How Do Innovators Stay Innovative? A Longitudinal Case Analysis

ABSTRACT

Purpose – How can some companies be the innovation leader in their industry over prolonged periods of time, while others cannot? The purpose of this study is to understand a firm's capability to be a successful serial innovator and to generate a constant stream of industry-leading innovations.

Design/Methodology/Approach – The paper uses a longitudinal case study approach to gain an understanding of what and how Singapore Airlines (SIA) sustained service innovation for over 30 years. The study uses triangulation, whereby the core data from in-depth interviews with senior and middle management, and frontline employees were complemented with academic research, case studies, annual reports, observations, and archival documents. 240 single-spaced pages of interview transcripts with over 130,000 words were analyzed and coded using MAXQDA for identifying repeated patterns of meaning.

Findings – We identified three key institutional foundations for service innovation: (1) innovation climate (i.e., leadership and service culture), (2) human capital (i.e., recruitment, training and development, and engagement and incentives), and (3) resource configurations (i.e., systems, structure, and processes). These foundations enabled the organization to build the following four service innovation-related dynamic capabilities: (1) embrace ambidexterity, (2) institutionalize learning and knowledge integration, (3) orchestrate collaboration, and (4) reinvent customer value. Interestingly, these institutional foundations and capabilities remained largely stable across 30 years; what changed were the contexts and specifics, not the foundations and capabilities.

Research Limitations and Implications – Data were collected only from one company. Due to the method of thematic analysis the generalizability of our findings needs further

investigation.

Originality/Value – This study is the first to investigate the drivers of industry-leading

sustained service innovation over a prolonged period of time. The proposed framework

provides a fuller and more integrated picture of sustained service innovation than past cross-

sectional studies.

Keywords: service innovation; serial innovation; dynamic capabilities; longitudinal case

study; Singapore Airlines

INTRODUCTION

"And that every time we reach a goal, we always say that we got to find a new

mountain or hill to climb." (Senior Vice President Product & Service, 2001)

How can some companies be the innovation leader in their industry over prolonged

periods of time (i.e., are serial innovators; Hamel 2006), while many cannot? Consider the

case of *Singapore Airlines* (SIA). Founded in 1972, the airline has over decades routinely

been voted the "best airline", "best business class", "best cabin crew service", "best in-flight

food", "best for punctuality and safety", "best for business travelers", "best air cargo carrier",

even "Asia's most admired company" (Wirtz et al. 2001; Wirtz and Zeithaml 2017), and

continues to be one of the most successful and consistently profitable airlines in the world

(Deshpande and Hogan 2003; Wirtz and Zeithaml 2017). Evidence of the firm's sustained

innovation performance includes the following:

- In 1979, only six years after being formed, SIA was ranked first among 40 airlines in

  the Service Index Ratings prepared by International Research Associates (INRA) with

  a rating of 78 for esteem and performance, compared to an industry average of 62.9

  (Wyckoff et al. 1989);

- In 2016, SIA was ranked number 1 for 29 of the past 30 years in the Condé Nast

  Traveler's World's Best Airline Award (Singapore Airlines 2017);

- SIA was the top-rated airline in the Customer Satisfaction Index of Singapore

  (CSISG) since its inception in 2008 (CSISG 2016).

SIA's success was built on its ability to be a serial innovator. *Serial innovation* occurs

when an organization is repeatedly successful in adopting change over time (Hamel 2006).

The airline pioneered a series of strategic innovations, introducing many firsts in the airline

industry that sustained its competitive edge over decades in the face of intense cost pressure,

industry crises, and trends towards commoditization (Heracleous and Wirtz 2010; Wirtz and

Zeithaml 2017). Yet, even though SIA was well known for its service excellence, it was also one of the industry's most cost-effective operators (Wirtz and Zeithaml 2017).

The crucial question is: What enabled SIA to not only achieve but also sustain service innovation over very long periods of time? We define *sustained service innovation* as a firm's capacity to generate a stream of industry-leading innovations (i.e., multiple new products and services, encompassing both incremental and radical innovations) with a reasonable rate of commercial success (Dougherty and Hardy 1996). Understanding the determinants that allow an organization to be innovative over time has proved to be particularly complex (Corradini 2013).

While the academic literature has studied extensively *dynamic innovation capabilities*, almost all research has been cross-sectional with the notable exception of Damanpour et al. (2009) who studied a 4-year period (see Figure 1). Thus, these studies do not provide insights on how an organization can be a serial innovator over long periods of time. Here, our study makes an important contribution by exploring the long-term institutional foundations and service innovation-related capabilities that enabled a firm to persistently innovate and prevail in a hyper-competitive business environment.

[Insert Figure 1 about here]

LITERATURE REVIEW AND BACKGROUND

Service innovation has been widely recognized as a primary source of competitive advantage (Snyder et al. 2016) and as a research priority (Ostrom et al. 2010). Historically, the innovation literature has primarily focused on products and technical innovations as opposed to services (Weerawardena and Mavondo 2011). Over the last decade, the body of scholarly research on service innovation has grown considerably (Carlborg et al. 2014; Lusch and Nambisan 2015). The research momentum underscores the significance given to service innovation in different fields, including marketing (Nijssen et al. 2006), strategy (Verma and

Jayasimha 2014), economics (Djellal et al. 2013), and information systems (Kim et al. 2015).

Service innovation is a broad and loosely-defined concept (Witell et al. 2016). Salunke et al. (2011, p. 1253) conceptualize service innovation as "the extent to which new knowledge is integrated by the firm into service offerings, which directly or indirectly results in value for the firm and its customers". This view captures both continuous and discontinuous innovation and the improvement of existing services and the creation of radical new services.

In recent years, the topic of innovation persistence has attracted a growing interest by scholars in manufacturing and product contexts adopting a wide range of econometric approaches (see a review of 30 empirical studies by Le Bas and Scellato 2014) but with inconsistent results (Haned et al. 2014). Analyses of case studies suggest that "many elements, other than continuous R&D or continuous innovation output, influence the ability of firms to be persistent, successful innovators" (Lhuillery 2014, p. 518). For example, persistent innovators may use the market for technology more efficiently. The available literature on innovation success does not investigate the mechanisms which enable firms to replicate innovation success over time (Lhuillery 2014).

In the strategic management and marketing-related innovation literature, the discussion of *dynamic capabilities* (also referred to as innovation capability or innovative capability, c.f. Hogan et al. 2011) has gained prominence in understanding service innovation-based competitive advantage. A number of researchers have proffered different definitions and conceptualizations (e.g., Den Hertog et al. 2010; Eisenhardt and Martin 2000; Teece et al. 1997; Teece 2007). Teece et al. (1997) define dynamic capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Eisenhardt and Martin (2000, p. 1107) provide an alternate view and argue that "dynamic capabilities are the organizational and strategic routines by

which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die". Salunke et al. (2011, p. 1252) define dynamic capabilities as the "capacity of an organization to purposefully create, extend or modify its knowledge-related resources, capabilities or routines to pursue improved effectiveness". Furthermore, some scholars distinguish between lower- and higher-order capabilities (Winter 2003), while others call those higher-order capabilities also meta capabilities (Collis 1994) or regenerative capabilities (Ambrosini et al. 2009). Despite the different definitions and conceptualizations, the dynamic capabilities perspective has become a prominent theoretical lens to study service innovation-based competitive advantage.

Empirical work has identified a number of dynamic capabilities, including strategic orientation, organizational learning, knowledge integration, and collaborative competencies. For an overview see Table 1. Note that these studies are predominantly cross-sectional. However, Le Bas and Scellato (2014) argue that dynamic capabilities co-evolve over time in step with a firm's innovation persistence and conclude that the institutional foundations for dynamic capabilities and firm innovation over time requires further study. We describe next the method we use to address this gap and examined the long-term innovation capability of a leading service organization.

[Insert Table 1 about here]

METHOD

Research Approach

We adopted a longitudinal case study approach for three main reasons. First, case studies are deemed a suitable method when the proposed research is largely exploratory addressing "how" and "why" questions (Gummesson 2017; Yin 2014) and when the research question requires a need for richness of data (Stavros and Westberg 2009). Since dynamic capabilities are difficult to imitate their complex nature makes it also harder to identify them

for research purposes (Fischer et al. 2010). Matvejeva et al. (2014, p. 550) argue that focusing "the analysis on one economic entity (a firm) allows going deeper into the details of internal processes and makes a valuable contribution to the understanding of the emerging relationships based on the qualitative richness of the discovered evidence."

Second, single case research is known for its descriptive power and attention to context, and recommended to study organizations that represent outstanding successes or notable failures (Ghauri 2014). As established in the introduction, SIA was recognized as an innovation and service leader for over 30 years.

Third, scholars have emphasized the importance of longitudinal studies in understanding the management of innovation in organizations (Damanpour et al. 2009; Van de Ven and Huber 1990). This view is particularly applicable to this study because the service innovation–performance relationship is path dependent and takes place over time (Damanpour et al. 2009). Thus, the adoption of an innovation at a point in time will not sufficiently explain innovation success over time (Damanpour et al. 2009).

Given the widespread recognition of SIA as an innovation leader over the last 30 years, we consider this in-depth study of SIA to be both a unique and revelatory case (c.f., Yin 2014). Aligned with our research question, SIA allowed us to explore patterns of persistent innovation capabilities that are instrumental to achieving sustained industry-leading service innovation.

Data Collection

We analyzed data from a number of sources, both primary research and secondary data. Our primary research consisted of in-depth interviews with SIA's management and staff, and was conducted in four phases (see Figure 2). The interviews were exhaustive, ranging from approximately 45 to 75 minutes, and were conducted by two interviewers simultaneously which facilitated in-depth coverage of issues (c.f., Salunke et al. 2011).

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During the interviews, probing questions were used to clarify and explore participants'

responses and to elicit further insights (Creswell 2009). The interviewers followed an

emergent design method with the purpose to add, delete, and modify questions throughout the

research process (Taylor and Bogdan 1984).

Note that the interviews for phases 1 to 3 were conducted for previously published

research by Heracleous, Wirtz and colleagues to explore SIA's strategy and competitiveness.

Their publications were based on subsets of the interviews using traditional analysis. For this

study, we reanalyzed the complete set of interviews with a focus on service innovation using

a computer-assisted tool. Table 2 summarizes the sample characteristics.

[Insert Table 2 and Figure 2 about here]

All interviews were recorded and transcribed resulting in 240 single-spaced pages of

transcripts comprising a total of 130,297 words. Transcripts were read for accuracy and then

imported into MAXQDA12 (www.maxqda.com), a computer-assisted qualitative data

analysis tool (Silver and Lewins 2014). The transcribed interviews were subjected to thematic

analysis (Boyatzis 1998), an analytic technique suitable for identifying "repeated patterns of

meaning" (Braun and Clarke 2006, p. 86). We followed a systematic step-wise recursive

process in the thematic analysis of the data as suggested by Braun and Clarke (2006).

Multiple sources in case research help to validate and triangulate emerging ideas and

interpretations (Golden 1992). Therefore, we complemented our primary data with our field

notes from observations within SIA, SIA's annual reports, archival records, industry reports,

academic publications (e.g., Heracleous and Wirtz 2010; Heracleous, Wirtz and Pangarkar

2009; Wirtz and Zeithaml 2017; Wirtz et al. 2003, 2007, 2008) and case studies on SIA

(Deshpande and Hogan 2003; Deshpande and Lau 2016; Goh 2005; Wyckoff et al. 1989).

We then returned to literature to compare the emergent themes with existing

frameworks (Salunke et al. 2011). This approach is consistent with Eisenhardt's (1989)

observation that tying emergent theory to extant literature enhances the internal validity,

generalizability, and theoretical level. Figure 2 illustrates the timeline of data collection and

selected SIA innovations.

INSTITUTIONAL FOUNDATIONS OF SUSTAINED SERVICE INNOVATION

As part of the text analysis in MAXQDA, we developed a coding theme based on the

literature (e.g., code: collaboration; keywords: cross-functional collaboration, collaborating

with [business partners/customers], to engage customers, customer engagement, customer

participation, to talk with customers). Our initial themes were guided by dynamic capability

theory. We then searched for similarities and differences between the codes to start grouping

them into a hierarchical tree structure. New codes were created in an iterative fashion to

capture the meaning of groups of initial codes (Thomas and Harden 2007). Next, the

interview findings were triangulated with our secondary data.

This analysis suggests that different determinants were responsible for SIA's

sustained service innovation success which can be grouped into two broad categories. We

labeled the first category *institutional foundations* (also referred to as organizational assets,

c.f. Galbreath 2005) consisting of innovation climate, human capital, and resource

configurations. The second category was labeled *innovation-related dynamic capabilities* (c.f.

Ngo and O'Cass 2009; also referred to as innovative capabilities, Chen 2009). One surprising

finding is that these foundations and capabilities seem to be stable over time. While

terminology, technology, and contexts changed, the basic underlying foundations and

capabilities did not. See Figure 3 for an overview of our findings. We discuss the findings

related to institutional foundations in this section.

[Insert Figure 3 about here]

Innovation Climate ("lead to innovate")

Our case data suggest that SIA built and nurtured a strong *innovation climate,* driven

by leadership that consistently over decades emphasized the importance of innovation to

retain SIA's industry-leading position. This forceful emphasis on innovation by SIA's

leadership resulted in a strong innovation culture that transcended the entire organization.

The result was that SIA was involved in "constant innovation" to improve existing products

and services as it internalized forward-thinking to push for regular "quantum leap

innovations," largely driven by customer needs, technology and the conviction of having to

stay ahead of competitors. This focus on innovation was prominent over all decades studied

as shown by the quotes below:

> *Because we are SIA we have a brand to support, a brand that says that we have*
>
> *to be a premium carrier, and that we always do better than our competitors. That's why*
>
> *our customers want to fly with us*. (Senior Vice President Product & Service, 2003)
>
> *[Innovation] is to a large extent governed by … the need to differentiate, in other*
>
> *words staying ahead as we are a premium carrier.* (Senior Vice President Product &*
>
> Service, 2003)
>
> *The culture of innovation is so pervasive in the company that most functional*
>
> *departments have the innovation objective as part of their mission.* (Senior Manager,
>
> Product Innovation, 2005)
>
> *A flight has many, many sub-components. By being better at every one of these*
>
> *sub-components we give our competitors a hard time. By the time they copy, we would*
>
> *already have moved ahead. This means constant innovation, and constant development in*
>
> *all the things we do.* (Senior Vice President of Product and Service Department, 2009)
>
> *Everyone in this company really understands the value of innovation. … You*
>
> *always have to stay a step ahead.* (Vice President of Public Affairs, 2011)

Human Capital ("enable & motivate to innovate")

SIA's innovation success was enabled by highly capable human resources.

Specifically, SIA consistently invested heavily in human capital over the 30-year period

studied, including having a rigorous and well-developed processes relating to recruitment,

training and development, and employee engagement and incentives. One interviewee

referred to training at SIA as "almost next to godliness". One of the important outcomes of

having top quality human capital was its systematic and company-wide innovation capability

driven by SIA employees' future and innovation orientation, and their pro-activeness,

creativity, and readiness to innovate. These capabilities were supported through a clear

innovation component in all human capital-related policies (e.g., constant job rotation to

drive improvements and innovation), activities (e.g., training), and targets and incentives

(e.g., performance evaluations contain innovation-related KPIs) as is shown in the quotes

below:

Within the Product Innovation Department there is what we call the innovation

lab, where resources are on a one-year basis. This person who comes in can be from

anywhere in the company, be it the cabin crew or the engineering division or elsewhere.

They would be asked to come into this idea lab, where they will spend one year coming up

with ideas. (VP Contracts, former VP Product Development, 2008)

So [there are] a lot of areas for improvement because this is a huge organization.

…. So it's … about process improvement, training, to drive up productivity and quality of

the people. (Senior Vice President Product & Services, 2011)

There's a group of them [cabin crew], and we're asking them to brainstorm. We

have certain objectives, so … we do this kind of thing quite regularly. (Inflight

Supervisor, 2011)

[The] innovation process can be a bit chaotic. … We need to be able to think out

of the box. And sometimes pressures come in and people are creative when they're under

some pressure. (Senior Manager Inflight Services, 2011)

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Their KPI is how many good ideas they can come up with. It's not easy, it's very

challenging actually (VP Contracts, 2008)

Resource Configurations ("structure to innovate")

The interviews show that SIA supported its innovation capability through adapting

and reconfiguring its structures, systems, and processes. Change in these was a constant to

adapt to changing customer requirements, competitor activity and technology. However,

throughout the 30-year period, structures, systems and processes were in place to drive

innovation as is shown in the quotes below. For example, SIA established the program

"Future Works" which was an annual mini boot camp that consisted of some 50 executives

from various departments to work on SIA's next breakthrough innovations:

The concept is to bring together a group of people from different departments and

backgrounds, lock them up for a few days … and do brainstorming. Participants will

have a chance to let their imagination run wild. At the end of the workshop, they will be

given a chance to present their ideas to the Venture Board, a selected group of SIA's

senior vice presidents. Funds will be provided to develop ideas if the board endorses

them. (Senior Manager, Product Innovation, 2004)

More recently, Future Works was superseded by a different program which places

staff from various departments of the company into the innovation lab for a year to come up

with new ideas and to involve others in developing and testing them.

Furthermore, SIA internalized the concept of "distributed innovation" (Lakhani and

Panetta 2007; von Hippel 2005), also referred to as open innovation, which is decentralized

and unstructured in nature. This fluid and flexible approach to distributed innovation enabled

and encouraged departments and individuals to take ownership of their innovations. Thus,

employees felt more motivated that their ideas contributed to SIA's performance. For

example, one initiative that ran for over 10 years globally across all stations and units was

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Transforming Customer Service (TCS):

TCS is a pretty integrated system where you look at not only the processes, but you [also] look at the people. And the customer is the underlying reason why you do those things. Because, basically, what you want is to anticipate the customer's needs, to exceed the customer's wants. And you want to empower your people to be able to do that. And to put into place processes that enable the employees to do that. So it is interrelated. It is seen as one. You cut it down and dissect it. When you do service process reengineering, you actually dissect it into bits where you just examine that. But actually, it's linked together. (Senior Manager HRD, 2001)

SERVICE INNOVATION-RELATED DYNAMIC CAPABILITIES

The interview analysis suggests four broad clusters of dynamic capabilities that enabled SIA's sustained service innovation (see Figure 3). We describe these capabilities and feature sample quotes below.

Embracing Ambidexterity

The case data suggest that SIA managed to embrace ambidexterity and pursue paradoxical positions. First, its dual focus on differentiation and cost leadership was an important driver and consideration in almost all innovations. For example, SIA's innovation department did not only focus on service innovations but also rigorously emphasized costs. When SIA launched the then-widest business class seat in the industry, it designed it to "wow" travelers. The seat could be flipped over and turned into a flat bed with a duvet and a bigger pillow. As the flipping was done manually, the number of heavy motors in a seat could be reduced which resulted in significant savings in manufacturing, fuel, and repair and maintenance.

Second, SIA sustained innovation by having adopted a seamless combination of centralized (i.e., structured and rigorous) and distributed (i.e., open and emergent), and break-

through and incremental innovations. For example, the Product Innovation Department followed a well-defined innovation framework that guided processes, including opportunity identification and selection, concept evaluation, design and development, and new service launches. This central unit focused on ground-breaking, dramatic innovations such as the cabin design of the newly launched A380 in 2007 and its new "Skyroom" Suites in 2017, but also developed more incremental improvements:

We launched our new Japanese meal. It has been around with us for many years, but after 10 years or so, we enhance it and give it new look. (Senior Manager Inflight Services, 2011)

We continue to enhance [the] business class seat … as part of this refresh programme. (Manager New Service Development, 2011)

While the large, centralized innovation department was key in driving significant and incremental innovations, SIA also showed a strong distributed innovation capability:

The idea is that innovation is not the sole monopoly of one small group of people here. I have only 18 people, how much can we do? Future Works want to tap the resources of the whole company. (Senior Manager, Product Innovation, 2004)

Whether you are in Product Innovation or whether you are in Inflight Services, Ground Services and so on … they are all very innovation-oriented, so in that sense, it is decentralized to all these departments. (Senior Manager, Product Innovation, 2005)

Institutionalizing Learning and Knowledge Integration

The interviews show that SIA used intensive sensing, discovering and accumulating of knowledge from a wide range of sources, and managed to integrate and synthesize all this information. SIA embedded employees, customers, suppliers, contractors, and design firms in the knowledge accumulation process. SIA constantly monitored customer feedback on current service offerings, tracked competitors' products and service, and used extensively

surveys and benchmarking tools. The case data show that SIA managed to implement

learning routines and processes (e.g., feedback loops between cabin crew and the service

department), and establish knowledge interfaces across the organization, share knowledge

across units, and integrate the knowledge to sense opportunities and problems to develop

solutions. This capability was visible across the entire 30-year period of observation. The

following quotes illustrate this capability:

> *I am [in] product innovation. So what we have to do is bring in in-flight*
>
> *entertainment people and engineers and cabin crew and so on. Then we will explain*
>
> *what the concepts are [and ask] are you all interested, do you think that for your*
>
> *product this is going to add value? If they say yes, that will be one more endorsement*
>
> *from the users. Then we will sit together and do a business case.* (Senior Manager,
>
> Product Innovation, 2004)

> *How we explore that? It's a lot of interactive processes.* (Senior Manager Inflight
>
> Services, 2011)

> *One of the things we can do in terms of innovation is not necessarily always*
>
> *coming up with new ideas. If somebody can do [something] very well, we can emulate*
>
> *them and do better*. (Senior Manager, Product Innovation, 2004)

Orchestrating Collaboration

Innovation at SIA was generally conducted jointly with key internal stakeholders and

a network of external innovation partners, including technology suppliers, aircraft

manufacturers, airports, and of course, customers. The case evidence suggests that SIA had

recognized the strategic importance of collaborative relationships for a long time and

therefore had orchestrated their participation in the innovation process and developed close

relationships with these partners. For example, SIA engaged in a strategic partnership with

Panasonic for redesigning its inflight entertainment system. They worked closely with

external vendors where they sometimes even provided ideas for new products their vendors

would develop. The following quotes illustrate how SIA orchestrated internal and external

collaboration:

> *In SIA, we used a lot of task forces. We are only the product people, so we work*
> *with the engineering department ... there would also representatives from cabin crew*
> *and inflight services.* (VP Contracts, former VP Product Development, 2008)
>
> *Cabin crew can tell us, they feel that this product may not work...they're [an]*
> *important integral of this process, because if they can't deliver, no matter how good the*
> *product is, it is useless.* (Senior Manager Inflight Services, 2011)
>
> *We engage [customers throughout] the stages of the development cycle, we*
> *actually call back some of these customers ... I don't think it's done anywhere else in*
> *the world.* (VP Contracts, former VP Product Development, 2008)
>
> *I view the [airport] lounge for us as a place to engage our customers…one of the*
> *key concepts is to allow passengers to test and give feedback, and to get them involved*
> *in the development process.* (Senior Vice President Product & Services, 2011)
>
> *[This] collaborative approach, with aircraft manufacturer, Boeing, Airbus, with*
> *the design firms, with the seat manufacturers, stakeholders within and cross-division*
> *colleagues [is] even more prevalent.* (Vice President Product Innovation, 2011)
>
> *We have to plant the ideas into the software developers [SIA's vendor] to enable*
> *this idea at the end of the day.* (Senior Vice President Product & Services, 2011)

Reinventing Customer Value

SIA was able to constantly transform and reconfigure existing value constellations

that oftentimes did not just lead to innovative products and services, but that redefined

industry standards. When SIA introduced its first suite in 2007, coinciding with the inaugural

Airbus A380 passenger flight, it was a "big deal" as no other airline had ever put a double

bed on an airplane. SIA's 2007 annual report described the new Suite Class as "truly a class

that goes beyond first". A decade later, SIA was still able to "wow" customers. SIA recently

introduced a "massive new suite" for the Airbus A380. This constant questioning and

reinventing of its value propositions is shown in the quotes below.

> *It's very easy to love what we do, and that's the danger. It's easy to say that*
> *the customers will surely want what we do. To be a winner, we have to continually*
> *strive to provide the very best service when compared with any industry. That's why*
> *it's so challenging. Whatever we do, we are in search of excellence and are never*
> *willing to settle for what we have already achieved. It's good to be passionate, but I*
> *think you must be able to say "I'm willing to kill it with a better program". And that is*
> *a huge challenge internally. We have to be able to tell ourselves that, "I love this new*
> *thing that I've developed and we'll make sure that it's well implemented". However,*
> *we also have to kill it with a better product in X number of months. It could be six*
> *months, it could be 12 months, it could be 20 months. But you have got to kill it*
> *because the lifestyles of our customers are continuously evolving … This means*
> *constant innovation and constant development in all the things that we do.* (Senior
> Vice President Product & Service, 2003)

> *When we introduced our new business class called Space Bed on board, it has*
> *always been our tradition, every time we do anything we do it in a package. It is a*
> *stronger proposition to our customer than to say that I have a better cup. We say that*
> *the cup comes with better coffee, better delivery, better design and better software. It*
> *is not just talking about the cup. Same thing when we introduced the seat. We talk*
> *about our service, our food, our thing.* (Senior Vice President Product & Service,
> 2003)

> *Everyone can have similar aircraft as long as you have the capital. But for*

SIA, what makes us different is in our configuration in the aircraft (Senior Manager

Inflight Services, 2011)

All our departmental heads, including myself, try to encourage our managers

to be centres of discontentment! They have to be continuously unhappy with some

things. I mean that you just have to have the sense to continually assess everything,

and preferably before your boss asks you. As a result of the constant injection of new

blood into the company, there is a breath of fresh air. Just asking questions, "why

can't I have it, why does it have to be this way." The only problem I see in SIA is that

if we stop people from asking those questions. Then we would be in big trouble.

(Senior Vice President Product & Service, 2003)

DISCUSSION, IMPLICATIONS AND FURTHER RESEARCH

Our initial question was "Why are some companies able to innovate time and again,

while others cannot?" We selected SIA as a *unique* and *revelatory* case (Yin 2014) and

conducted a 30-year longitudinal study to investigate the firm's capability to be a successful

serial innovator and to generate a constant stream of industry-leading innovations.

We identified three key institutional foundations for service innovation: (1) innovation

climate (i.e., leadership and innovative culture), (2) human capital (i.e., recruitment, training

and development, and engagement and incentives), and (3) resource configurations (i.e.,

structures, systems, and processes). These building blocks were the foundation for four

service innovation-related dynamic capabilities of (1) embracing ambidexterity, (2)

institutionalizing learning and knowledge integration, (3) orchestrating collaboration, and (4)

reinventing customer value.

Theoretical Implications

Despite the growing body of knowledge, the concept of service innovation remains

relatively unexplored (Carlborg et al. 2014; Salunke et al. 2011). Scholars have argued that

uncovering the organizational antecedents of service innovation is still one of the main

challenges in the literature (Janssen et al. 2014; Ostrom et al. 2010). We expand the current

service innovation literature in several ways.

First, we identified the significance of innovation climate, investments in human

capital and resource configurations as key institutional foundational drivers of sustained

service innovation in a hyper-competitive and commoditized industry (c.f., Rothkopf and

Wald 2011; Wirtz and Jerger 2017). Our results are consistent with dynamic capability theory

which "assigns a prominent role to the firm's strategic leadership in nurturing and building of

dynamic capabilities critical to the value generation process" (Salunke et al. 2011, p. 1252).

While we have not seen an integrated examination and discussion of these three foundational

elements in the service innovation literature, these topics have been addressed separately in

other areas of the literature. For instance, the critical connection between leadership and

resource utilization may not surprise resource-based view theorists in the strategic human

resource management literature. They emphasized the critical role of human capital and the

"centrality of HR issues to the understanding and development of dynamic capabilities"

(Wright et al. 2001, p. 713). Our research thus extends the view within the service innovation

literature to institutional foundations as drivers of the dynamic capability building process

(e.g., Salunke et al. 2011) and provides a fuller and more integrated view on the institutional

foundations required to deliver sustained service innovation.

Second, our findings related to institutional learning and knowledge integration and

on orchestrating collaboration are consistent with prior cross-sectional dynamic capabilities

research and confirm their relevance for long-term innovation success. In particular, we see

consistent arguments for the importance of the following dynamic capabilities: sensing

opportunities (Janssen et al. 2016; Plattfaut et al. 2012), "technology sensing" (Kinstrom et

al. 2013), organizational learning (Salunke et al. 2011), knowledge sharing/integration

(Srivastava and Shainesh 2015), the importance of continuous recursive learning in improving service delivery and effectiveness (Srivastava and Shainesh 2015), and collaboration (Agarwal and Selen 2009; Ordanini and Parasuraman 2011; Verma and Jayasimha 2014).

Our findings that SIA innovations evolve from joined actions of a network of actors in a service ecosystem is also consistent with extant research (e.g., Lusch and Nambisan 2015; Zhang et al. 2015) and confirms its importance for sustained innovation. Customer engagement in particular has gained considerable attention among practitioners and in the academic community (Brodie et al. 2011, 2016; Hollebeek et al. 2014, 2016) and has been emphasized many times as a success driver of service innovation (e.g., Chen et al. 2016). Interestingly, we noted that SIA had a long history of involving customers (e.g., their frequent fliers) in innovation processes. While SIA did not use the term "customer engagement" until more recently, we see clear evidence that SIA had a customer centric culture and was following customer needs and wants, and was closely engaged with its various key customer segments.

Third, our findings suggest that ambidexterity is an important capability related to service innovation which can lead to sustained service innovation performance (c.f., Gibson and Birkinshaw 2004; O'Reilly III and Tushman 2013). A paradox involves "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith and Lewis 2011, p. 382). Specifically, we found that SIA managed consistently to follow "dual strategies" (c.f., Wirtz and Zeithaml 2017) and challenged paradoxical extremes in its approach to innovation. For example, SIA simultaneously pursued differentiation through service excellence and cost orientation, adopted a seamless combination of centralized (i.e., structured and rigorous) with distributed (i.e., open and emergent) innovation, and pursued ground-breaking, dramatic innovations and incremental improvements at the same time. Our

findings confirm past research that demonstrated a positive relationship between

ambidexterity and innovation (c.f., O'Reilly III and Tushman 2013). However, it appears that

the discussion has mainly focused on the comparison between exploration versus exploitation

and less on differentiation (e.g., SIA's premium positioning) versus cost leadership.

Furthermore, our findings emphasize the importance of ambidexterity, which has hitherto not

received much attention in the service innovation literature.

Finally, an important and to us somewhat surprising finding is that the three identified

institutional foundations and four dynamic capabilities seem to be stable over time. While

terminology, technology, and contexts changed, the basic underlying foundations and

capabilities remained largely constant. SIA consistently adapted to changing conditions in the

service ecosystem. For example, SIA embraced new technologies (e.g., Internet, CRM

systems, biometrics, mobile and RFID technology) to improve existing service processes and

to engage customers more actively in the ideation and testing of new services. However, the

basic blocks such as SIA's focus on building an innovation climate, human capital and

supportive structures, systems and processes remained firmly in place, and the four dynamic

capabilities where clearly present throughout the 30-year period studied. These findings align

to the views of institutional theorists who contend that "because institutional elements

(structures, actions, roles) are authorized to legitimate other elements, institutionalized

aspects are simultaneously highly stable and responsible for creating new institutional

elements" (Zucker 1987, p. 446).

Managerial Implications

The literature suggests that managers in high-velocity markets face not only external

pressure of competition, but also the internal challenge of collapsing dynamic capabilities

(Eisenhardt and Martin 2000). Our study offers managers a roadmap to examine a pathway to

sustained service innovation performance which consists of two blocks. First, managers need

to focus on institutional foundations, beginning with leadership to build an innovation climate. This goes in hand with "aligning skills, motives, and so forth with organizational systems, structures, and processes" (Wright et al. 2001, p. 710) in order to achieve organizational capabilities (c.f. Hamel and Prahalad 1994; Wright et al. 2001). Oftentimes, organizations tend to focus their innovation efforts on short-term practices and episodic innovations. In order to achieve sustained service innovation performance, firms need to have visionary leaders that inspire employees and cultivate a service-centric culture.

Second, our framework offers managers a fuller and more integrated picture than past cross-sectional studies on the dynamic capabilities required to sustain service innovation. There are four categories of dynamic innovation capabilities managers should examine and build in their own organization. Specifically, managers should (1) evaluate their current strategic orientations and embrace organizational ambidexterity, (2) establish a framework for developing and managing knowledge and enhance the learning processes in the organization; (3) invest in collaborative ideation processes involving all relevant stakeholders internally (especially frontline employees) and externally (including customers and business partners); and (4) foster a culture of discontent with current services and solutions to constantly reinvent the customer value offered in ongoing incremental innovation and periodic break-through new services.

SIA had a long tradition of service excellence and organizational ambidexterity. Thus, managers cannot expect to swiftly change their organizations overnight to become serial innovators. As research shows, "firms are to some degree stuck with what they have and may have to live with what they lack" (Teece et al. 1997, p. 514). Nevertheless, we hope that our research helps managers to understand a fuller and more integrated view of how to move their organizations towards becoming sustained innovation leaders in their respective industries.

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Limitations and Future Research

This study has several limitations that offer avenues for further research. First, qualitative data were collected from a single organization. To generalize our findings and validate the proposed framework, a necessary next step is to conduct in-depth case analyses of other leading serial innovators, followed by a quantitative study. Second, our results highlighted that SIA is an ambidextrous organization. More research is needed to investigate how different types of organizational ambidexterity (i.e., temporal, structural, and contextual) at the different organizational levels (i.e., organization, group, and individual) influence sustained service innovation. Third, we developed a framework that integrates institutional foundations and dynamic capabilities as drivers of sustained service innovation. Further research is needed to study the interrelationships between innovation climate, human capital, and resource configurations on the development of innovation-related dynamic capabilities.

In conclusion, this study offers a broadened view of sustained service innovation and identified three institutional foundations and four dynamic capabilities that allowed SIA to be the innovation leader in its industry over a prolonged period of time. The proposed framework provides a fuller and more integrated view than what is available in the extant literature on what it takes to for an organization to deliver sustained service innovation. We hope that the emergent framework will encourage future research on this important topic.

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Table 1: Empirical studies of dynamic service innovation capabilities (DCs)

Authors	Sector/Country	Conceptualization of DCs	Key findings
Birkinshaw et al. (2016)	Pharmaceutical, (GSK), automotive (BMW), food (Nestle)	Lower-order (sensing and seizing) and higher-order (transforming/reconfiguring) capabilities	• Sensing, seizing and reconfiguring capabilities depend on three modes of adaptation (structural separation, e.g., Nestle, behavioral integration, e.g., GSK, and sequential alternation, e.g. BMW).
Fischer et al. (2010)	Capital goods industries; Germany and Switzerland	Sensing, seizing, reconfiguring	• Companies either exploit or explore opportunities when it comes to service business development. • DCs differ between the two approaches and predict which way a company chooses.
Grawe et al. (2009)	Electronics industry; China	Customer orientation, cost orientation, competitor orientation	• Both customer- and competitor-orientation are positively related to service innovation capability. • Relationship between cost-orientation and service innovation was not significant.
Janssen et al. (2016)	Multi-industry (76% services); Netherlands	Sensing (user needs and technological options), conceptualizing, coproducing/orchestrating, scaling/stretching	• Authors develop and validate a new scale of five DCs: (1) sensing user needs, (2) sensing technological options, (3) conceptualizing, (4) coproducing and orchestrating, and (5) scaling and stretching. • Sensing user needs and sensing (technological) options are linked to conceptualizing, which in turn is related to coproducing and orchestrating, and scaling and stretching. • Capabilities correlate to different extents with firm performance.
Ordanini and Parasuraman (2011)	Hotel industry; Italy	Collaborative competences, dynamic capability of customer orientation, knowledge interfaces	• Customer collaboration contributes to innovation volume but not radicalness (and vice versa for collaborating with business partners).
Parida et al. (2015)	Manufacturing; global	Developing customer insights, integrating global knowledge, creating global service offerings, building digitalization capability	• Path towards global service innovation is a gradual, three-step process which requires a distinct focus— (1) collaboration, (2) integration, and finally (3) orchestration.
Plattfaut et al. (2012)	IT consulting; Germany	Sensing, seizing and transformation	• Capabilities of sensing, seizing and transforming vary for "event-dependent" (i.e., consulting projects for clients) and "event-independent" situations. • Current understanding of dynamic capabilities was only partially useful for explaining service innovation at the client organization
Salunke et al. (2011)	Project-oriented service firms; Australia	Episodic learning, relational learning, client-focused learning, combinative capability	• Innovation is an integral component of competitive strategy in project-oriented service firms. • Episodic learning, relational learning, and client-focused learning are key drivers of service innovation. • Building and nurturing these DCs involves three inter-related processes or routines: (1) create, (2) extend, and (3) modify.
Srivastava and Shainesh (2015)	Healthcare; India	Knowledge, technology, institutions	• Identified four enablers of ICT-based service innovations: (1) obsessive customer empathy, (2) belief in transformational power of ICT, (3) continuous recursive learning, and (4) efficient network orchestration.
Verma and Jayasimha (2014)	Finance and IT consulting; Mexico	Collaborative efforts (customer & business partners), technology (IT infrastructure and knowledge integration mechanisms),	• DCs have a positive and significant relationship with service innovation success. • Customer orientation strengthens the service delivery–performance relationship.

organizational resources (market
and innovation orientation)

Table 2: In-depth Interviews Analyzed

Phase	Year	No.	Gender	Position
1	2001		Female	Senior Manager HRD
	2001		Male	Senior Vice President Cabin Crew
	2001		Male	Senior Manager Cabin Crew Performance
	2001		Female	Senior Manager Cabin Crew Training
	2001		Female	Senior Manager Cabin Crew Service Development
	2001		Male	Senior Vice President Product & Service
	2001		Female	Commercial Training Manager
2	2003		Male	Senior Vice President Product & Service
	2004		Male	Senior Manager, Product Innovation
	2004		Male	New Service Development
	2005		Male	Senior Manager, Product Innovation
	2005		Male	Senior Manger cabin crew performance
	2005		Male	Senior Manager, Crew Performance
	2006		Male	Cabin Crew
	2006		Female	Cabin Crew
	2008		Male	VP Company Planning & Fuel
	2008		Male	VP Contracts (former VP Product Development)
3	2011		Male	Acting Senior Vice President Cabin Crew
	2011		Female	Vice President Customer Affairs
	2011		Male	Vice President Product Innovation
	2011		Male	Senior Vice President Human Resources
	2011		Female	Inflight Supervisor
	2011		Male	Inflight Supervisor
	2011		Female	Senior Manager Inflight Services
	2011		Male	Vice President Public Affairs
	2011		Male	Manager Performance Management and Development
	2011		Male	Senior Vice President Product & Services
4	2016		Male	Senior Vice President Customer Affairs
	2017		Male	Senior Vice President Customer Affairs

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5 Figure 1: Overview of the literature and positioning of this study
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Longitudinal

> 20 years

This study

Perks and Roberts (2013) identify 48 longitudinal studies; mostly with shorter 3-5 year data sets

< 4 years

4-year study by Damanpour et al. (2013) on effects of innovation types and performance

Cross-sectional

Evanschitzky et al. (2012) conducted a meta-analysis of 233 empirical studies from 1999 through 2011 on new product innovation success

- Agarwal and Selen (2009)
- Fisher et al. (2010)
- Grawe et al. (2009)
- Jansen et al. (2016)
- Ordanini and Parasuraman (2011)
- Plattfaut et al. (2012)
- Salunke et al. (2011)
- Srivastava and Shainesh (2015)
- Verma and Jayasimha (2014)
  (For details see Table 1)

Product Innovation

Service Innovation

Figure 2: Timeline of data collection and selected SIA's innovations

Overview of SIA's break-through service innovations:

1) 1970s: SIA was first to offer free drinks, free headsets and choice of meals
2) 1991: First to launch phone and fax services on board
3) 1998: One of first airlines to set up a website
4) 2001: SIA the first airline to provide audio- and video-on-demand to all passengers in all classes
5) 2004: World's longest non-stop flight from Singapore to New York City (SQ-21)
6) 2006: Introduced world's widest First and Business Class seats, which transformed into fully-flat beds
7) 2007: First airline to fly the Airbus A380
8) 2009: First to offer iPod and iPhone connectivity in Economy Class
9) 2013: First airline to introduce 3D games on board
10) 2013: Launched next generation of cabin products, set to be the new industry benchmark for premium air travel
11) 2017: New "Skyroom" Suites on the A380

Figure 3: Proposed framework of sustained industry-leading service innovation

Institutional Foundations for Service Innovation

"Lead to innovate"

Innovation Climate

Leadership
Service culture

Recruiting
Training & Development
Engagement & Incentives

Human Capital

"Enable & motivate to innovate"

"Structure to innovate"

Resource Configu-rations

Systems
Structures
Processes

Innovation-Related Dynamic Capabilities

"Embrace Ambidexterity"
- Organizational ambidexterity; sustained adoption of dual strategies (e.g., differentiation vs. cost leadership)
- Sustained adoption of ambidextrous innovation approaches (structured vs. open, centralized vs. distributed, and incremental vs. breakthrough innovation)

"Institutionalize Learning & Knowledge Integration"
- Consistently sensing opportunities and threats
- Discovery of knowledge from multiple sources
- Sustained capability of learning and knowledge integration

"Orchestrate Collaboration"
- Sustained capability to build strong relationships with key innovation partners (incl. aircraft manufacturers, technology providers, and interior designers)
- Tight integration of internal and external key partners in the innovation processes (incl. customers)

"Reinvent Customer Value"
- Constant questioning of today's successful services on how to reinvent them through breakthrough innovation
- Sustained continuous improvement and fine-tuning of exiting products and services
- Pragmatic flexibility in inventing, validating, retracting, fine-tuning new products and services

Innovation Outcomes

Sustained Industry-Leading Service Innovations

<u>Authors' Response to the Editor and Reviewers for</u>

Manuscript JSM-02-2017-0052.R2

<u>Old Title</u>: "Conceptualizing the Art and Science of Serial Service Innovation"

<u>New title</u>: "How Do Innovators Stay Innovative? A Longitudinal Case Analysis"

25 November 2017

Dear Dr Hollebeek,

Thank you for providing us with the opportunity to further improve our manuscript. We have worked diligently to address the comments made by you and the reviewers. Below, we provide a detailed, point-by-point response to each comment. We will be happy to address any further comments that you and the reviewers might have.

We hope the revised version meets your approval.

Yours sincerely,

The authors

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Reply to Editor's Comments:

Please revised your wok by focusing on addressing the reviewers' comments. Two key issues, in particular, emerge from the reviews:

1.   There needs to be a clearer link between the paper's aims, methods and findings, and

Response – Thank you for your guidance and suggestions which helped us greatly in revising the manuscript. To address your comment, we have conducted a substantial and careful revision of the manuscript which included: (1) a clear positioning and identification of the contribution of the study (incl. a revised title of the article), (2) justification and explanation of the method and analysis, and a fine-tuned reanalysis of the data, (3) a stronger link of the findings to the analysis, including providing better quotes that clearly demonstrate key point, (4) a sharpened implications section that clearly connects back to the key literature and emphasizes our key findings and their implications for theory.

2.   The RBV and/or S-D logic-related implications for service innovation must be fully specified (e.g. by linking back to relevant S-D logic propositions, axioms or concepts).

Response – As suggested by the reviewers, we have removed SDL as a theoretical approach. We now build on dynamic capability theory. In the strategic management and marketing-related innovation literature, the discussion of dynamic capabilities (also referred to in the literature as innovation capability or innovative capability, c.f. Hogan et al. 2011) has gained prominence to understand service innovation-based competitive advantage. We acknowledge that literature is still inconsistent when it comes to the definitions or conceptualizations of dynamic capabilities. However, the dynamic capabilities perspective has become a prominent theoretical lens to study service innovation-based competitive advantage, and as such, we decided to adopt this lens as well.

In addition, please ensure your paper is carefully proofread and edited. For example, in the first sentence of the abstract "Many service industries face increasing commoditization. While service innovation is recognized as a primary source of competitive advantage, research remains inconclusive regarding how service innovation-based advantages can be sustained…" Further, on p. 2 (line 27), "Innovations are not confined to within an organization anymore…" - please rephrase to "innovations are no longer confined…" and conduct a general check of manuscript flow and language. Third, "Hollebeck" is mis-spelled on several occasions, this should be "Hollebeek."

Response – We apologize for those errors. We have carefully proofread the article to correct such errors.

In the abstract, please also define 'serial service innovation capability."

Response – The abstract has been rewritten. We do not use the term 'serial service innovation capability' anymore.

On p. 5 (strategic orientation), how does this differ or fit in with market orientation, and how does it link to service innovation?

Response – We removed this part.

If possible, please reduce the paper's keywords to a maximum of 5.

Response – This has been done.

The Limitations and Future Research section would benefit from expansion (e.g. by establishing separate subsections for the theoretical and practical implications arising from this work).

Response – Thank you for your feedback. We have completely rewritten the discussion, limitations and further research sections. They now closely map to the key contributions of the article and provide next steps for further research already in the implications section and explicitly list key topics for further research in the Limitations and Future Research section.

We also remind you of JSM's strict author guidelines where paper titles shall be no more than 9 words (yours is currently fine), and total paper length (including text, references, all tables/figures, etc.) should not exceed 9,000 words.

Response – Thank you, we now closely follow the author guidelines. The title of the paper has 9 words. The word count is 9,072 words including all tables.

Furthermore, we would like to highlight the following additional changes we made to the manuscript:

- The paper is now clearly positioned (see also Figure 1 in the revised manuscript)
- The nature of the longitudinal study is clearly presented (see also Figure 2 in the manuscript)
- We have revised our results section, added better and more evidence (i.e., sample statements) to support our findings.
- The discussion and implications section has been extended. We now clearly relate our findings back to the extant literature.
- We deleted Figure 2 of the previous submission and replaced it with new Figure 3 to show the key findings of our article.

Reply to Reviewer #1's Comments:

Introduction
The introduction has a clear structure in terms of providing a background, a problematisation as well as the explication of two aims. With regards to the first aim, however, this aim in contrast to the second seems to be a bit decoupled from the introduction. With regard to the second aim, however, this one makes a lot of sense given that scope of the introduction section and the main line of argumentation.

Response – Thank you for your feedback and suggestions which helped us in substantiating the method and contribution. We have completely rewritten the abstract and the introduction. We removed the old objectives and position the paper more clearly (see Abstract and Introduction).

Literature review and background
This section starts by a review of service innovation, but the interconnection between doing so and the second aim (to explore the dynamic capabilities necessary to achieve sustained service innovations over a long period of time) which I believe to be at the core of your paper is not self-evident. Furthermore, the respective subsections that depict the character of the different theoretical orientations does not seem to be highly integrated with the problematisation found in the introduction, i.e. the CE/SI interface.

Response – Thank you for your suggestions, you are correct with your suggested core of the paper. We have revised the literature section to clearly communicate that we focus on dynamic capabilities. Furthermore, we removed the reference to SDL. Table 1 has been revised and shows only empirical studies. We illustrate a research gap as these studies were all cross sectional, and now clearly position the paper on the long term institutional foundations and dynamic capabilities.

Method
In terms of the rationale for selecting the case in question and how data collection as well as data analysis was carried out, the method section provides a relatively detailed overview of what has been carried out. However, the interlink between the problem at hand, the aims and the case is as discussed above not obvious. Therefore, the interlinkage between these sections would benefit from being explicated more clearly, especially in the introduction as well as the theoretical review, but perhaps also in the very beginning of the method section.

Response – Thank you for this feedback. We have revised this section and link it more clearly to the new introduction. In particular, we added Figure 2 to give more background on the longitudinal study.

Responding to your feedback, we have conducted a substantial and careful revision of the manuscript that included (1) a clear positioning and identification of the contribution of the study

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and (2) a revision of the method and analysis, removing the hybrid character of the manuscript. In particular, we revised the method section to improve the clarity in several ways.

1. We present an argument why we selected a single, longitudinal case study.
2. We shortened the research context section and removed the reference to the airline industry. We also moved the discussion of SIA from the method section to the beginning of the introduction.
3. We emphasize the triangulation of our data more.
4. We added new Figures 1 and 2. Figure 1 illustrates the research gap and the positioning of our study. Figure 2 highlights the timeline of our longitudinal study.

Findings
As with the method section, this section provides a relatively detailed illustration with regards to what the empirical case displays. However, the underlying rationale based on which the findings of the case at hand is presented still remains unclear.

Response – Thank you for your suggestions. We have completely rewritten the results. Now we clearly present our results based on the evidence from the interviews.

Discussion and implications
In discussing your findings and articulating the implications, it unfortunately becomes quite apparent that the literature review's current structure, which in my reading primarily focus on providing overview concerning different theoretical orientations, does not enable enough depth with regards to the theoretical analysis. Therefore, I am not convinced that the study contributes in "pivotal ways" as you state, as I find the theoretical implications section to more focus on identified gaps rather than explication the character, consequence and magnitude of actual implications.

Response – Thank you for your suggestions. We have completely rewritten this section. We now relate our findings back to the literature. The revised section has been improved in several ways. Please see below where we added detailed responses both with regards to the revision of our results section and the revised discussion section.

Additional Questions:
1. Originality: Does the paper contain new and significant information adequate to justify publication?: In this paper, two research aims are formulated. In the manuscript's associated sections, however, the underlying rationale of the paper is unclear and its alignment vis-à-vis the research aims is not self-evident. In essence, one of reason for the lack of clarity is that the link between the two questions is not explicated, and that the paper's structure could be characterised as a hybrid between a conceptual paper (with regards to the first research question) and an empirical paper (with regards to the second research question).

Response – Thank you for your feedback. We have conducted a substantial and careful revision of the manuscript that included a clearer positioning and identification of the contribution of the study (incl. a revised title of the article), a stronger link of the findings to the analysis, including providing better quotes that clearly demonstrate key point, and a sharpened implications section that clearly connects back to the key literature and emphasizes our key findings and their implications for theory. This revision also removed the hybrid character of the manuscript. Specifically, the paper is now firmly positioned as a qualitative, in-depth case study. We dropped the conceptual part and opened it up for further research in the implications section.

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: As the interrelation between the aims is unclear because of the hybrid-oriented structure of the paper, this question becomes hard to assess. In general, the author(s) exhibit(s) a broad knowledge of the fields that the paper in question integrates.

Response – Thank you for your encouraging feedback. We have conducted a substantial and careful revision of the manuscript, including the literature review. Specifically, we revised the table with the literature review to improve its clarity (Table 1).

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: The method section is relatively detailed, but the hybrid character of the paper makes the method section a bit freestanding due to the problems in the earlier sections.

Response – Responding to your feedback, we have substantially revised the method section and mapped it closely to the sharpened positioning. Specifically, we now present a clear argument why we selected a single, longitudinal case study; we shortened the research context section and removed the reference to the airline industry. We also moved the discussion of SIA from the method section to the beginning of the introduction; we emphasize the triangulation of our data more clearly; and we added Figure 2 to better explain the timeline of our study.

4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: The same problem as with the method section can also be identified here in terms of this section also being relatively freestanding.

Response – Thank you for your comment. In response, we have substantially rewritten the results section. Following the analysis, we argue that different determinants were responsible for SIA's sustained service innovation success which can be grouped into two broad categories. We labeled the first category *institutional foundations* consisting of innovation climate, human capital, and resource configurations. The second category was labeled *innovation-related dynamic capabilities* (c.f. Ngo and O'Cass 2009).

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We removed the Figure 2 in the previous version and replaced it with the new Figure 3 in the revised manuscript to serve as an overview of our findings.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: Due to the problems of identifying the core of this paper, it becomes hard to assess the stated implications.

Response – Responding to your review, we now state a clear core of the paper and link the implications discussion closely to this core. Specifically, we sharpened the implications and connect them back closely to key literature. This connects our key findings closely to their implications for theory.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: Even though a clear sense of direction is lacking, the paper is in general well written.

Response – Thank you, we worked hard in improving the quality of communications further.

Reply to Reviewer #2's Comments:

Comments:
The authors of "Conceptualizing the Art and Science of Serial Service Innovation" pursue two objectives in their paper: "1) to develop a holistic theoretical framework of service innovation and 2) to explore the dynamic capabilities necessary to achieve sustained service innovations over a long period of time" (p. 3). The authors take the starting point in the resource-based view, the dynamic capability framework, and service-dominant logic, and conduct a qualitative data collection within a single company, Singapore Airlines. Although the combination of the above-mentioned theoretical lenses does have a great potential, the authors, unfortunately, have not manage to realize it. Neither did they sufficiently utilize the rich data that they claim to have collected during ten years.

Response – Thank you for your comments, suggestions and pointers, and push to do better. We worked hard and diligently to address the issues you highlighted, and we hope that the revised

manuscript finds your approval.

1. Theoretical part. This part could have benefited from a clear justification of the theoretical choices instead of (or, at least, beyond) mentioning their increasing popularity. For example, on p. 7-8, the choice of SDL is justified merely by its "popularity in recent years", "a novel mindset and an overarching view", and some "distinct differences between RBV and SDL", none of which is further explained. All three frameworks have their merits and challenges, but, for example, dynamic capabilities framework and service-dominant logic have completely different anchoring and require careful consideration, if one wants to combine them. Dynamic capabilities framework is about firms and their ability to outperform competitors; it still incorporates the traditional notions of value chain, physical goods and services. In contrast, service-dominant logic does not make distinction between firms, customers, governments, etc.; as the authors rightly point out, it is about actors. It also rejects value chain in favor of networks, products in favor of value propositions. In this context, I think the authors could improve the paper by developing some sort of a common vocabulary based on these theories to avoid inconsistencies later in the paper.

Response – Thank you for these comments which helped us to rethink our paper. We have removed the reference to SDL and now only refer to dynamic capability theory. As such we use a more consistent vocabulary. We revised the literature section accordingly.

p. 4. The definition of service innovation that the author chose is inconsistent with service-dominant logic. SDL claims that the innovation happens as a result of reconfiguring ecosystems, novel applications of competencies, and it does not necessarily emerge from certain firms' activities. Neither can innovation be "integrated by the firm into service offerings", which implies the traditional value chain and some sort of an intangible product.

Response – Thank you for this comment. As mentioned above, we deleted the reference to SDL.

p. 5. Review of the literature – how was it done? The two research objectives are extremely broad, and the answer to the first one requires a solid theoretical development. In fact, the authors could easily substitute the whole method and findings part with a formal literature review, because Figure 2 can be fully derived from the existing literature; and the authors might consider doing this if they wish to maintain Figure 2 in some or another form. In this case, the authors would need to present some formal search criteria and documentation of the search/review procedure. This may lead to a more solid coverage of the literature (for example, now it is unclear why Eisenhardt and Martin, 2000 is in Table 1, but none of Teece's articles).

Response – Thank you for pushing us on this issue. As a response, we dropped the first objective and fully concentrated on the analysis of our data, and built a model based on those (see Figure 3). The literature review section was changed as follows:

1. We revised the Table 1 to provide a clearer overview of the key literature.

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2. In the manuscript, we removed the references to different theoretical approaches.
3. The new manuscript includes a paragraph on innovation persistence which has been covered in the product innovation literature. We believe it relates to our topic of sustained service innovation.

pp. 2-8. The presentation of numerous notions is puzzling and confusing. In most cases, it is not clear why they are mentioned, how they relate to each other, and how they will be used. This includes customer engagement (is in the abstract, superficially mentioned in the introduction, then disappears), serial service innovation capability (mentioned in the abstract only), innovation orientation, organizational learning capability, and many other. Instead of this variety, the paper could benefit from a more accurate, in-depth presentation of a few selected concepts and their discussion across the selected theoretical lenses. Note that "serial service innovation capability" is actually a tautology – the notion of capability implies that there is some stable pattern of behavior (e.g., Helfat and Winter, 2011), so "service innovation capability" already presumes a serial activity. It is also unclear why organizational learning capability is presented as a dynamic capability (p. 7); these concepts are related, but they do not refer to the same phenomena.

Response – We agree with your assessment. Following your feedback, we decided to remove the whole section "Conceptual Development'. Instead, we expanded the discussion of our results and implications. Furthermore, we removed the term 'serial service innovation capability' as the section was rewritten. Finally, we now streamlined language and positioning throughout the manuscript.

2. Method part. The approach that the authors chose has two fundamental problems. First, the single-case, firm-focused study is not consisted with the authors' choice of service-dominant logic as one of the theoretical lenses. SDL has a clear focus on actors and the network of actors, renounces goods and services, takes the view that is "inherently beneficiary oriented and relational", and claims that the value is inherently beneficiary oriented and relational", "cocreated by multiple actors", and "always uniquely and phenomenologically determined by the beneficiary". Unfortunately, the chosen method and data are not suitable for addressing these issues (neither for addressing customer engagement that you mention). The second problem is the data collection and analysis: the authors refer to Eisenhardt (p. 11), but she explicitly recommends using several cases to create theoretical propositions. In the case of a single company, with a data collection over a long period and an opportunity of data triangulation, the authors could benefit from following Dennis Gioia's approach. However, this would also require a different objective – to develop a process model (inductively) or a novel concept. Such an objective could be also a bit more consistent with Figure 2, which has a flavor of a process model, but exhibits a poor fit with the original research objectives. In addition to these two core problems, I think it is rather unfortunate that the authors, who have seemingly a rich dataset from their earlier work, have decided to use mainly 20 in-depth interviews. If the authors decide to follow Gioia's approach, they can substantially improve the paper by actively using other sources they mention, such as observations and archival records. It would be also very helpful for readers if the authors could provide a better description of SIA and some examples of SIA's innovativeness.

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Response – We would like to thank the reviewer for the detailed comments regarding the method. We apologize if the reference to Eisenhardt let to confusion. The method section has been revised in several ways. First, we present a clearer argument why we selected a single, longitudinal case study. Second, we follow your suggestion and emphasize the triangulation more clearly.

Findings part. P. 11 – it is unclear why the authors call those seven notions (customer centricity, organizational learning, knowledge sharing, etc.) "dynamic capabilities". Within the dynamic capabilities framework, it has become common to follow Teece's (2007) tripartite framework of sensing, seizing, and transforming, which is seen as more parsimonious. The authors do mention sensing and seizing, but the role of these capabilities remains unclear. On Figure 2, these capabilities look like some underlying part of organizational learning, service ecosystem collaboration, and knowledge sharing and integration, whereas in the text, they are presented as another (eighth?) capability.

Response – Thank you for this comment. We apologize for the confusion and inconsistent way how we presented the results. We have completely rewritten this section. However, we want to point out that Teece distinction is only one way of defining dynamic capabilities, even though we agree that the seminal work has laid groundwork for much of the empirical studies. But within the DC literature there is no universal perspective of what dynamic capabilities are. We now discuss the different conceptualizations of dynamic capabilities, position our study better against them, and relate our key findings (see in Figure 3) back to them.

The more fundamental issue is that it does not look like the authors have inductively derived all these concepts from the data (as it would otherwise be expected from the explorative, single case, longitudinal study), but have rather derived the concepts from the literature and then used the data to illustrate these concepts. Figure 1 that presents most of these concepts prior to analysis only confirms my concern. Obviously, such an approach to data analysis is not sufficient for a research article (but could be very well used in, for example, a teaching case).

Response – Thank you for this comment as it has helped us to rethink the structure of our article. We made the following changes:

(1) We removed Figure 1 in the previous manuscript;
(2) We deleted the section 'Conceptual Background' in the manuscript;
(3) We revised the literature section focusing on empirical studies that identified dynamic capabilities;
(4) We have rewritten the results and discussion sections. In our findings, we now present more clearly that we derived our themes from the case data. Our initial themes were guided by dynamic capability theory. We then searched for similarities and differences between the codes to start grouping them into a hierarchical tree structure. New codes were created in an iterative fashion to capture the meaning of groups of initial codes (Thomas and Harden 2007).

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(5) We identified two different groups of determinants that were responsible for SIA's sustained service innovation success which we labeled *institutional foundations* (also referred to as organizational assets, c.f. Galbreath 2005) consisting of innovation climate, human capital, and resource configurations and *innovation-related dynamic capabilities*.

(6) In our discussion section we connect those themes to the extant literature.

(7) We replaced Figure 2 from the previous manuscript with the new Figure 3 which more clearly illustrated our findings.

Figure 2. All the previously described problems accumulate in Figure 2, which is supposed to be the article's main contribution. As a result, Figure 2 raises more questions than it answers. Are service innovation orientation, and sensing and seizing the types of "dynamic capabilities of serial service innovation"? If yes, are there seven or nine of them? If no, what are they? Why service innovation orientation is not a part of "BE: innovation mindsets and values", but ambidextrous leadership, which is much more about "DO" and "HAVE" (e.g., rewards and recognition, p. 13), is? Why does organizational learning come before knowledge sharing and integration, and are they really so separated? Why are knowledge interfaces and formal search procedures not included in "HAVE: innovation structures"? Why innovation PRACTICES are "DO", but organizational ROUTINES are "HAVE"? Why customer centricity is "relentless", but none of the other "dynamic capabilities" is? In the findings part, many illustrations are rather confusing, which, in turn, makes Figure 2 difficult to follow. For example, formal search procedures that support sensing capability are incorrectly described on p.16 as sensing capability itself, yet, if the authors think it is sensing capability, why is it not in "HAVE", which is about organizational routines (according to p. 4)? The illustration of adaptation (which is a part of "HAVE") on p. 19 relies on mentioning creativity, improvisation, pro-activeness, preparedness, future orientation, and culture. However, most of these notions belong to "BE: innovation mindsets and values". The figure has many more inconsistencies, and the main reason is the lack of a clear categorization. Organization is opposed to employees, but is it not employees who actually constitute organization? Organizational learning is separated from knowledge sharing and integration, but is it not knowledge sharing that supports organizational learning?

Response – Thank you for your critical comments that led us to go back to our data and revise this model to closely follow the analysis and findings from our research at SIA. The revised framework appears in Figure 3.

As I mentioned earlier, I think there are two possible solutions to these problems. The first solution is to create a literature review or a conceptual paper with a clear justification of each notion. However, there are similar conceptual papers that already deal with the same issues (e.g., den Hertog et al. 2010). The second solution is to use the rich dataset that the authors have and try to explore the organizational events and the participants' understandings of the events. In this case, however, the authors might consider removing service-dominant logic or, if they wish to maintain it, consider exploring customers and business partners' points of view.

Den Hertog, P. et al. 2010. Capabilities for managing service innovation: towards a conceptual framework.

Helfat, C. and Winter, S. 2011. Untangling dynamic and operational capabilities: strategy for the (n)ever–changing world.

Teece, D. 2007. Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance.

Response – Thank you for your suggestions. We followed your advice and removed the reference to SDL and focused on our rich dataset. We appreciate the new references that you suggested.

Additional Questions:

1. Originality: Does the paper contain new and significant information adequate to justify publication?: The article's contribution is limited and consists mainly of a convoluted re-combination of existing concepts.

Response – We revised the paper substantially to clearly position the paper and its contributions.

2. Relationship to Literature: Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?: The choice of the multiple theories that the authors use in their article is not properly justified, and the theories are not adequately presented. The overlaps and differences between the theories are not sufficiently addressed, which, in turn, results in inconsistencies in the final model.

Response – Thank you for this comment as it has helped to rewrite this section. We hope the revised literature review finds your approval.

3. Methodology: Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?: There is a mismatch between the method and the paper's objectives, theoretical part, and conclusions. Instead of being used for exploratory purposes, the data are used to simply support or illustrate the well-known concepts from literature. The data are insufficient, considering the ambition of an in-depth exploratory study in a single case company and the fact that the data collection took over a ten years - according to the method section, the study is mainly based on twenty one-hour interviews.

Response – Responding to your comments, we completely rewrote this section: (1) We present a clearer argument why we selected a single, longitudinal case study. (2) We emphasize the triangulation more clearly. (3) We clarify the timeframe of our study which was not just 10 years but consists of 30 years. In particular, we added Figure 2 which illustrates the nature of our data and timeline.

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4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: The results are presented fragmentarily, with no obvious connections until Figure 2; this is basically a list of theoretically-derived concepts illustrated by a few quotes (sometimes incorrectly). Figure 2, which is the main outcome of the paper, is inconsistent, both as a standalone model and as in relation to the paper's objectives.

Response – Thank you for pushing us on this issue. The results now are presented more clearly based on evidence from the analysis.

5. Implications for research, practice and/or society: Does the paper identify clearly any implications for research, practice and/or society? Does the paper bridge the gap between theory and practice? How can the research be used in practice (economic and commercial impact), in teaching, to influence public policy, in research (contributing to the body of knowledge)? What is the impact upon society (influencing public attitudes, affecting quality of life)? Are these implications consistent with the findings and conclusions of the paper?: No, considering that the paper's questionable premises and method,.

Response – We appreciate your detailed and constructive feedback earlier in this review which helped us to clearly articulate the implications this study.

6. Quality of Communication: Does the paper clearly express its case, measured against the technical language of the field and the expected knowledge of the journal's readership? Has attention been paid to the clarity of expression and readability, such as sentence structure, jargon use, acronyms, etc.: The paper is easy to read, but lacks logical consistency.

Response – We have revised the paper substantially to improve its logical consistency. Thank you again for your substantial and constructive feedback and detailed comments which helped us to improve the quality of this manuscript. We hope we could address your concerns satisfactorily.

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| | **Longitudinal** | > 20 years | **This study** |
| | | < 4 years | Perks and Roberts (2013) identify 48 longitudinal studies; mostly with shorter 3-5 year data sets | 4-year study by Damanpour et al. (2013) on effects of innovation types and performance |

Longitudinal

> 20 years

This study

< 4 years

Perks and Roberts (2013) identify 48 longitudinal studies; mostly with shorter 3-5 year data sets

4-year study by Damanpour et al. (2013) on effects of innovation types and performance

Cross-sectional

Evanschitzky et al. (2012) conducted a meta-analysis of 233 empirical studies from 1999 through 2011 on new product innovation success

- Agarwal and Selen (2009)
- Fisher et al. (2010)
- Grawe et al. (2009)
- Jansen et al. (2016)
- Ordanini and Parasuraman (2011)
- Plattfaut et al. (2012)
- Salunke et al. (2011)
- Srivastava and Shainesh (2015)
- Verma and Jayasimha (2014)
  (For details see Table 1)

Product Innovation   **Service Innovation**

Overview of SIA's break-through service innovations:

1) 1970s: SIA was first to offer free drinks, free headsets and choice of meals
2) 1991: First to launch phone and fax services on board
3) 1998: One of first airlines to set up a website
4) 2001: SIA the first airline to provide audio- and video-on-demand to all passengers in all classes
5) 2004: World's longest non-stop flight from Singapore to New York City (SQ-21)
6) 2006: Introduced world's widest First and Business Class seats, which transformed into fully-flat beds
7) 2007: First airline to fly the Airbus A380
8) 2009: First to offer iPod and iPhone connectivity in Economy Class
9) 2013: First airline to introduce 3D games on board
10) 2013: Launched next generation of cabin products, set to be the new industry benchmark for premium air travel
11) 2017: New "Skyroom" Suites on the A380

Institutional Foundations for Service Innovation

Innovation-Related Dynamic Capabilities

Innovation Outcomes

"Lead to innovate"

Innovation Climate — Leadership / Service culture

Recruiting
Training & Development
Engagement & Incentives

Human Capital

"Enable & motivate to innovate"

"Structure to innovate"

Resource Configu-rations — Systems / Structures / Processes

"Embrace Ambidexterity"
- Organizational ambidexterity; sustained adoption of dual strategies (e.g., differentiation vs. cost leadership)
- Sustained adoption of ambidextrous innovation approaches (structured vs. open, centralized vs. distributed, and incremental vs. breakthrough innovation)

"Institutionalize Learning & Knowledge Integration"
- Consistently sensing opportunities and threats
- Discovery of knowledge from multiple sources
- Sustained capability of learning and knowledge integration

"Orchestrate Collaboration"
- Sustained capability to build strong relationships with key innovation partners (incl. aircraft manufacturers, technology providers, and interior designers)
- Tight integration of internal and external key partners in the innovation processes (incl. customers)

"Reinvent Customer Value"
- Constant questioning of today's successful services on how to reinvent them through breakthrough innovation
- Sustained continuous improvement and fine-tuning of exiting products and services
- Pragmatic flexibility in inventing, validating, retracting, fine-tuning new products and services

Sustained Industry-Leading Service Innovations

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