Exploring ways to make a business case for the transition towards circular business models

Making circular investment decisions in a non-circular world

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Extended abstract

A rise in global population and welfare is depleting the earth's resources and challenging the current predominantly linear economy, following a take-make-waste pattern, calling upon a shift towards a more circular economy (Bastein and Willems, 2019; Ellen MacArthur Foundation, 2013; Lüdeke-Freund et al., 2019). The Dutch government and the European Union have set the goal/ambition to become fully circular by 2050 thus striving towards a cleaner economy and reducing the dependency on scarce resources (European Commission, 2020; Government of Netherlands, 2016).

Businesses are expected to play a large role in the transition towards a circular economy. This poses a challenge for businesses transitioning towards these new circular business models aimed at closing-, narrowing-, and slowing down the resource loop (Bocken et al., 2016; McDonough and Braungart, 2002; Vermunt et al., 2019). Taking into consideration the economic, social and environmental effects on businesses implementing circular practices and circular business models, positive impact can be realized (Cavallo and Cencioni, 2017; Geissdoerfer et al., 2017; PACE, 2019; Stegeman, 2015). But, developing clear business cases will be essential in the ability of firms to adapt circular business models (PACE, 2019).

Many firms in the Netherlands are currently transitioning towards circularity, but in order to achieve a fully circular economy, value chains will still need to change considerably (Peters et al., 2019; Roemers et al., 2018). The province of Zuid-Holland supports SMEs (Small and Medium Enterprises) in the manufacturing industry by boosting material and production innovation, driven by the digitization of manufacturing (Peters et al., 2019).

The smart industry has shown capabilities to fungate as an enabler of circular business models (Bastein, 2018; Bastein and Willems, 2019; Blunck and Werthmann, 2017; Ellen MacArthur Foundation, 2016; Ellen MacArthur Foundation and Google, 2019; Nascimento et al., 2019; Pham et al., 2019; Rosa et al., 2019). These technologies are especially crucial as they allow for more efficient resource use by means of intelligent cross-linked value creation models (Rosa et al., 2019; Stock and Seliger, 2016). Taking note that circularity can only be reached on an eco-system level (cross-company boundaries) (Jonker et al., 2017; Raworth, 2017) and that supply chain issues are perceived among the main barriers for implementing circular business models (Brown et al., 2020; Vermunt et al., 2019), smart industry technologies show great prospect in order to accelerate the transition towards circular businesses.

A coalition of nine frontrunners in implementing digitalizing and circular business models joined forces in the Capital Equipment Coalition (CEC), which was established in January 2018 in Davos. In this paper the circular driver framework proposed by CEC (2018) is adopted. This framework suggests drivers that can strengthen business cases for those SMTEs that are mainly profit-led instead of mission driven frontrunners (Bastein and Willems, 2019; PACE, 2019).

In the current framework seven drivers have been described; 1. Enter new markets, 2. Reduce Cost, 3. Reduce risk and future-proof the business, 4. Trigger Innovation Capacity, 5. Attract & Retain talent, 6. Deliver greater customer value and 7. Align with public expectations (PACE, 2019). However, it is not yet known how digitalization and circularization of manufacturing leads to these drivers exactly. The PACE framework summarizes these drivers, but this framework has not yet been validated in the context of smart manufacturing.

Other scholars have also identified both drivers and barriers in firm transitions to circular business models (Brown et al., 2020; Lawton et al., 2013; Linder and Willianders, 2017; Rizos et al., 2016; Tura et al., 2019). Analysis of the type of impacts for such business transition clearly reveal that these are of strategic nature (Eisenhardt and Zbaracki, 1992). The underlying fundamental shift is to move away from mere financial value maximization towards multiple value creation (Jonker, 2014; Raworth, 2017; WECD, 1987). This points to the need to embed digitalization and circular business strategies at the strategy level of an organization.

The aim of this research is to identify how and why manufacturing companies adopted digitalizing and circular business strategies, in order to distill and provide practical pathways for followers to adopt. This is done by means of qualitative case study approach. Eight different corporations in the manufacturing industry that have taken initiatives in the past to implement circular business models will be examined. The examination consists of desk research regarding the strategy of the corporation, a short survey and an in-depth interview that allows for understanding the contextual conditions of their circular initiatives. This collective and instrumental case study approach, allows for examining similarities and differences between the cases and is expected to lead to insights into the barriers end drivers related to circular business initiatives and therefore a validation of the PACE framework.

This paper pursues action design research (Sein et al., 2011) as the research outcomes are used to accelerate the transition of SMEs towards circular business models. This is done by the development of an interactive online tool that shows pathways and possible drivers and

barriers related to circular initiatives and will therefore provide input for building circular business cases at an operational, tactical and strategic level for SMEs. Two SMEs in ZuidHolland are selected for three iteration sessions for tool development. The last part is a validation stage of both the framework and the tool with a new sample of twelve selected SMEs.

This paper seeks to add to clarifying the link between digitalization of manufacturing industry and circular drivers. Circular value drivers will be validated and function as the basis for business case information that will enable SMTEs to make the investments in digitalization that accelerate their transition towards a circular economy.

Keywords
Circular Economy, Smart Industry, Digitization, Smart Manufacturing, Sustainable Business Models

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