spanning traditional boundaries
  - often using digital platforms, APIs, internet of things technology, and new tools for data gathering and analysis.

Transport Enterprises Revenues strategy

Market challenges and trends

Transport activities

- Passengers/users (ticket, park&ride, etc)
- (penalties…..)

85% → 40-50% ↓

Non transport activities

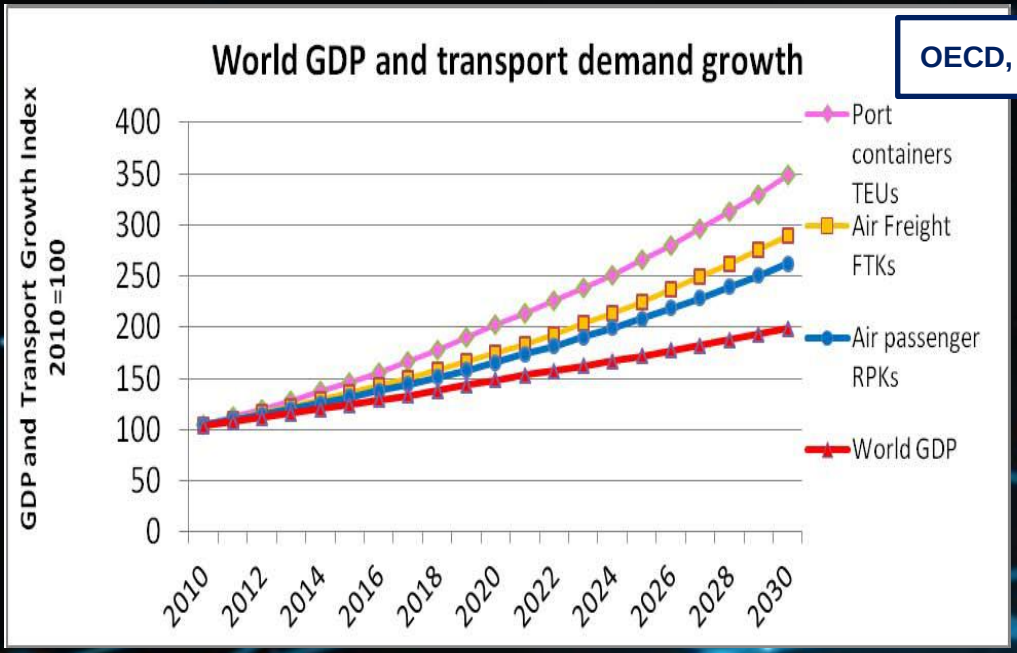
- Advertising
- Commercial activities
- Real estate

15% → 60-50% ↑

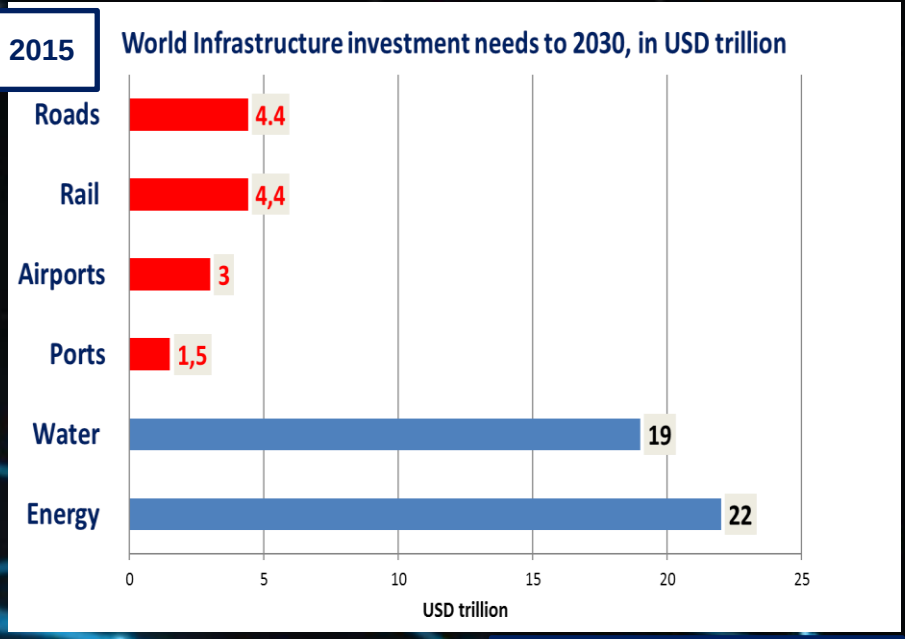
- Creditability/financing
- Portfolio/asset management
- Trade (shopping centres, sales, etc)
- Other financial services (insurance, visa, etc)
- Other non-financial services (energy, info, etc.)

- Transport spin off activities – data use

Demand drivers



OECD, 2015

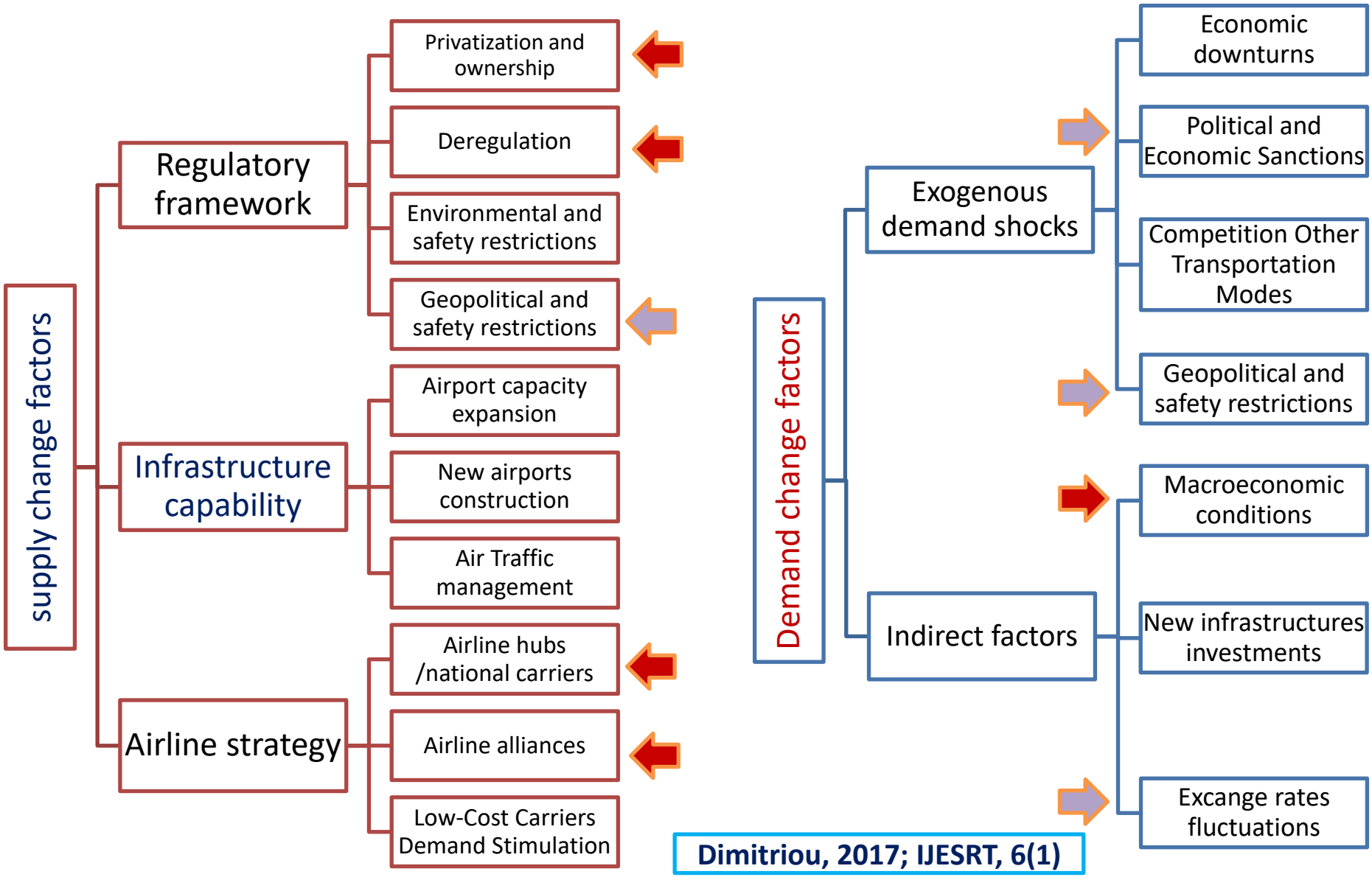


Dimitriou; Economist, 2018
Dimitriou, OECD, 2017
Dimitriou, ICAO 2017
Dimitriou, ACI 2016

Dimitrios J. DIMITRIOU

Dr./Professor Assoc. in Planning Management and Economics in Transport, Dept. of Economics, DUTh, Greece

Key variables influence air-transport business



Dimitriou, 2017; IJESRT, 6(1)

Transport sector key business planning variables

Dimitriou, UNECE; 2018

Dimitriou et al.2017, IJESRT, 6(1)

- **Strategy**
  - New market development
  - Regulation / protection vs deregulation
  - Funding – capitals leverage
  - Socioeconomic impact

Dimitriou et al., 2018; Transportation proceedia, Elsevier

- **Planning**
  - New business (routes, destinations, etc)
  - Business viability (risk sharing, incentives)
  - Intellectual property (new business)
  - Benefits return to society (CSR)

Dimitriou, 2016; Infrastructure Governance, OECD

Dimitriou, 2017; GACS II, ICAO, Athens

- **Competitiveness**
  - Regulatory framework
  - Monitoring/Review performance
  - Analysis of the competition
  - Provide information to users/market

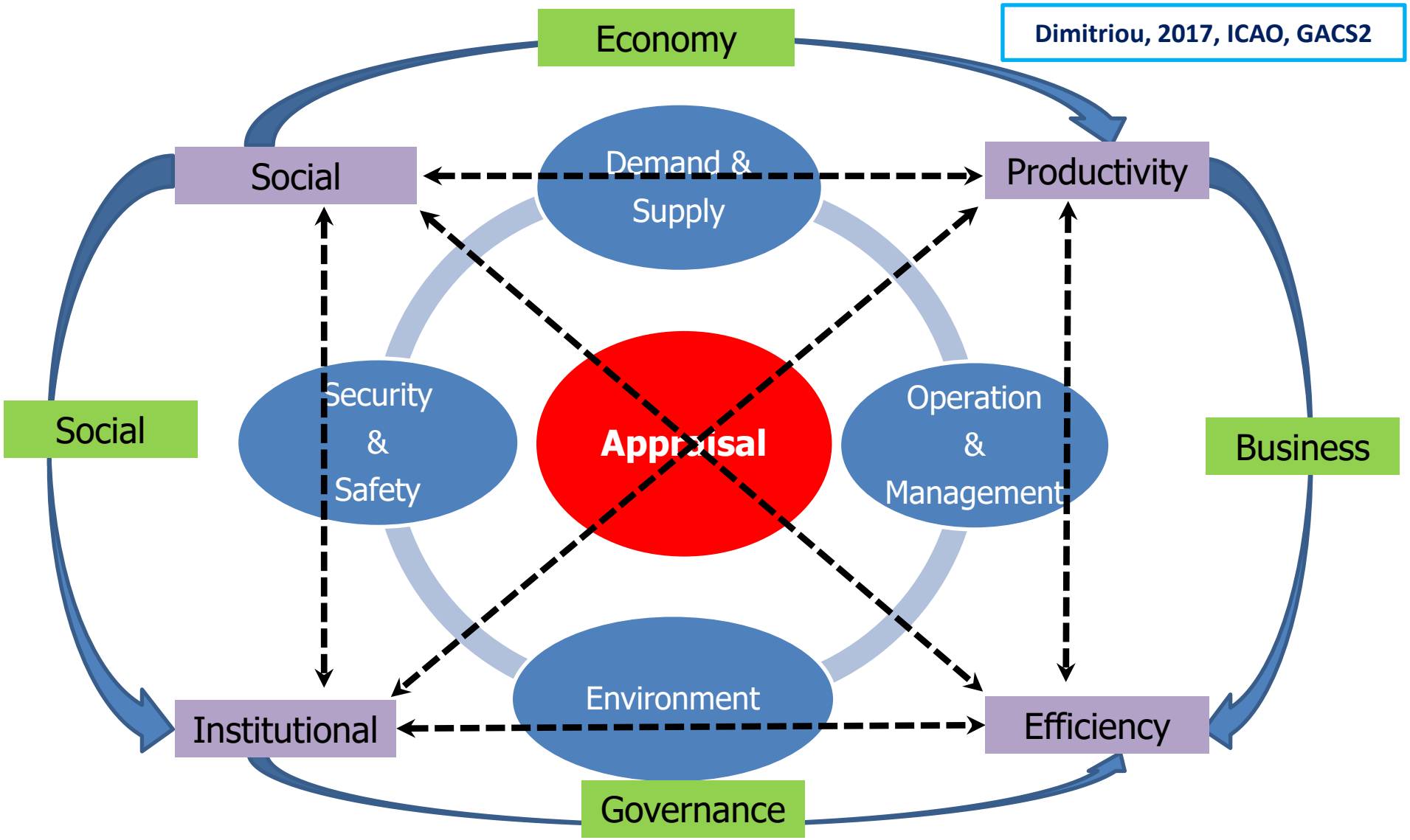
Dimitriou, 2017; Mobility as a service, UNECE, Geneva

Dimitriou, 2017; NGAP, ICAO, Canada

Dimitriou, 2018; New Skills, Economist, Athens

- **Innovation**
  - New Products - services
  - IT – ITS – SMART Business
  - Artificial Intelligence – machine learning
  - Research (SU)

Performance Appraisal and Decision Making in Transportation



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Dr./Professor Assoc. in Planning Management and Economics in Transport, Dept. of Economics, DUTh, Greece

Transport industry trends and challenges 1/3

A. Transport Industry Expectations

Expectation differencing for

- Carriers
- Infrastructure operators
- Traffic management Providers
- Authorities

Key Challenges

- Completion (globalization vs protectionism)
- Connectivity (**market access**)
- Innovation (**cost control, data use**, etc.)
- Value added (**market effects**)

B. Investments and Business Development

Key Strategies

- Concession projects
- Attract investor's
- Market growth
- National/regional goals

Key Challenges

- Ownership (**governance vs financing**)
- Regulation
- **Condition of contracts**
- **Workforce capacity** - regulation

Dimitriou 2017; COST/ATARD Workshop, Dublin
Dimitriou 2017; OECD: Forum on Governance of Infrastructure, Paris

Transport Business challenges 2/3

C. Tools Influencing Demand

Key challenges

- Pricing policy
- Regional conditions
- Demand patterns

→

Key drivers for action

- **Cost control**
- Security/safety
- **Marketing-Promotion**

D. Business development

Key challenges

- Efficiency (operation)
- Revenues (profitability)
- Cash flow (viability)

→

Key issues

- LoS / LoQ
- **Financing tools**
- **Governance structure**

E. Management

Key challenges

- Risk sharing
- Business control
- System of System approach

→

Key decision drivers

- **Funding scheme**
- **Auditing**
- HR / Talent

Dimitriou 2017; COST/ATARD Workshop, Dublin
Dimitriou 2017; OECD: Forum on Governance of Infrastructure, Paris

Corporate challenges in Air-Transport – Variables 3/3

Dimitriou 2017; COST/ATARD Workshop, Dublin
Dimitriou 2017; OECD: Forum on Governance of Infrastructure, Paris

Influencing Demand

Key Strategies
- Connectivity
- Network Planning
- Demand patterns

→

Key Challenges
- Type of Aircraft
- Travel Conditions
- **Incentives**

Manage Infrastructure as a 'private' Company

Key Strategies
- Efficiency (operation)
- Performance (profitability)
- Attractiveness

→

Key Challenges
- CAPEX
- OPEX
- Investor's appraisal

Coorporate Management

Key Strategies
- Risk sharing
- Cost control
- System of System approach

→

Key Challenges
- **Unit cost**
- Capacity/Utilization/life cycle
- **Auditing**

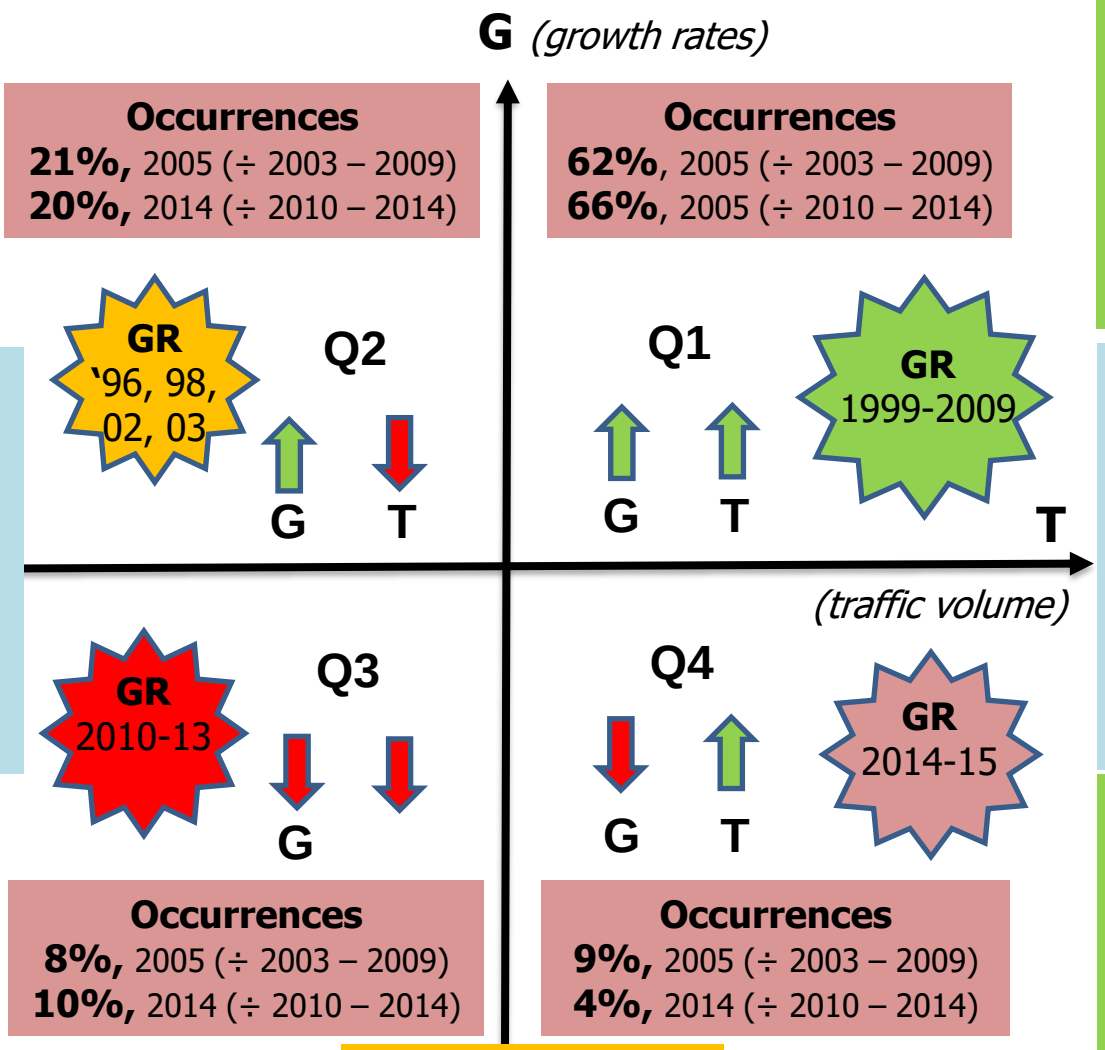
Interaction – Air Transportation & Economic Activity

Dimitriou 2018; Economist Workshop, Athens
Dimitriou 2017; COST/ATARD Workshop, Dublin

Key Facts
- PL/carriers
± PL/Airports
\+ Competition
- - Prices
- Investments
- Regulation

DM Key Drivers
Stimulate demand
Barriers to entry
Merge/Acquisition
Network concept
Optimisation
Industry marketing
Demand value chain
Impact on other sectors

Key Facts
- - PL/carriers
± PL/Airports
- - Competition
- - Prices
- - Investments
++Regulation



Source: MIT (2010), IATA (2015), Author analysis

Key Facts
\+ PL/carriers
++ PL/Airports
\+ Competition
++ Prices
++ Investments
\+ Regulation

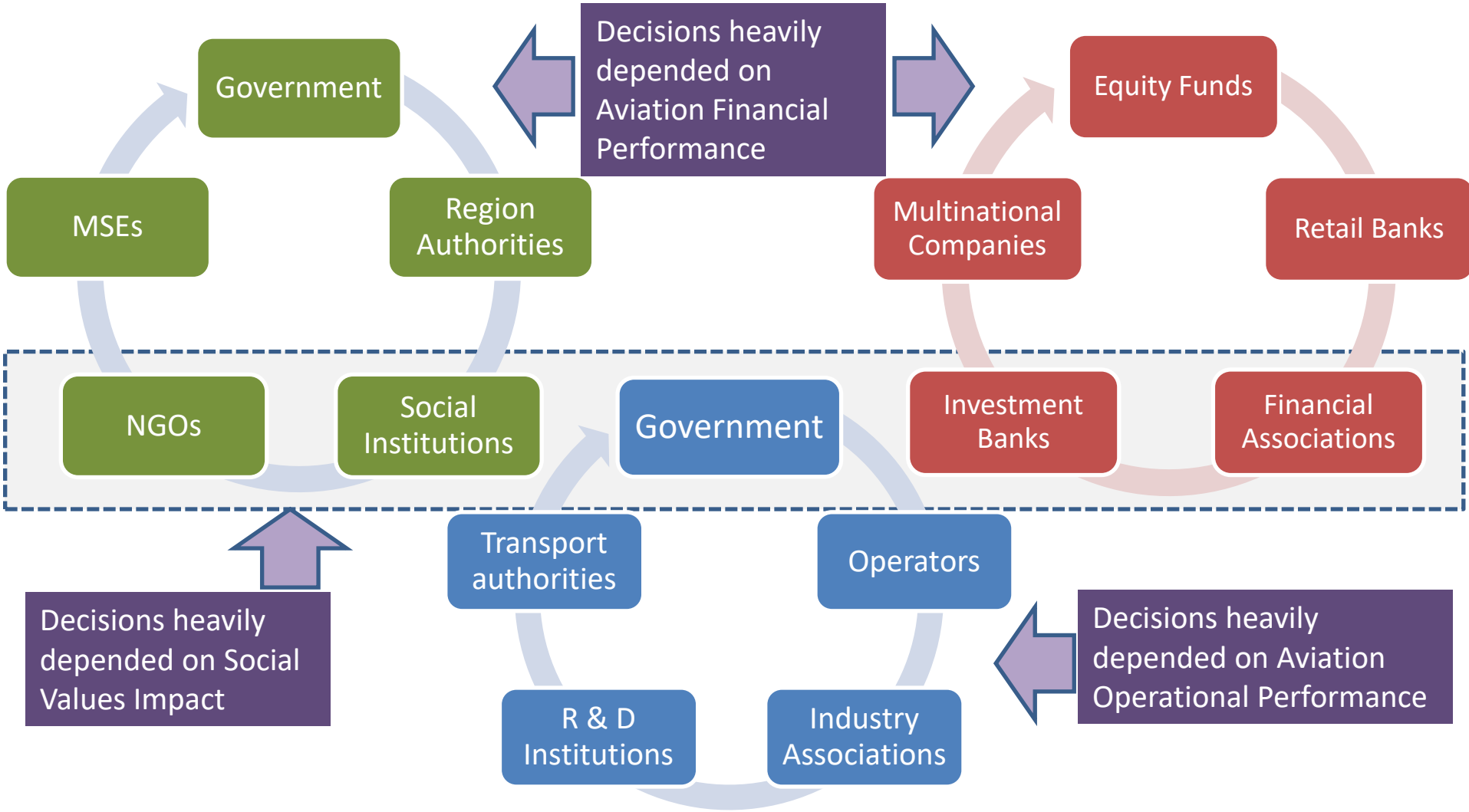
DM Key Drivers
Maintain demand
New routes/orders
Synergies
Hub/spoke concept
Differentiation
Product Marketing
Aviation Value chain
Impact on economy

Key Facts
++ PL/carriers
\+ PL/Airports
++ Competition
\+ Prices
± Investments
- - Regulation

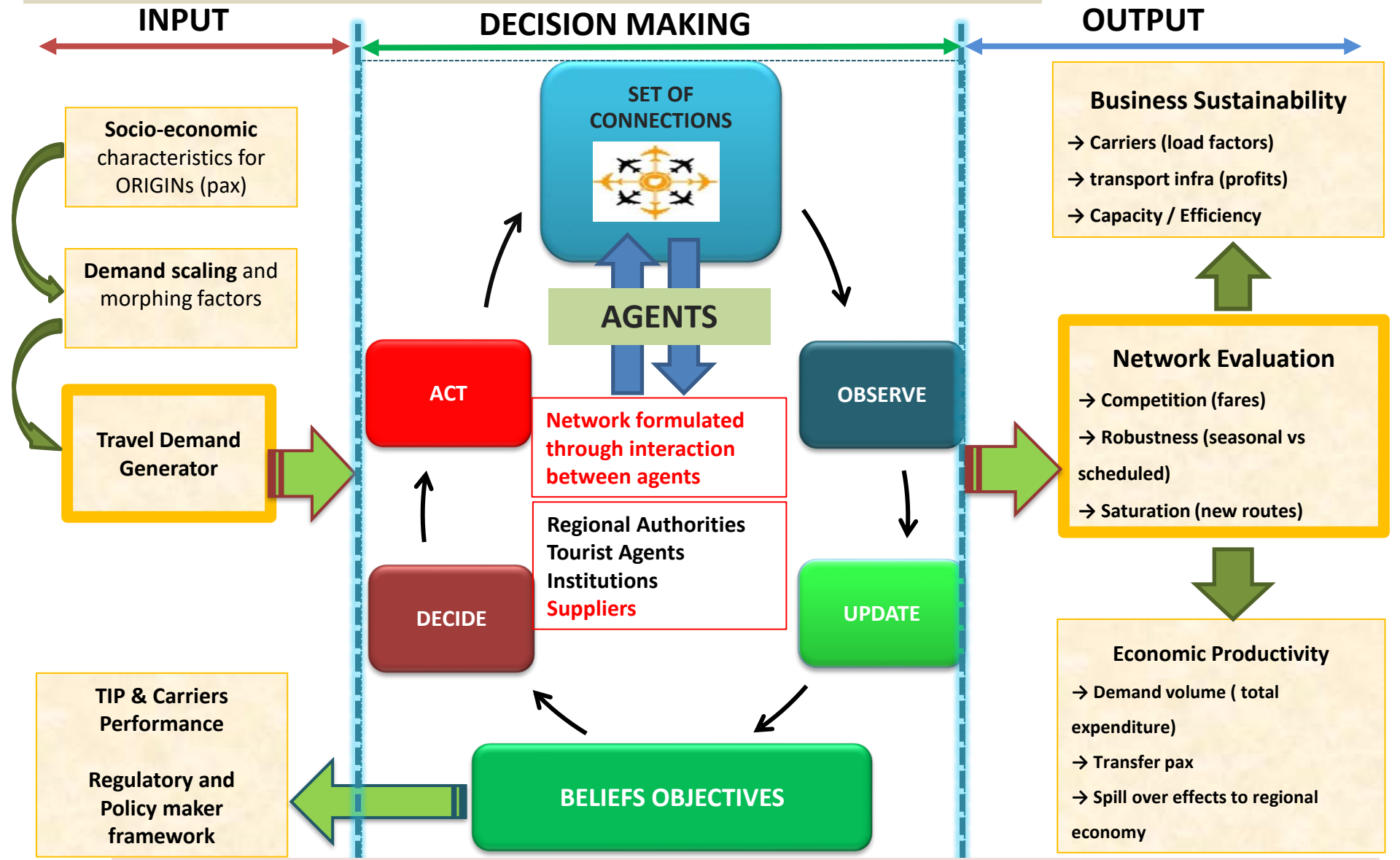
Dimitrios J. DIMITRIOU
Dr./Professor Assoc. in Planning Management and Economics in Transport, Dept. of Economics, DUTh, Greece

Transport industry decision making

Dimitriou 2018; Economist Workshop, Athens
Dimitriou 2017; COST/ATARD Workshop, Dublin
Dimitriou; ICCBMDA 2017, Barcelona, Spain



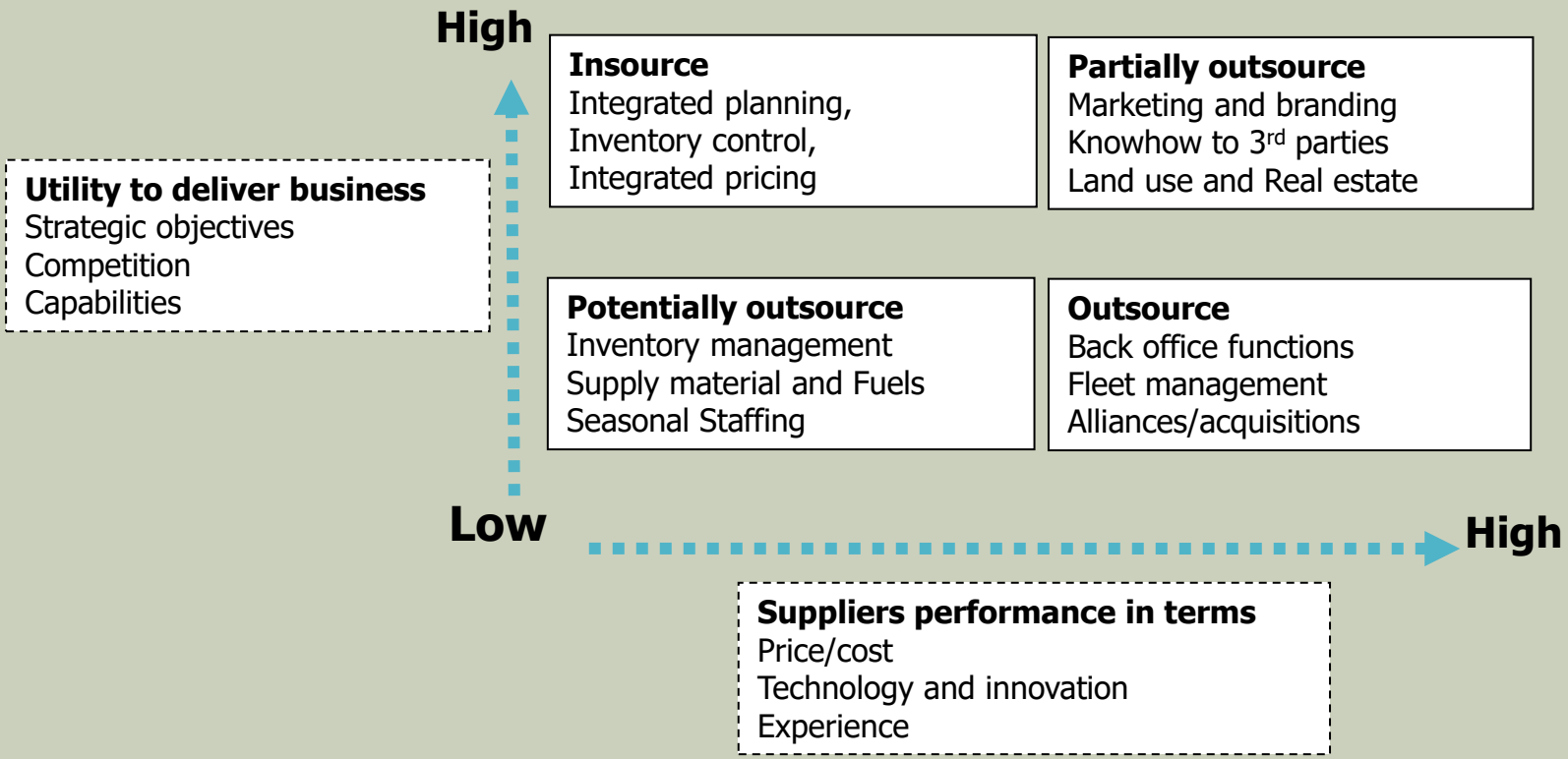
DM TAXONOMY FOR TRANSPORT INFRA PERFORMANCE



Dimitriou D., (2017). Quantitative evaluation taxonomy for transport infrastructure projects, IJRSM, 4(3), 34-40.

Ecosystem – Transport sector tendency

Orientation towards outsourcing based on business value at risk in transport sector



Source:

Dimitriou D., (2021). The evolution in transport operators corporate structure : ownership and governance, Outsourcing and Offshoring, InTech, (ISBN 978-1-83968-471-5), DOI: 10.5772/intechopen.96334

Ecosystem – Transport sector outsourcing

a typical International Air Carrier

Insourcing

High

Fleet management	Technical provider	Business Intelligence
Fleet management Scheduling Flying Crew	Maintenance Repair Overhaul	Marketing Branding Revenue/fares
On Bord services	**Logistics**	**Partnership services**
Catering Sales-Entertainment Cabin crew	Fuels Cleaning Ground staff	Interlining, code sharing Ticketing Destination marketing

Low

Outsourcing

High

Outsourcing functions for …

a typical International Airport

Insourcing

High

Administration	Traffic intelligence	Passenger services
Safety - Security Accounting Custom services	Air Traffic Control Traffic data management Destination marketing	Info kiosk Ticketing Advertisement
Airside	**Terminal**	**Landside**
Maintenance Apron crew Cleaning	Baggage handling Cleaning - FM Stores and Sales	Parking Accommodation Real estate – Market area

Low

Outsourcing

High

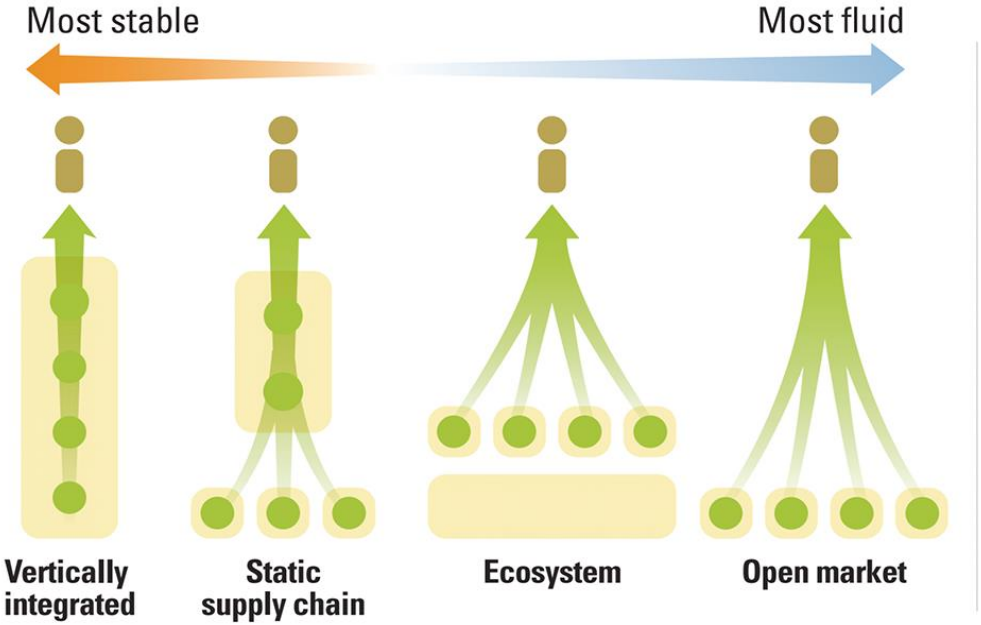
Source:

Dimitriou D., (2021). The evolution in transport operators corporate structure : ownership and governance, Outsourcing and Offshoring, InTech, (ISBN 978-1-83968-471-5), DOI: 10.5772/intechopen.96334

Ecosystem – Key aspects

A Spectrum of Organizational Structures

Different organizational structures, along a spectrum of market fluidity, demonstrate the different kinds of relationships companies can have between their products and



Ecosystems sit between:

on one extreme, vertically integrated companies or static supply chains,
and
on the other extreme, open, competitive markets, in which customers combine various products according to their shifting patterns of need.

The essential characteristics of **business ecosystems** are the following:

- They are multi-entity, made up of groups of companies not belonging to a single organization.
- They involve networks of shifting, semi-permanent relationships, linked by flows of data, services, and money.
- The relationships combine aspects of competition and collaboration, often involving complementarity between different products and capabilities (e.g. smartphones and apps).
- The players coevolve as they redefine their capabilities and relations to others over time.

Ecosystem – Benefits

- The growing interest is also driven by necessity:
  - Business environments are evolving more rapidly, requiring the **rapid acquisition and coordination of diverse, novel capabilities**.
- The **rise of ecosystems requires a new way of thinking about business** — the ecosystems perspective.

- The essential characteristics of business ecosystems are the following:
  - They are **multi-entity,** made up of groups of companies not belonging to a single organization.
  - They involve networks of shifting, semi-permanent relationships, linked by flows of data, services, and capitals.
  - The relationships **combine aspects of competition and collaboration**, often involving complementarity between different products and capabilities (for instance, air-travel and apps).
  - Finally, key players coevolve as they redefine their capabilities and relations to others over time.

- Ecosystems **provide new ways of managing the trade-off between flexibility and commitment**.
  - Transport companies can either make **flexible decisions**, as in launching a pilot project, or they can commit themselves to a particular strategic path, which is often necessary to reach efficient scale and secure competitive advantage.
  - In an ecosystem, a company can sale services via ecosystem platform, like air carrier alliances using code-sharing scheme, but remain flexible about the services it will deliver, by letting others develop and provide those services. Existing capacities can be combined and recombined without one company having to commit to each combination in-house.
  - An ecosystem can also explore various **new paths** in parallel, creating options across the system that a traditional company might not have the resources, time, or **risk tolerance** to create alone.

Ecosystem – Planning & Development

- Before determining **an ecosystem strategy**, organizations must first shift to a new perspective and way of thinking.
- To take the benefits of ecosystems, organizations **need to shift** from using a traditional, static, company-centric perspective, and instead apply new ways of thinking about strategy from an ecosystems perspective. This perspective is distinctive in multiple ways:

Dynamic
Based on a coevolutionary rather than a static view of relationships and capacities.
Collaborative
Driven by crafting novel product combinations drawing on complementary offerings.
Influence based
Shaped by partial influence rather than full ownership or control.
Indirect
Profits from system transactions or cross-subsidies, as often monetization occurs indirectly
Emergent
Generates and embraces unanticipated shifts, reversals, and unintended consequences.
Network oriented
Involves overlapping networks, rather than discrete, linear value chains.
Externally focused
Focuses strongly on activities beyond individual company borders.

Ecosystem – success factors

Myth 1: You always need an ecosystem.

- Building an ecosystem is a choice; e.g. in alliances in aviation (one word, star alliance, etc)
- However, there some successful companies that do not rely on ecosystems, like P. Moller–Maersk and COSCO, two of the world's largest eyewear companies, which is highly vertically integrated.
- **The choice for companies depends partly on the capabilities of potential collaborators and the cost of developing specialized capacities in-house.**
- The business environment also plays a role. **In unpredictable and malleable environments, building an ecosystem can make sense.** In more predictable sectors, a classical analyze, plan, and execute approach, relying on static supply chains, is likely a better fit.
- Ecosystems are not a solution to every business problem; An ecosystem can be useful when business needs involve:
  - **Exploring a new area** of possibility, conducting parallel experimentation and development with others, especially when you do not possess all the skills to engage in this exploration (for example, groups of companies exploring the possibilities of autonomous vehicles).
  - **Pulling together a complex offering involving multiple complements**, especially when you can benefit by co-opting other actors (consider Tourism ecosystem and events/travel companies).
  - **Circumventing distribution complexity and cost by building a new**, more effective channel (for example, STAR ALLIANCE Group's merchants contribute to a shared platform).
  - To disrupt an entire industry, **giving your model greater scale**, scope, and influence by partnering with existing players (for example, *Skyscanner working with established carriers*).

Ecosystem – success factors

Myth 2: An ecosystem is a supply chain.

- "Ecosystem" is often used as a synonym for supply chain. Indeed, a set of relationships with suppliers, if collaborative and dynamic, *can* be an ecosystem.
- **Airbus and Boeing**, for example, has shifting, coevolving relations with multiple suppliers. Rather than just buying standardized parts, Airbus pours time and money into codeveloping new kinds of glass or production-line robots, sending its engineers to test new processes in suppliers' factories, which feeds back into its own designs.
- **But ecosystems often extend beyond this kind of partnership.** Consider Airbus/Boeing and relationship with air-carriers that use their aircraft— a network extending far beyond its supply chain.
- We miss the greater value of the ecosystem concept if we restrict our view to suppliers only: ***An ecosystem can certainly encompass a supply chain and more, or no supply chain at all.***

Ecosystem – success factors

Myth 3: Ecosystems are always maximally open.

Discussions of ecosystems often emphasize openness. As a recent *Forbes* article describes, "*Companies that want to spearhead or join … ecosystems will aggressively adopt systems that encourage open collaboration*."

- All ecosystems are to some degree "open," as they involve interactions across the corporate boundary. But the degree and kind of openness vary.
- Any kind of openness comes at the expense of control, and some effective ecosystems are comparatively closed with respect to either new participants or data and intellectual property.
- For example*, the STAR Alliance* is an ecosystem of companies collaborating to shape one another's market best practices. The value they create depends on credibility in this arena — **the ecosystem is valuable *because* it applies strong selection criteria**. Openness is a choice: In unpredictable situations when exploration is key, it might make sense to have a more open system.
- Conversely, it may make sense to have less when more control is required for the system to create value.

Ecosystem – success factors

Myth 4: An ecosystem is a digital platform.

In many discussions, ecosystem and digital platform are almost inseparable.

- It's easy to trace how this myth came to be, as many ecosystems do involve digital platforms, like Airbnb.
- But this shouldn't lead us to equate one with the other and ignore the broader set of options that ecosystems provide.
- Technology can powerfully facilitate the orchestration of multiple players in a complex ecosystem, but successful ecosystems can exist without digital platforms.

Ecosystem – success factors

Myth 6: Ecosystems are constant over time.

While designing an ecosystem based on where and how much value each participant adds feels like a natural starting point, this rests on the assumption that we can somehow know this information.

- But ecosystems are complex; participants have a high degree of autonomy, and *roles within ecosystems are not constant*.
- In biological ecosystems, "succession" occurs as one semi-stable configuration gets replaced by the next, like when a grassland ecosystem gets replaced by a forest, held together by a new semi-stable web of relationships.
- We can see this vividly in business in the case of BA or KLM. By 2018, the ecosystem dynamics had radically shifted.
- The danger of this myth is that it leads to adopt static, deductive approaches that are at odds with the dynamic, emergent character of ecosystems. When we assume this kind of approach, the risk being closed to change or not sensing the signs of emerging opportunities fast enough.

Ecosystem – success factors

Myth 7: Anyone can be the orchestrator.

- A common assumption around ecosystems is that any company — usually, one's own company — can lead the efforts. Few companies, though, are really in a position to do this.
- Orchestration requires the possession of several exceptional assets
  - *a powerful brand,*
  - *an existing platform,*
  - *the ability to scale,*
  - *a compelling mutual vision,*
  - *cash reserves and thus the ability to explore and build patiently.*
- It's easy to lose sight of realism when developing strategy — after all, who wouldn't want **their own company to be the central actor**?
- Even industry-leading companies should think carefully about whether they are really in a position to orchestrate new cross-industry ecosystems.
- CEOs should consider how their company will operate in relation to relevant ecosystems, but not every business can or should set out to orchestrate one.

Ecosystem – success factors

Myth 8: Ecosystems should be controlled or managed.

Even orchestrators have only limited control over ecosystems. When creating an ecosystem strategy, it's best to err on the side of modesty, with a goal of influence, rather than complete control.

- Successful shaping comes from iteration and coevolution, by updating one's model of the environment and goals continually, alongside others doing the same, rather than pretending that everyone can agree on a single objective and success criteria.
- The danger here is using classical plan-and-execute tactics when what we need is adaptation and indirect shaping. In so doing, we delude ourselves and end up unprepared to face the unexpected one.

Myth 9: You need only one ecosystem.

Most discussions in this space focus on developing a single ecosystem. But companies such as TOURIST AGENTS are members of a number of ecosystems.

- Consider TUI agent, which has an agency ecosystem involving resort firms, and local MSE; a delivery ecosystem of charter carriers and delivery to hotels/resorts; and a third ecosystem, based around a tele-booking app supported by multiple digital agency partners across the world.
- Focusing on just one closes off the possibility of joining or building multiple ecosystems, and it prevents a company from considering how to make best use of the roles it may already be playing in different ecosystems.

Ecosystem – success factors

Myth 10: If SC managers understand ecosystem strategy, can do it.

Ecosystems require a *shaping strategy*, which refers to collaborating with others using indirect influence (including *being* influenced by others), being responsive to unpredictable changes, and evolving the ecosystem for mutual benefit.

- Enacting such a strategy can feel counterintuitive, as we are likely much more familiar and adept with the practices of a classical "**plan and execute**" strategy.
- The shift to ecosystems thinking challenges the very idea of "industry" that we inherited from the industrial revolution — a discrete set of broadly similar players competing to produce a common end product in a vertically integrated fashion.
- **The coming decades will likely see the further spread of ecosystems, with companies coevolving in temporary clusters of semifluid relationships, spanning traditional industry boundaries.**
- Transport companies should therefore be wary of inadvertently applying assumptions from more classical environments or overgeneralizing from a handful of well-known precedents.
- Instead, comapnies should adopt an ecosystems perspective and consider the specific strategic choices, based on their particular situation, aspirations, and capacities.

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Seminars and Research outputs Dissemination
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2nd International Conference on Intermodal Transports

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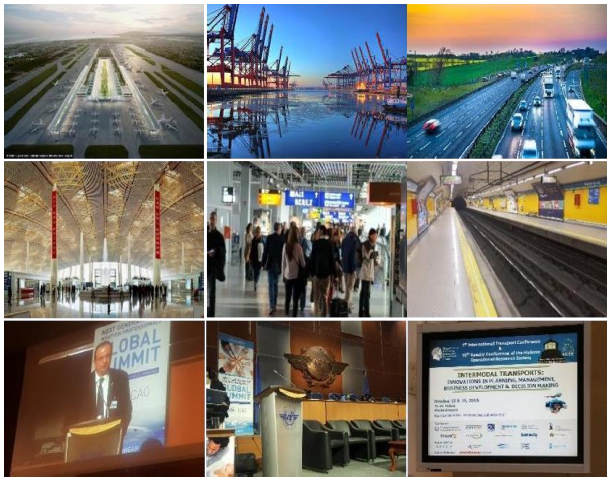
Innovations in Planning, Management, Business Development & Decision Making



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Research Activities and Conference chair:
Dimitrios Dimitriou, Associate Professor, Department of Economics, DUTh, (ddimitri@econ.duth.gr)

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Thank you for your attention
Any question?

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