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How Are Firms Measuring Digital Transformation at a Corporate-Level in Organisations?

Research-in-progress

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Abstract

The COVID-19 pandemic has made it imperative for many large firms to embark on a digital transformation journey, however there is still minimal understanding of how strategic performance is measured in transformative organizations. This paper lays the groundwork for better understanding how firms are measuring digital transformation. This is the first phase of a two-phase research initiative, supporting our intent of establishing the appropriate theoretical frameworks. The first phase included a systematic review of the leading companies by total revenue to understand the adoption of strategy performance management frameworks. This research-in-progress paper has generated initial insights, namely the emergence of the Objectives Key Results method among technology firms for both corporate and business-level strategic management, some evidence of a decline in use of the Balanced Scorecard for strategic-level management and a tendency for organisations to create digital innovation units for digital transformation.

Keywords: Objectives Key Results, Balanced Scorecard, Key Performance Indicators, Strategic Performance Management, Digital Transformation, Digital Innovation Units

1 Introduction

The COVID-19 pandemic has made it imperative for many large traditional firms to initiate or accelerate digital transformations, in response to new regulations or changes in consumer needs (Fletcher and Griffiths, 2020; IDC, 2020; Papagiannidis, Harris, and Morton, 2020). With global spending on digital transformation projected to reach $2.3 trillion by 2023 (IDC 2019), understanding how companies measure whether targeted strategic goals and objectives have been met by digital transformation efforts is of interest. Despite the imperative for digital transformation, little is known about how corporate-level management measures the impact of digital transformation strategies to ensure that their goals and objectives are achieved (Bohnsack, Hanelt, Marz, and Marante, 2018; Vial, 2019) and this gap provides an opportunity for exploratory research.

This gap has been particularly noticeable within Information System (IS) literature, where the recent systematic reviews of digital transformation from Vial (2019) and Bohnsack et al. (2018) have neglected the role of measurement tools during digital transformations. IS scholars have focused on a range of other key digital transformation topics, including organizational barriers to digital transformation, variations in a firm's organizational structure, digital strategy, developing a digital culture and understanding interactions between the firm and consumers (Chanias, Myers, and Hess, 2019; Sebastian et al., 2017), while failing to discuss digital transformation metrics.

The authors sought to address this limited understanding within the IS literature by examining how the attainment of strategic goals and objectives through digital transformation was being measured. Based on the focus on strategic goals and objectives at a corporate level, the widely adopted Balanced Scorecard (Kaplan and Norton 1992) and Objective Key Results (Doerr, 2018) were selected as frameworks for consideration. A cursory review was undertaken of Hoshin Kanri (Jolayemi, 2008) but owing to no evident representation of the framework in the companies reviewed in the systematic literature review, and for the sake of brevity, this framework was omitted.

It was also recognised that key performance indicators (KPIs) are widely adopted as performance metrics (Parmenter, 2019). However, this measure of performance is not always an indicator of the achievement of strategic goals and objectives specifically, but rather performance at all levels of the organisation (Parmenter, 2019). While KPIs are used within the Balanced Scorecard as measures associated with the objectives being measured, their use is far broader than measuring the attainment of strategic goal and objectives. (Parmenter, 2019). As the aim of the research was to generate new insights regarding how the attainment of strategic goals and objectives are measured during a digital transformation at a corporate level in organizations, it was decided to include KPIs in the preliminary research in progress, as some of the KPIs might prove indicative of strategic digital transformation goals and objectives.

This research is intended to contribute to knowledge about how the strategic effects of digital transformation on organisations' goals and objectives is being measured by organisations via practice-oriented research, and to identify what theoretical frameworks support this strategic measurement.

2 Research Question and Proposed Design

The researchers commenced by reviewing the current IS understanding of measurement tools during a digital transformation, which included the recent systematic reviews of digital transformation from Vial (2019) and Bohnsack et al. (2018). These critical systematic reviews highlighted that the role of measurement tools during a digital transformation had been neglected. Despite this limitation, the researchers were aware of anecdotal evidence and trends that suggested that the widely adopted Balanced Scorecards (Kaplan and Norton 1992) and Objective Key Results (Doerr, 2018) methods may be applied in the digital transformation context for defining the strategic goal and objectives for digital transformation initiatives. KPIs, also widely adopted, presented somewhat of a challenge in that Kaplan and Norton viewed measures associated with the goals within the four dimensions of the Balanced Scorecard as KPIs (Parmenter, 2019). As such KPIs could be considered subordinate to goals and objectives - similar to the Key Results component of OKRs, rather than an independent goal and objective framework (Parmenter, 2019). But owing to a paucity of IS literature, the researchers were reticent to proceed without a preliminary testing of these assumptions.

Thus, a phased approach to the research was selected with the first phase entailing a systematic review of the annual reports of the top 50 companies and top 20 technology companies identified by the Fortune 500 for 2019 for evidence of both digital transformation initiatives and the strategic

measurement thereof (Tranfield, Denyer, and Smart, 2003). Findings of this systematic review are expected to shape further refinement of research design for a subsequent second phase where a qualitative case study (Yin, 2017) of digital transformation will be conducted to provide a deeper understanding of this research. This has been done to generate new insights regarding measurement tools during a digital transformation, and to address the following research question: How are firms measuring the impact of digital transformation on strategic goals and objectives at a corporate level in organizations?

The first stage of the systematic review outlined by Tranfield, Denyer and Smart (2003) included developing a protocol of keywords to establish critical measurement tools among our selected studies. The keywords were determined by reviewing the current industry reports discussing measurement tools among digital transformations, which consisted of theoretical frameworks such as Balanced Scorecard, Objective Key Results, KPIs and broader measurements frameworks (Broudal, Callies, and Patel, 2020; Bain and Company, 2018). The second stage of the systematic review evaluated the leading firm's current measurement tools in relation to digital transformation. The top 50 companies' annual reports identified by the Fortune 500 were selected for review. However, during the initial data extraction, we noticed the minimal representation of technology firms in the top 50, which was a concern as many of these technology firms were considered leaders in the digital transformation field (Anthony, Trotter and Schwartz, 2019). To address this concern, the systematic review was extended to include the top 20 technology firms. Two reasons led to this decision: their perceived leadership in digital transformation and their approach in adopting strategic performance measurement systems during a digital transformation (Doerr, 2018).

Once the data was captured from the systematic review, stage three, highlighted by Tranfield, Denyer and Smart (2003) was initiated to report and disseminate the findings. This included discussing how some of these measurement tools have been applied among industry in section four. The systematic review will be further supported by primary qualitative data collection which is expected to commence at the end of 2020. The following section will further expand upon the theoretical foundations of the Balanced Scorecard, Key Performance Indicators and Objective Key Results before we apply the learnings from the systematic review in section 4.

3 Literature Review

Many studies have considered a firm undergoing digital transformation as a unit of analysis, focusing on how a single entity undergoes this process. Chanias et al. (2019) focused on the organisation's digital competences and resources to undergo the change, while Sebastian et al. (2017) analysed articulating a digital strategy and El Sawy, Kræmmergaard, Amsinck, and Vinther (2016) considered the necessary mindset and skills set for digital leadership. Despite this imperative for digital transformations, little is known about how corporate-level management measures digital transformations (Bohnsack, Hanelt, Marz, and Marante, 2018; Vial, 2019).

An examination of Balanced Scorecard frameworks (Kaplan and Norton 1992) was undertaken to determine whether these should be included in the measurement of the attainment of the goals and objectives of digital transformation at a corporate level. Owing to the prevalence of OKRs in the company reports for technology companies there was evidence to suggest that Objective Key Results (Doerr, 2018) deserved review as a theoretical framework that could be well adopted at corporate level.

3.1 Balanced Scorecard Theoretical Framework

The Balanced Scorecard originated to seek resolution of a managerial conundrum: how to measure not only short-term financial performance, but operational changes that created long term value (Hoque, 2014). The theoretical framework focuses on financial performance measurement and the measurement of three other perspectives: the customer, internal business and innovation and learning perspectives (Kaplan and Norton 1992).

The financial perspective focuses on revenue and improved value of customer. This is directly attributable to elements of the customer perspective – acquisition and retention. Improved asset use and reduction of cost structure forms the next layer (Kaplan and Norton, 1996). Next, the customer value proposition within the customer perspective achieves better customer value through improved customer management processes and innovation via the internal perspective. All these perspectives are enabled through the foundations of learning and growth perspective and the contribution made to a well-equipped workforce (Kaplan and Norton, 1996).

Subsequent evolutions of second and third generations of the Balanced Scorecard have seen the inclusion of the strategic objective concepts and better causality linkages between measures. This has led to visual strategy mapping and destination statements to visualize impact of action and inform target setting (Lawrie and Cobbold, 2004). Hoque (2014) draws the conclusion that 'Until another improved innovation tool appears, the balanced scorecard will continue to provide organizations with a valuable option as a strategy map, an enabler of policy implementation, and an organizational control and accountability tool.'

3.2 Objective Key Results Theoretical Framework

Objective Key Results are generally understood to consist of clear, aspirational objectives which are then quantitatively measured with the key results (Boudon, 2019; Klanwaree and Choemprayong, 2019). The theoretical framework was developed by John Doerr when he worked with Andy Grove in creating this measurement tool which has now been widely adopted by many firms located within Silicon Valley.

The theoretical framework has two segments, Objectives and Key Results (Boudon, 2019; Klanwaree and Choemprayong, 2019). Objectives are defined as 'What is to be achieved, no more and no less. Objectives are significant concrete, action-oriented, and (ideally) inspirational' (Doerr, 2018, p.10). The objectives aim to develop ambitious end goals, which are impossible to complete. An example from Google illustrates this – 'Accelerate Blogger Revenue Growth' (Klau, 2012) remains an ongoing objective.

Key Results (KRs) can be considered as the '…benchmark and monitor HOW we get to the Objective, effective KRs are specific and time-bound, aggressive yet realistic. Most of all, they are measurable and verifiable' (Doerr, 2018, p.10).

The Key Results are quantifiable measurement targets such as sales numbers, engagement numbers to achieve the Objective. To draw upon an example from Google, Key Results can be 'implement AdSense Host Placement Target to increase RPMs by xx or launch three revenue-specific experiments to learn what drives revenue growth' (Klau, 2012).

Even though OKRs have been well defined in industry since 2012, there is minimal literature on the topic, with the few exceptions being (Boudon, 2019) and (Klanwaree and Choemprayong, 2019). This indicates a need for further research on firms embedding OKRs, especially as initial research suggests propensity for adoption by employees and employers among technology firms (Boudon, 2019; Doerr, 2018; Klanwaree and Choemprayong, 2019).

3.3 KPIs

The prevalence of KPIs in many of the company reports covered by the systematic review warranted further examination. While it was clear that KPIs are not an independent theoretical framework focused on goals and objectives, they were integral components of frameworks focussed on attainment of goal and objectives (Parmenter, 2019; Bullen and Rockart, 1981; Kaplan and Norton, 1992; Rockart, 1979). However, KPIs seem to have been more widely adopted as business-level metrics i.e. operational or individual manager measurements, not as corporate-level metrics (Bullen and Rockart, 1981; Rockart, 1979). In the Balanced Scorecard, KPIs as metrics and targets cascade from corporate-level objectives (Kaplan and Norton 1992) with KPIs being subordinate to the objectives of each dimension of the Balanced Scorecard. While the Objective Key Results can also cascade from corporate-level objectives to operational or individual manager measurements (Doerr, 2018) this is a case of using the same methods for measurement but at different levels within the organisation, originating at a corporate-level and thence cascading down the management chain.

4 Application of Measurement Frameworks

4.1 Adoption of Balanced Scorecard

In Bain and Company's 'Management Tools and Trends' report for 2018, Rigby and Bilodeau rank the Balanced Scorecard as 3rd out of the 25 most popular management tools, with a usage rate of 29%. It is an established performance management system that has featured in ample literature across diverse sectors since inception in 1992. The longevity of the tool has been attributed to supporting communication of organisational strategy and behavioural influence (Malina, 2013).

However, based on the systematic review of companies within the parameters defined for this study only one company (in the oil and gas industry) described their strategic performance management by

the term 'Balanced Scorecard' (BP 2019, p.114). Two companies in the automotive sector detail the measurement of strategic non-financial targets, however there is only demonstrable alignment to one of four perspectives of the Balanced Scorecard - customer (Daimler.com 2019, p.115; Volkswagen 2019, p. 53).

To be noted are Bain and Company's (2018) findings which reflect a steady decline in use of the Balanced Scorecard over the past decade by respondents to their annual survey.

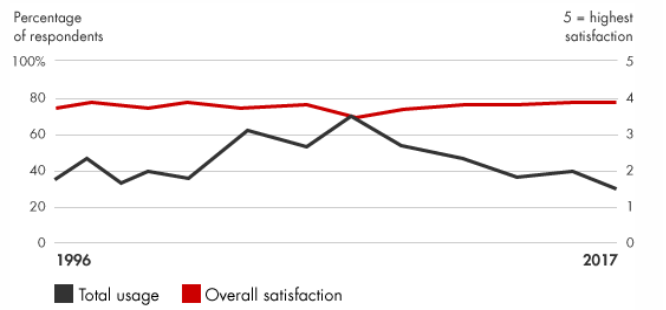

Figure 1: Balanced Scorecard usage and satisfaction (Bain and Company, 2018)

That is not to say that companies are not adjusting their existing Balanced Scorecard in response to strategic digital transformation efforts — Digital Bank Singapore (DBS) is an example that has (DBS 2019, p.25) — it may simply be that those who are, did not fall within the arc of our systematic enquiry.

4.2 Adoption of Objective Key Results Indicators

OKRs have been widely adopted among 'born digital' firms such as Dropbox, LinkedIn, Slack, Spotify, Twitter, Netflix, as well as traditional firms such as BMW, Disney, Exxon and Samsung (Doerr, 2018). Google is one of the significant companies that has embedded OKR from their corporate level down to their product teams. The senior leadership originally adopted OKR in 1999 (Doerr, 2018) as they provided ambitious objectives which could then be publicly measurable among the team members. While it has been positively accepted, Rick Klau, a Google executive has noted:

> OKRs are not synonymous with employee evaluations. OKRs are about the company's goals and how each employee contributes to those goals. Performance evaluations — which are entirely about evaluating how an employee performed in a given period — should be independent from their OKRs (Klau, 2012).

The distinction between corporate-level measurement to employee evaluation is a very important distinction. In the context of Google, it has also been adopted within its Ventures Arm, which is primarily focused on building and implementing the next generation of Google products.

This form of adoption of OKR has been echoed at IBM digital arm, IBM Garage, which is focused on building the next generation of digital solutions (Broudal, Callies, and Patel, 2020).

> The difference from traditional planning methods is that OKRs are set, tracked, and frequently re-evaluated, usually quarterly. In a typical OKR environment, at least 60% of the goals are set bottom-up rather than cascaded down (Broudal et al., 2020, p. 1).

These examples demonstrate adoption of corporate-level OKRs to measure strategy performance management of a digital transformation.

5 Preliminary Findings and Expected Contribution

Data from the systematic review was tabulated to summarize two perspectives. Firstly, in Table 1 below, how companies were measuring strategic performance and if technology companies had a different approach.

	OKR	**BSC**	**Measure, Targets and KPIs**
Top 20 Technology Companies	12	0	8
Percentage	*60%*	*0%*	*40%*
Top 50 (-3 technology companies)	1	1	45

Percentage	*2%*	*2%*	*96%*

Table 1 - Strategic performance measurement comparison

No evidence could be found in Annual Reports of the top twenty technology companies using the Balanced Scorecard. Only one non-technology company's Annual Report stated that they used the Balanced Scorecard.

In technology companies, twelve of the twenty companies reviewed used OKRs. A case of OKRs being used by a retailer by the Fortune 500 report was identified - however on closer inspection, this retailer is a large e-commerce marketplace, including cloud-based platforms. This does suggest that OKRs have been more widely embraced in the technology sector.

Another notable finding was the use of measures, targets and KPIs. Most companies appear to have elected not to follow a model strategic performance management framework but to select specific custom measures, targets and KPIs, at the business-level, for their unique business needs, with many using customary financial measures for corporate-level measurement.

The second perspective sought to identify whether companies indicated engagement in digital transformation. On scanning with key words, it became evident that certain firms were not only engaging in digital initiatives but were creating separate units to progress their digital transformation efforts. This was captured as an additional attribute in the systematic review illustrated in the table below.

	Separate Innovation Unit	**Digital Initiatives**
Top 20 Technology Companies	12	19
Percentage	*60%*	*95%*
Top 50 (-3 technology companies)	13	26
Percentage	*28%*	*55%*

Table 2 - Comparison digital initiatives and digital innovation units

Of the top twenty technology companies, nineteen identified a commitment to ongoing digital transformation. Similarly, there was a higher proportion of investment in a separate innovation unit in the top twenty technology firms.

Amongst the top fifty companies, more than half referenced some form of digital transformation either currently under way or planned, with more than a quarter of these companies investing is some form of separate innovation unit.

5.1 Limitations

It is fair to note that this systematic review faced clear limitations, and the researchers were aware of these shortcomings, but still considered there to be value in the analysis to establish whether certain anecdotal perspectives about OKRs and firms in the technology sector could be supported.

The primary limitation relates to the nature and purpose of company reporting. There is no requirement for a company to declare their corporate-level strategic performance management system in their Annual Report, nor any plans that they may be making for digital transformation. This understanding was supported by a review of one company that is known to be undertaking a significant transformation, yet their Annual Report made no mention of this digital transformation.

Equally, different regulatory frameworks influence what information Annual Reports are required to include, and this results in a broad diversity of inclusions and exclusions dependent on the regulations in different national contexts, which often favour the reporting of financial information for regulatory purposes.

6 Conclusion

The findings do offer an indicative position for further research. The unexpected prevalence of measures, targets and KPIs in company Annual Reports suggests that this type of operational measurement is more meaningful to firms in reporting their performance as an achievement of the targets that have been cascaded down from their strategic objectives.

Equally, digital innovation units are operating at business level, creating an opportunity to discover a range of business-level metrics that support the measurement of digital transformation. Some that have been suggested based on the systematic review include: Customer Experience, User Experience,

Return on Investment, Adoption rate, Net Promoter Score, and Digital Maturity. These findings will materially influence the qualitative case study (Yin, 2017) design in phase 2, which will provide deeper insights about range of business-level metrics that support a digital transformation.

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