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Dynamic Service Analytics Capabilities for Service Systems in the Global Big Data Economy - A Systematic Review and Agenda for Future Research

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Abstract
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ABSTRACTS SESSION 2

TRACK 5: Application of Big Data and Artificial Intelligence

Dynamic Service Analytics Capabilities for Service Systems in the Global Big Data Economy – a Systematic Review and Agenda for Future Research

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1.0 Introduction

The progressive digitisation of organisational processes and socio-technical interactions, is elevating the role of 'data' and some term it as 'oil for digital economy' (Wedel and Kannan, 2016) and some term it is an 'asset' (Davis and Patterson, 2012). The characteristics of big data (BD) are itself evolving from 3Vs to 7Vs namely: volume, velocity, variety, veracity, value, variability and visualisation (Mikalef et al., 2017). Increasing interest in BD both from academia and practitioners substantiate the explosive growth and interest on harnessing the power of Dynamic service analytics capabilities (DSAC) for research as well as business decision making (IDC, 2017; Wedel and Kannan, 2016). Riding on this wave of optimism, this paper explores where does DSAC fit within data-driven markets, and what capabilities are needed to derive informational and decisional value. This study focuses on service analytics capabilities of 'service systems' which are defined as a value co-creating process using resources, such as people, technology,

organization and shared information to satisfy customer needs better than competing alternatives (Akter et al., 2016a). Cardoso et al. (2015) define service analytics as "the process of capturing, and analysing the data generated from the execution of a service system to improve, extend, and personalize a service to create value for both providers and customers". With the advent of big data now firms have much more dynamic capabilities to sense, seize and transform service adaptiveness and innovation for service systems (Teece et al., 2016). Although big data analytics has become of strategic importance for service systems, leveraging dynamic analytics capabilities continues to be a challenge. Motivated by this challenge, the main research question we address is: what are the dimensions of dynamic service analytics capabilities for service systems in big data economy?

2.0 Research Methodology

The research is based on a systematic literature review and 28 in-depth interviews (n=28). To address the research gap, the review has been undertaken using Scopus, Web of Science (WoS) and Google to extract relevant extant literature on this subject matter. We searched for service analytics, dynamic service analytics, service analytics culture, data-driven services etc. A total of 321 retrieved articles are screened based on first title, abstract, keywords and then body of the text. Narrowing the list to 50 articles, final lists of 20 relevant articles were chosen for deeper analysis. In addition, we conducted a thematic analysis of 30 in-depth interviews following the guidelines of Braun and Clarke (2006).

3.0 Findings on Service Analytics Capabilities

Overall, the findings put forward six dynamic service analytics capabilities (i.e., management, technology, talent, data governance, model development and service innovation capabilities) with future research agenda.

3.1 Management Capability

Management capabilities are reflected in a firm's ability for planning, investment, coordination and control of BD deployments. Akter et al. (2016b) propose that a firm's three distinct capabilities comprising of management, technology and talent define its big data analytics capabilities (BDAC). To realise full benefits, firms need to facilitate a seamless coordination across its functional divisions so as to ensure that all entities operate for a common vision and based on single truth (Kiron et al., 2014).

3.2 Technology Capability

A service system's technology capability is composed of its infrastructure's connectivity, compatibility and modularity (Akter et al., 2016b). These characteristics enable to flexibly configure data resources to facilitate real-time decision making (Davenport, 2012, Barton and Court, 2012).

3.3 Talent Capability

Talent capability consists of management of technology, technical skills, business knowhow and relational knowledge (Akter et al., 2016b). Matured organisations invest in training and enhancing their employees' analytical skills thereby create a competitive advantage (Ransbotham et al., 2015). These skills range from management of technology, technical know-how, business knowledge and relational knowledge which enable the people to deliver their job responsibilities in a big data-driven service system.

3.4 Data Governance Capability

The data governance capability consists of four component areas of competency: data architecture, life-cycle management, master data management, and privacy and security management (Wang et al., 2016). Service systems especially, healthcare and financial firms need to focus on who have access to which data, their continuous business need for it and how to protect the privacy of the individuals (Davis and Patterson, 2012, Wang et al., 2016). While DSAC promises big benefits, robust service systems to ensure **security and privacy are still at its infancy (Demirkan and Delen, 2013, Motamarri et al., 2017).**

3.5 Model Development Capability

For DSAC to have an impact on a service system's performance, data must flow in a modular way from its inception to the point of service delivery or every touch-point where a customer interacts with the firm (Hall et al., 2016, Kiron and Shockley, 2011, Vargo and Lusch, 2004). Firms can build their models (Descriptive, Diagnostic and Prescriptive) via aggregation, sampling or selection to reduce the dimensionality of structured BD (Wedel and Kannan, 2016).

3.6 Service Innovation and Adaptiveness Capability

Service innovation refers to the refinement of an existing service or origination of a new service altogether (Maglio and Chei-Hyeon, 2016). DSAC has a massive capacity to harness data from multiple sources is able to provide deeper insights about the market, competition, and customer's perceptions about their services vis-à-vis competition (Wedel and Kannan, 2016).

4.0 Implications

The foundation of the DC framework is suitable for service systems in big data environment to gain an edge in the market. Service systems constantly focus on developing dynamic analytics capabilities that can adapt, orchestrate and innovate with market and technology developments (Teece, 2014). Despite the growing momentum of service analytics capability in big data environment, there is a paucity of research on service analytics capability model and its relevant dimensions. It is no surprise that Ostrom et al. (2015) have identified data-driven service analytics as one of the critical service research priorities. Thus, this paper presents a useful starting point of dynamic service analytics capabilities for service systems in the big data economy with an agenda for future research.

References

References can be provided upon request.