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An emerging future for digital marketing: From products and services to sequenced solutions[☆]

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ABSTRACT

This paper highlights key developments in digital marketing since 1990, emphasizing the shift from static interactions to dynamic, data-driven ecosystems. While significant research on digital marketing has focused on the promotion and distribution aspects, the “Product” component of the 4P framework remains underexplored. Addressing this gap, the paper examines how digital technologies are transforming products and services, merging them into a “phygital” realm where physical and digital experiences seamlessly integrate. This has led to the rise of sequenced solutions—tailored offerings that combine products and services in a timely manner to achieve higher consumer goals, like well-being. Such solutions require companies to adopt customer-centric, proactive approaches using real-time data and advanced technologies. The paper discusses challenges in adopting a solutions-oriented mindset, emphasizing cross-company and cross-industry collaboration. It concludes by exploring the transformative potential of sequenced solutions and calls for further research to address critical challenges in this evolving field.

1. Summary of past developments in digital marketing

Kannan and Li (2017) defined digital marketing as an adaptive, *technology-enabled process* by which firms collaborate with customers and partners to jointly *create, deliver, and sustain value for all stakeholders*. Undoubtedly, the most important technology propelling the rise of digital marketing was the birth of the World Wide Web in 1990. Initially, the Web functioned as a static network designed purely for information sharing in a read-only format. Even in this rudimentary form, e-commerce was already taking shape, such as services from Prodigy, AOL, CUC (Compu-Card). But soon the Web evolved to support interactivity and collaboration, paving the way for digital marketing, and signifying the natural progression of direct marketing into a digital realm.

Companies started to build sophisticated websites to increase their online visibility. With the growing number of websites, there was a need to provide a directory like the Yellow Pages, triggering the birth of web directories such as Yahoo. These directories soon developed into search engines. Although there were many search engines that emerged before

Google, its revolutionary algorithms enhanced the ability to find the most relevant content for a search query. With a market share of about 90%, Google is undoubtedly the most important access gate to the internet in the Western hemisphere today.¹ Marketers quickly realized the importance of gaining a favorable position on a Google search results page to achieve visibility, and, thus, search engine optimization (SEO) became highly popular and relevant. Another notable milestone was the advent of display advertising in the 1990's, leading to search engine advertising (SEA) to complement companies' efforts to create online visibility and awareness for their products and services. Along with the growing number of websites, the number of email users burst over the years. There were about 10 million email users worldwide in 1997, whereas this number is about 4.5 billion users today.² Not surprisingly, email marketing emerged as a powerful tool, enabling businesses to send personalized messages to large audiences—especially existing customers—at a remarkably low cost. But developments related to privacy protection have made it more challenging to directly contact potential customers.

In the early 2000's, popular social media platforms such as Facebook

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¹ <https://www.statista.com/statistics/1381664/worldwide-all-devices-market-share-of-search-engines/>.

² <https://www.theguardian.com/technology/2002/mar/13/internetnews>; <https://www.statista.com/statistics/255080/number-of-e-mail-users-worldwide/>.

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and Twitter (today X) were launched that introduced new ways for marketers to engage with consumers and other stakeholders. Before these social media sites became popular, there were other sites such as classmates.com and myspace.com in the 1990's that pointed to the potential of the Internet to build and sustain large communities online. Social media marketing (SMM) has since become an essential part of digital marketing. Simultaneously, these years also mark the transition from mobile phones to smartphones. Many people probably remember the introduction of the first iPhone in 2007. The introduction of smartphones changed how, where, and when companies can interact with consumers. Responsive website designs, mobile apps, and location-based advertising gained traction as consumers have greatly expanded their use of mobile devices in their daily lives.

From 2010 onwards traditional social media platforms were complemented by platforms such as YouTube, Instagram and TikTok, transforming how consumers consume content, and have created alternative options to reach and engage with consumers, for example, through storytelling. At the same time, influencer marketing became popular, wherein both celebrities and 'ordinary' people act as ambassadors for products and services on social media (i.e., social media influencer (SMI)). Today, some non-celebrity SMIs have gained such widespread popularity that they can be considered celebrities themselves.

These developments highlight the evolution of digital marketing with a focus on the communication and community aspects. Yet, internet technology has not only facilitated interactive, visible, real-time communications that are ubiquitous and remembered (Hennig-Thurau et al., 2010), it has also enabled and supported the growth of electronic commerce. Today, about 21 % of all retail sales are conducted online,³ demonstrating that the development of internet-based technologies has not only impacted how firms communicate with customers but also how products and services are sold.

In a recent article, Rangaswamy and Gensler (2024) noted that most submissions to the *Journal of Interactive Marketing* in the last two years were related to e-commerce, online and social media advertising (e.g., influencer marketing, livestream commerce), as well as new technologies such as chatbots and AI. These digital marketing topics relate mainly to the "Promotion" and "Place" components of the 4P-framework of marketing. There has been relatively low emphasis, especially in the academic literature, on the "Price" and "Product" components, which have also been fundamentally changed by digital technologies.

In the remainder of this article, we highlight how digital technologies are altering fundamental aspects of a what a product or service is, and what these changes mean for consumers and companies. The quintessential aspect of a product (or service) is that it encapsulates value that can be exchanged in the marketplace. But, when physical products and services take on more digital features, or when shopping and consumption experiences combine physical and digital aspects, we operate in a "phygital" world which transforms both the value encapsulation and exchange processes. The term "phygital" denotes that technology is utilized to bridge the digital and physical worlds, aiming to deliver unique interactive experiences for users. We articulate the nature and implications of this phygital transformation in the context of products and services. We do not, however, focus on a specific product or service. Instead, we emphasize how and why digital technologies are transforming the nature of products and services, which are evolving into *sequenced solutions* to cater to broad consumer goals, with the potential to enhance people's lives.

2. From products and services toward sequenced solutions

Products encapsulate value in a tangible way that can be stored and used in the future by customers, whereas services are intangible,

ephemeral, and perishable, and cannot be stored for future use. However, the digitization of the value exchange process has altered the demarcations between products and services, blurring the distinctions between them (Fig. 1), and in some cases, approximately the same value capsule can be delivered either as a product or a service (e.g., software on a CD vs. SaaS). Observing the blurring distinctions between products and services, Vargo and Lusch (2004) proposed the concept of service-dominant logic that emphasizes interactivity, integration, customization, and coproduction as the hallmarks of a transition taking place in the economy from products to services.

We now describe in detail the evolution from products and services to solutions, depicted in Fig. 1. We first note that digital technologies help *servicize* products and *productize* services. Products can be *servicized* by bundling a product with various services, or a company could offer the functionality and benefits of a product without transferring ownership (Kramer, Krafft, & Storbacka, 2024; Orsdemir et al., 2019). An example of the former is GE Healthcare's 'OnWatch' program, whereas an example for the latter is Rolls-Royce's 'Power-by-the-Hour' program. GE Healthcare's 'OnWatch' program offers a proactive solution for monitoring imaging systems, aiming to prevent equipment issues before they arise. The program has been developed to meet customers' increasing demands for quality, productivity, and patient safety. By diagnosing early signs of system failure, 'OnWatch' helps customers plan for future repairs and replacement parts. The Rolls-Royce's program uses a different approach to deliver value by providing customers with the capability of moving airplanes from one place to another, rather than delivering a high-tech airplane engine. The 'Power-by-the-Hour' program is not a product; rather it is an offering that delivers a solution to its customers. This solution potentially encapsulates greater customer value by ensuring more reliable and efficient engine performance. Alternatively, customers may 'rent' a manufacturer's resources as and when needed to create a product tailored to their specific requirements (Rangaswamy & Balakrishnan, 2006). Examples here include stuffed animals that can be configured online (e.g., Build-A-Bear) or customized print products (e.g., photobooks, T-shirts, personalized M&Ms). Likewise, some services can be *productized*; a music concert can be recorded and watched afterwards, or a lecture can be recorded and made available online.

The world is now awash in offerings that include products, services, *servicized* products, and *productized* services, most of which can be accessed or acquired through websites and mobile apps. There are now over 745 million registered domain names, about 36 % of which have the .com top-level domain (from domainnamestat.com). Additionally, there were over 3.5 million apps available through Google Play and 1.8 million from Apple's App store in February 2024 (from statista.com). Amazon lists over 600 million products, 98 % of which are from third-party vendors (from amzscout.net), and Amazon Web Services offers over 200 services, including data warehousing, deployment tools, directories, and content delivery (from docs.aws.amazon.com).

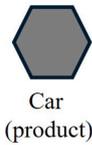
With the overabundance of offerings to choose from, consumers are increasingly looking for 'one-click' solutions that simplify their lives – clicking a button on a mobile phone to get a ride, medical consultation, food from a restaurant, groceries from a supermarket, hear any song or watch any movie, etc. Today, convenience is crucial for consumers when making consumption decisions, and solutions incorporate convenience. In response to these developments, marketers are stepping up to configure convenient offerings, which are selected and integrated from large assortments of offerings – sometimes in real time – to customize, encapsulate, sequence, and deliver value to customers.

We propose that digital marketers must now rise to the challenge of generating offerings that are more than (customized, convenient) bundles of products and services: they need to configure and offer phygital solutions that help consumers to achieve longer-term and higher-level goals in addition to satisfying specific customer needs and wants.

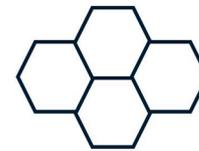
Here are a few examples of a solutions mindset for marketers to consider. A tennis racket is a product, and a tennis lesson is a service.

³ <https://www.statista.com/topics/871/online-shopping/#topicOverview>.

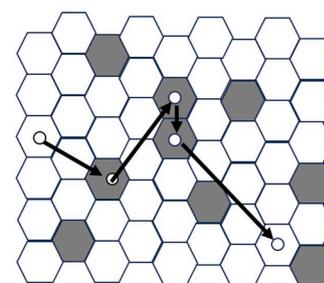
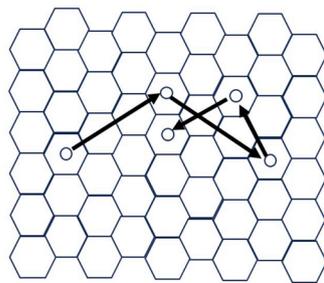
Products (represented by grey capsules) and Services (represented by white capsules)



Prefixed Bundled Offerings/Hybrids



Emergent Sequenced Solutions: Customized temporal bundling (potentially in real time)



Emergent solutions may consist solely of services (e.g., those offered by airlines or ridesharing companies), or a combination of products and services (e.g., solar panels and monitoring, or tennis racket and lessons) integrated into an ecosystem.

Fig. 1. The Evolution of Products Toward “Solutions”.

Offering tennis lessons that include the purchase of a tennis racket is a bundle. But a solution, which helps customers to achieve higher-level goals, is something different. To stick with the tennis example, one higher-level goal could be playing tennis competitively, or to stay active and healthy as well as to spend time with friends to satisfy social needs. A complete solution here would include (in addition to rackets and lessons) regular health checks, recommendations for fitness exercises to prevent injuries, or offering travel arrangements with team players to tournaments. Likewise, solar panels could be part of an “energy solution” that includes services such as site assessment, installation, maintenance, purchase of excess energy produced, product additions such as solar trackers, etc., all of which could be customized, integrated, and managed by a company to optimize the overall energy spend for a consumer. Another example is Uber Eats. The app sends a message to its customers saying the food is being prepared. The app also displays the delivery person’s route and highlights several outlets along the way where the customer could obtain additional items like wine or ice cream. The routes are heterogeneous, and the set of outlets shown could be customized to satisfy customers’ needs and goals. Meal-kit-providers such as Hello Fresh provide a solution by suggesting meal options, accommodating consumer preferences and dietary restrictions and delivering to customers the necessary ingredients along with a recipe. This solution not only meets the basic need for food but also helps customers achieve higher-level goals, such as spending more time with family, eating healthier foods, and taking better care of themselves. The United Airlines app helps optimize several aspects of a customer’s air travel. A

flight is a service, but for a consumer, the trip from the origin to the destination could be an activity serving a larger goal (e.g., vacation, meeting family, business trip, etc.). Consumers want a comfortable and hassle-free trip. The United app provides many features to help plan and book air tickets, lodging, rental cars, as well as services on the day of travel such as bag drop, purchasing meals on the flight, real time guidance regarding connecting gates, bag tracking, time it takes to walk between gates, etc. Things do not always go right, and when there is a problem, consumers need quick solutions, such as alternative flights, changing seats, and the like, all of which are handled via the app. Here the company is integrating several different customized services for each customer and sequencing them based on specific needs the customers may have during travel, based on real time data about flights and where a customer is at a given moment. These features, and more, are further facilitated by prior customer data available from the company’s loyalty program.

Offering solutions requires a deep understanding of consumers’ long-term preferences and needs, as well as evolving short-term wants. Existing and emerging digital technologies now enable real-time tracking of product consumption or service use (as in the Solar panel, United Airlines, and Uber examples), including details on where, how, when, and in what context the offerings are consumed or used. The capability to configure solutions to better satisfy customer needs and wants by leveraging technologies is becoming an integral part of digital marketing, i.e., an adaptive technology-enabled process by which companies collaborate with customers to jointly create, deliver, and

sustain value.

Marketers need to adopt a proactive view of *how* a solution and the associated customer experiences are created and delivered so that they can offer effective solutions that help customers achieve their higher-level goals. Tuli et al. (2007) identified four process steps to develop effective solutions particularly in a B2B context, namely, (1) requirements definition, (2) customization and integration, (3) deployment, and (4) post-deployment support. To illustrate these process steps, consider the Caterpillar company (all information provided here is drawn from <https://www.caterpillar.com>) which is the world's leading manufacturer of construction and mining equipment, off-highway diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. The main goal of Caterpillar's customers is the uptime of the equipment (process 1: requirement definition). By enhancing the physical products with digital services, Caterpillar has devised several solutions for its customers to improve uptime and thus productivity, as well as improve safety, loss prevention, reduction of risks, etc. For example, Caterpillar uses sensors that are built into the equipment and are connected to mobile apps available on all major platforms, allowing customers to track, monitor and manage multiple equipment conveniently at the same time (process 2: customization and integration). Currently, more than 1.2 million Caterpillar products have digital sensors (process 3: deployment). Telematics data as well as additional onsite data captured by users are continuously analyzed to monitor performance, alerting a Caterpillar advisor when fault codes arise (process 4: post-deployment support). This support enables quick assistance to fix problems by means of anticipatory maintenance, which may include customers purchasing replacement parts. Finally, an additional benefit is that customers can track – with the help of geofencing – if an equipment is deployed outside an authorized area or has been stolen. Thus, Caterpillar gains insights into usage patterns and potential customer needs to further enhance the value they provide to their customers and build closer relationships with its customers by using digital technologies. Taken together, Caterpillar is more than just an equipment manufacturer today; it is a digitally enabled solutions provider embedded in a phygital world. Its products are interconnected, and the exchanged data is used to create value for customers by leveraging the capabilities of the Internet of Things (IoT). The integration of artificial intelligence (AI) and the use of technologies such as edge computing could further enhance the ability to deliver customized solutions in real-time.

Although collecting, connecting, and analyzing data to deliver a solution imposes challenges for Caterpillar, these challenges appear to be manageable because most of its customers have a well-defined goal: maximizing uptime using economic value calculations to decide on the solutions they need. In B2C markets, the values and goals driving consumer behaviors, however, include psychological and social costs and benefits, in addition to economic considerations. Moreover, consumers in B2C markets are likely to be more heterogeneous in their preferences, needs and higher-level goals, which makes it more challenging to develop cost-efficient, effective solutions. To capture the idea that consumers are heterogeneous not only in their preferences, needs, and goals but also in their paths to purchases, the concept of 'Customer Journey Management' has recently gained substantial importance. The customer journey describes the path a customer takes to purchase a product or service using different touchpoints. Like the process described above for B2B markets, the customer journey is formulated from the company's perspective, namely, when and how to reach a target customer to consummate the sale of a product or service. It is thus a transactions-driven approach, although the company considers various interactions (touchpoints) in customizing or designing an offering.

Offering solutions requires companies to change their transaction-oriented mindset into a customer-oriented mindset, which poses organizational challenges such as incentivizing the collaborations needed to create effective solutions. Consider the following example to illustrate

this aspect: A coffee shop chain provides an app as a touchpoint to facilitate the ordering process because they have learned that customers are often in a hurry. Customers can order their preferred drink, customize it (e.g., sweetness level), pick it up, and pay through the app. In this example, the solution is customer-oriented, and a product-service bundle is offered by the same company. But we also observe cooperation between companies designed to satisfy customer needs. Airlines, for example, have started to expand their offerings so that they also provide links to rental car companies and hotels when one books a flight on their websites. Moreover, airlines offer mobile apps to manage customers' flight experience collaborating with airport authorities, or offer Wi-Fi access during flights in partnership with telecom companies. The ensemble of products and services provisioned from multiple companies aims to enhance customers' travel experiences by making traveling as convenient as possible even when something goes wrong. Yet, the flight is just part of the journey for travelers on vacation. Beyond mobility and hospitality aspects, they seek relaxation and memorable experiences. To offer a comprehensive solution that helps all customers reach their higher-level goals, multiple companies would need to not only cooperate (e.g., through referrals) but also collaborate (through seamless integration) to jointly create value for customers. A close collaboration between companies potentially enhances the value delivered to customers' and gets closer to satisfying customers' higher-level goals. Companies' digital interactions with customers help them in gathering harmonized data and to learn about consumers' preferences (e.g., consumers who prefer aisle seats prefer to book larger rental cars in the travel example). Yet, just thinking about touchpoints seems insufficient to learn about customers' needs and higher goals.

Marketers need an understanding of the hundreds of activities consumers perform daily so they can better understand the sequence of their activities (e.g., having breakfast, reading or watching news, taking the bus, browsing online, going for a walk, etc.) and the needs and goals consumers strive for (e.g., staying healthy, mental well-being, safety). The activities that contribute to achieving a specific goal form a sequence. Yet, consecutive activities do not necessarily belong to the same sequence, and the length and composition of sequences vary across customers. Additionally, the same activity can belong to multiple sequences, contributing to different goals (or sub-goals) of an individual customer.

Today, companies have a good understanding of short sequences serving immediate needs and goals. An example of such a short sequence is going to a pharmacy to buy Tylenol when having a headache. The goal from the customer's perspective is to feel better, and Johnson & Johnson as the provider of a solution has to ensure that Tylenol is top of mind when consumers have headaches and want a solution. The customer journey concept has helped us to understand these short sequences – especially when only one product or service provides the solution. However, understanding longer sequences is more challenging even when only one service or product is the solution. Longer sequences might be caused by more detailed elaboration by consumers regarding their 'best' solution; consumers switch channels, and companies may not observe all consumer activities that belong to a sequence. Additionally, products and services are consumed in many sequences over time, which means that the underlying goals are also satisfied over time. Such temporal contexts include education (e.g., bundling of courses and learning modules sequenced over time), chronic health conditions (e.g., managing consumption of multiple drugs), pet ownership (e.g., managing the flow of food, medical care, toys, pet care services), car and home ownership (e.g., financing, maintenance, insurance, sale), and wearables to name a few examples.

Consider the case of wearables, which are likely to be associated with longer sequences of activities. Oura, for example, offers smart rings that enable consumers to track their heartbeat, temperature, and sleep efficiency. While owning such a smart ring helps consumers monitor their health status, their ultimate goal is likely to improve their overall well-being. The smart ring serves as a tool to achieve this higher-level goal.

To reach the goal, consumers may need to increase their physical activity and adjust their eating or media consumption habits. To enhance the value for the consumer, additional services could be integrated into the monitoring sequence, such as recommendations for nearby fitness clubs and personalized nutritional advice in collaboration with meal-kit providers like HelloFresh. Furthermore, offering suggestions for health checkups or natural remedies like Valerian through partnerships with pharmacies or organic stores, would add even more value to the consumer's journey, fostering a comprehensive approach to their health improvement. This type of sequence that consumers undertake is different from the previous airline example because the consumer actions here are not intrinsically related, or they are spread over a long period of time. By helping consumers achieve their higher-level goals through integrated, sequenced solutions, the perceived value of both the overall solution and each individual product and service can be enhanced. The higher level of value realized might lead to greater customer satisfaction and foster long-term loyalty. Moreover, the interconnected offerings create seamless experiences, encouraging customers to stay engaged.

Understanding such longer sequences is a great challenge for companies when – as in the example above – sequences span longer periods and encompass numerous smaller sub-sequences. Thus, a set of sequence-of-sequences could serve to achieve consumers long-term goals (well-being, learning, health, financial security). Decisions made in a specific sequence affect subsequent decisions (sequences). Thus, there are path dependencies when consumers strive for a higher-level goal that focuses on an end state. For solution providers, the challenge is to understand the higher-level goals consumers pursue and how individual activities and sequences can be supported by solutions that help consumers achieve their goals.

Recent methodological developments in AI, particularly models such as deep RNN (Recurrent Neural Networks) that are used for describing and understanding word sequences in language, might help marketers describe, and potentially explain, consumption sequences (and sub-sequences) from empirical data. Pattern analysis methods applied in areas such as DNA sequences, playlist construction, and data streaks may also be useful in developing models to analyze ordered categorical sequences observed in the context of goal-oriented consumption characterized by temporally varying needs and wants. Note that the analysis of consumption sequences is different from the analysis of market baskets, for which there is a sizeable literature in marketing (e.g., Hui et al., 2013; Manchanda, Ansari, & Gupta, 1999). Market baskets are based on co-occurrence of product purchases and ignore the sequential aspects of consumption. However, one challenge in obtaining data for studying consumption sequences is consumers' concerns related to sharing private (sequence) data and privacy regulations may prevent companies from fully utilizing the potentially available individual-level data.

In addition to understanding the conditions under which customers value the availability of solutions, companies need to explore questions about how they can build a sustainable business model around solutions. There is a substantial literature in economics related to optimal bundling of products. If bundling is initiated by the company (e.g., cable companies, [stitchfix.com](https://www.stitchfix.com)), then bundling is typically optimal for a monopolist if there is a negative correlation in valuations of products across customers (e.g., Adams & Yellen, 1976). In a two-product context, this means bundling becomes more attractive for the company if, for example, customer 1 prefers product A over B, and customer 2 prefers product B over A. That is, customer valuations for bundles become more homogenous than their valuations for individual products, which enables a monopolist to extract consumer surplus. However, identifying optimal bundles becomes very complex if the number of products becomes large. Bakos and Brynjolfsson (1999) show that for a monopolist selling digital products (i.e., products whose marginal costs of production are very low), company profits increase when the number of products in a bundle increases, assuming that customer valuations for a product are drawn from a common distribution. When a company offers

many products, another option is to allow customers to select the bundles themselves (e.g., as at [Amazon.com](https://www.amazon.com) and at local grocery stores). Hitt and Chen (2005) explored the optimality of customized bundling where companies enable customers to self-select their own bundles. They show that customized bundling is an attractive strategy when customers face a budget constraint, the marginal costs of products are low but not zero, and customers' valuations are concentrated in a few products (though the set of products that are of high value varies across customers). Yet, we have little knowledge about optimal bundling when customers select from products and services in some sequence that varies across customers. Loewenstein and Prelec (1993) show via experimental studies that customers generally prefer sequences that increase their utility (valuations) over time. For example, customers tend to prefer “an indifferent dinner followed by a good one,” over “a good dinner followed by an indifferent one.”

As we noted earlier, in B2C contexts, consumption sequences do not necessarily follow logical structures, and there is likely to be high heterogeneity in sequences across customers. In a sense, the sequences of different customers are ensembles that ebb and flow in somewhat unpredictable manner, much like logs floating on a river (i.e., there is some order in the sequences even if they are idiosyncratic, transitory, and contain fluid components). In the best of circumstances, determining optimal bundles is a difficult analytical problem for companies because of the potential combinatorial explosion when there are many options. However, even if we know the exact bundle of products and services a customer is likely to need, it is difficult to predict *when* they would need a specific product/service in an ensemble, and exactly what specific features they would need (e.g., whether they need re-stringing of a tennis racket, or whether they need a one-hour or two-hour tennis lesson). This type of situation does not lend itself to optimization using dynamic programming. Recommendation systems (see review in Roy and Dutta 2022), and models such as “next product to buy” (Knott et al. 2022) can provide some guidance to marketers in offering solutions, but these models do not specifically accommodate consumption sequences that cater to higher-level goals and needs, and sub-sequences that cater to specific needs and wants. Instead of relying on models to support solution-oriented offerings, companies could consider designing digital business platforms that can simultaneously manage supply and demand of offerings and help clear the market at every instant using flexible and adaptable processes (Rangaswamy et al., 2020).

In sum, companies that wish to provide solutions for higher-level goals need to think beyond a product/service or bundling mindset and adopt a “sequenced solutions”-mindset, taking a customer's perspective. As illustrated, such a mindset is likely to require greater effort for B2C companies, as compared to B2B companies. We hypothesize that a single company will not be able to offer sequenced solutions that satisfy customers' needs and goals because of heterogeneity across and within consumers over time; rather companies need to collaborate with others through digital platforms to address the challenges of offering flexible bundles of products and services at reasonable costs by using the expertise of multiple providers (Vargo & Lusch (2004); Day, 2004). Offering solutions collaboratively will also raise questions related to effective branding strategies, because a solution is not owned by a single company but by a network of brands (Gensler et al., 2013). Additionally, there is increasing demand from consumers and policymakers for companies to act responsibly and reduce their negative impact on societal outcomes. Effective solutions could potentially contribute to positive societal impacts, such as reducing the carbon footprint due to their phygital nature and/or by improving customer well-being (Libai et al., 2020). In the following, we propose future research questions that can help to address the challenges of providing effective sequenced solutions.

3. Avenues for future research in digitally-enabled sequenced solutions

Recent research on digital marketing has primarily focused on delivering value to customers, namely on the ‘Promotion’ and ‘Place’ components of the 4P-framework. While we anticipate that technological advancements and their applications (e.g., XR, AR, metaverse, blockchain, Large Language Models) will introduce new challenges to how companies promote and sell their products and services in the future, these challenges appear to be extensions of what those companies face today. Companies will still need to address questions such as how to allocate their marketing budget across a wide array of communication and distribution channels, and how to appropriately model and attribute each channel’s contribution to the company’s success in the marketplace. Moreover, companies must find ways to ensure long-term success in an evolving competitive and volatile environment.

We suggest that the opportunities offered by a phygital world could serve as a significant lever for companies. The merging of the physical and digital world facilitates offers that create incremental value for both companies and customers through the provisioning of sequenced solutions as well as corresponding research questions for academic scholars (Table 1).

First, companies face organizational challenges when reconfiguring their organization and business model to offer sequenced solutions, as Rolls Royce discovered when it launched its ‘Power-by-the-Hour’ program. In theory, the resulting increase in engine uptime benefited both Rolls Royce and its customers (i.e., airlines). However, with this approach, Rolls Royce assumed market-level risks that were previously at least partly borne by its customers. For example, when the pandemic hit and many airplanes were idled, Rolls Royce had to bear the brunt of the losses. In recent years, technologies have evolved to reduce risks for all parties involved in the value exchange process. If solutions can be delivered when, where, and how they are needed by customers, that is a win-win situation for both the company and customers because of better utilization of resources and a net gain in the value generated. Our argument is that there are ways to share risks via contractual mechanisms (e.g., pay upfront, pay-as-you-go, subscription model, etc.) that need to be explored carefully to identify the appropriate business model for a specific solutions provider. Digital platforms might be necessary to make the offering of sequenced solutions possible. Additionally, most companies focus on products and services today, with varying levels of market orientation and customer centricity. Transforming a company into a solutions provider necessitates embedding strong customer orientation within the company culture, which requires, for example, top management support (Kirca, Jayachandran, & Bearden, 2005). Achieving a comprehensive 360° view of customers to understand their goals and their purchase or consumption sequences necessitates data sharing within the company and the elimination of data silos. Internal departments must collaborate to develop and deliver effective solutions, and external partnerships may be required to fully address customer needs. Consequently, reward systems should incentivize not just the success of individual products and services but the effectiveness of the solutions they provide. Ultimately, companies must think about performance indicators to evaluate the ROI and success of sequenced solutions. When sequenced solutions result from collaborations, defining a company’s contribution to customer value will be challenging.

Second, to develop effective sequenced solutions, companies need a deep understanding of the choice and purchase sequences that customers pursue to achieve higher-level goals. Methodological advances in machine learning and AI can help to collect, harmonize, and analyze data to detect sequences and enhance our understanding of them. These methodologies are essential for processing the vast amounts of consumption and usage data generated by customers, helping firms decipher the different cognitive sequences associated with different customer segments. For example, Google’s ‘‘People also ask’’ feature showcases how AI can predict user queries based on patterns observed in

Table 1

Research questions related to solutions.

Topic	Research questions
Organizational challenges and performance implications of a solutions mindset	<ul style="list-style-type: none"> - How can companies overcome organizational challenges when transitioning to become providers of sequenced solutions? - What are effective business models for solution providers? - How can companies align their organizational structures and processes to support the implementation of sequenced solutions? - How do companies establish contractual arrangements with collaborators and other stakeholders to support a solutions-based approach? - How can companies effectively join and integrate with existing business platforms for developing and delivering sequenced solutions, and under what conditions is this integration beneficial? - How do industry and market conditions influence the competitive advantage of sequenced solutions in the marketplace? - How can companies sustain long-term profitability by offering sequenced solutions? - How should companies evaluate the ROI when implementing a solutions-based strategy? - How can companies evaluate the impact of sequenced solutions on Customer Lifetime Value (CLV) and customer equity?
Data collection, harmonization, and analysis	<ul style="list-style-type: none"> - What can companies do to effectively collect, analyze, and utilize consumption and usage data to inform their sequenced solutions strategy? - How do real-time data analytics play a role in understanding sequences and associated goals? - How can companies incorporate customer feedback effectively to understand sequences and higher-level goals? - How do various factors influence the accuracy of predictions in understanding consumption sequences? - How can predictive capabilities be enhanced to anticipate customers’ next choices or actions in a sequence? - What types of context-aware suggestions are effective in formulating sequenced solutions for consumers? - How can companies ensure data privacy and security when utilizing advanced analytical tools to provide sequenced solutions?
Customer reactions	<ul style="list-style-type: none"> - What latent goals and needs are associated with different types of consumption sequences? - How do potential biases, such as temporal discounting, affect consumption sequences? - How and why do consumer expectations change when companies transition from selling products/services to offering sequenced solutions, and what mechanisms explain this shift? - How can companies measure the perceived value of sequenced solutions from a customers’ perspective? - What are moderating and mediating factors influencing customers’ perceived value of sequenced solutions?

(continued on next page)

Table 1 (continued)

Topic	Research questions	
Branding	- How can companies identify and avoid potential negative effects on customer experience when implementing sequenced solutions?	
	- What are the key drivers of customer satisfaction and loyalty when adopting a solutions-based approach?	
	- How do customers' higher-level goals shape their interactions with brands that offer sequenced solutions?	
	- How do customers interact with both the physical and digital aspects of sequenced solutions?	
	- How does participation in digital worlds (e.g., AR, VR, metaverse) alter consumers' valuations of sequenced solutions?	
	- How do customer experiences in the phygital world differ from experiences in the physical or digital world? Why?	
	- How should companies redefine their brand purpose to align with the transition to sequenced solutions?	
	- How does a solutions-based approach impact brand reputation, brand image, and brand equity in the long term?	
	- How can companies identify and align their brand purpose with higher-level customer goals?	
	- How will emerging technologies, including XR technologies (e.g., AR, VR, and metaverse) shape the brand purpose and customer experience with sequenced solutions?	
	Sustainability and social responsibility	- How can companies leverage the features of the phygital world to provide solutions for vulnerable customer segments?
		- How can companies design solutions that enhance customers' well-being?
- How do sequenced solutions contribute to sustainability and social responsibility?		
- How can companies combine physical and digital products and services to deliver solutions that improve their ecological sustainability?		
- What are ethical considerations when developing sequenced solutions?		

other users' query patterns. In the future, AI could evolve to suggest actions like "People also do," further guiding consumer behavior. Yet, companies usually face customer data that is fragmented, incomplete with respect to sequences, and varying in quality and type (unstructured data vs. structured data). Providing sequenced solutions, hence, requires careful consideration of the enterprise data strategy. There are many unanswered questions related to how the collected data can be analyzed to create effective sequenced solutions.

Third, the shift towards offering sequenced solutions is expected to evoke customer reactions and changes in customer expectations. It is crucial to understand how consumers react to sequenced solutions and under what circumstances they perceive sequenced solutions as having higher value compared to products, services, or bundles. The added value of sequenced solutions likely stems from anticipating when customers need a particular product or service to achieve their goals. Consequently, providing sequenced solutions that help consumers achieve their goals necessitates personalization, customization of offerings, and high data availability. However, recent privacy regulations and concerns about surveillance can hinder solution providers from realizing the full potential of their solutions. Offering solutions perceived as 'fair' and communicating transparently about how solutions were developed will likely impact the success of customized solutions in the

marketplace. Moreover, solutions will be phygital, and we need to understand how consumer behavior differs in physical and digital worlds.

Fourth, providing sequenced solutions may require companies to reconsider their branding strategy, as the perceived brand image should be centered around solutions rather than individual products and services. While some companies' vision/mission statements reflect a solutions-oriented approach (e.g., Google: "organize the world's information and make it universally accessible and useful"), others are solely product-focused (e.g., Coca-Cola: "craft the brands and choice of drinks that people love, to refresh them in body and spirit"). To embody meaning in a solutions-oriented world, brands must clearly state how they contribute to effective solutions. Consequently, a brand's purpose may evolve when a company decides to become a solutions provider. Finally, a shift to becoming a solutions provider might prompt companies to rethink their impact on society and the environment. The change in mindset could encourage companies to act more responsibly, as the customer becomes the focal point of their actions.

CRedit authorship contribution statement

Sonja Gensler: Writing – original draft, Conceptualization. **Arvind Rangaswamy:** Writing – original draft, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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