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Performance measurement: Key performance indicators as drivers in assessing risk and improving value in the services sector

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A B S T R A C T

The research investigated the relationship among Key Performance Indicators (KPIs), risk assessment capabilities and value creation in service sector firms. The study also sought to examine the effect of KPI`s components on risk assessment & value capitalisation, and how they either facilitate or hinder implementation, monitoring and continuous improvement processes. In this context, a quantitative cross-sectional research design was applied using an online survey of shared middle and senior managers in service organizations. After filtering, the final version of segmented sample included a total of 215 respondents engaged in different service businesses. The analysis was determined using Partial Least Squares Structural Equation Modeling. The results showed that all components of KPIs have significant positive relationships with risk assessment and value improvement outcomes First, performance drivers were found to be the most significant predictor of both constructs. As such, the results show that both risk assessment and value improvement had a positive effect on implementation/monitoring processes which in turn enabled continuous improvements. Performance measurement, risk management and value creation in service organizations: A performance at-risk-based conceptual model. The results have numerous managerial, practical and policy implications for the service sector. This drives home the necessity of creating integrated KPI systems that include risk assessment and value improvement factors. In building on existing theory, the study is of substantial interest in that it provides empirical evidence for these organizational mechanisms related to service organizations. Resilient Organizations in the Service Sector picture of Resilience across Performance Management with KPIs, Risk Assessment and Value Creation strategies offering a comprehensive foundation for sustainable organizational success.

1. Introduction

Over the last decades, the service sector industry has experienced unprecedented growth and transformation, becoming a dominant force in the global economy. In 2022, the industry represented around two-thirds of the world's gross domestic product (GDP) (World Bank 2019), underscoring its importance for economic development and growth. It was most prevalent in developed nations, where the tertiary sector usually accounts for more than 70% of GDP. In the US, services accounted for 77.3% of GDP in 2022 and in the United Kingdom reaching 79.9% (OECD, 2023). The services sector is

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booming globally thanks to a host of factors - from the technological revolution and globalization to shifting consumer appetites. With the digital revolution especially, new service-oriented business models have arisen and transformed entire established industries. One needs to only look at the breakaway success of e-commerce: global sales ballooned 27.6% in 2020, hitting $4.28 trillion (Almarshad et al., 2024). The expected growth from this had continued with projected global e-commerce sales in 2023 to amount to over $6.5 trillion (Statista, 2022). By contrast, the rise of services has created a derivative set of complications and issues. Services are different from tangible goods, as they lack tangibility and possess other characteristics like Intangibleness, Inseparability (of production), Heterogeneity and perishable (Zeithaml et al., 1985; Al-Afeef et al., 2023). These fundamental traits, including a lack of physical products to track and establish value with; an experience that is personally unique by default; more-or-less continuous invention driving competitive differences; pure interface-based product use - no one knows the purpose for certain until they happen. These are not exactly strong foundations on which we can measure and manage service performance. Performance measurement systems intended for manufacturing settings, when applied to service operations, have been found by researchers to be less than adequate. Complicating the matter are a variety of dimensions that affect service quality and customer satisfaction. According to a study from the American Customer Satisfaction Index (ACSI), overall customer satisfaction with services has fallen over more than ten years, declining by 1.3% between 2010 and 2020 (ACSI, 2021). Such behavior illustrates the importance of intensive service-specific performance measurement and management policies. Further, the service industry is a people-heavy and variable sector that increases the risk in part of its very nature. Following close behind, 62% of service organizations ranked operational risk as the next desired focus (Alkhawaldeh et al., 2024). The issue comes with potential financial consequences, where service failure estimates equate to businesses suffering over $75 billion in losses annually worldwide (NewVoiceMedia 2018).

Recent global events have further underscored the acute volatility of services. COVID-19, for example, had a disproportionate impact on services industries and the global decline in merchandise trade amounted to nearly 20% although it varied somewhat across subsectors (e.g., WTO, 2021b, Almarshad et al., 2024). The unprecedented disruption revealed weaknesses in current performance measurement and risk assessment frameworks, highlighting the need for more resilient & flexible tools. There has been a known preponderance of, among others, Key Performance Indicators (KPIs) as response to these challenges, specifically designed towards the services sector. KPIs allow for quantitative evaluation of different metrics of service performance ranging from operational efficiency to customer satisfaction. Selecting and implementing the right KPIs, on the other hand, are still one of the biggest hurdle's organizations face today. According to Gartner in 2023, almost three-quarters (70%) of service-based organizations admit that they are finding it either very or extremely challenging to identify and implement good KPIs for their strategic objectives. Essentially, even if a KPI framework can be set up quickly, complexity is added further by that fact of services being such a wide variety encompassing everything from financials to care/health sectors or hotels. As each sub-sector is unique in terms of its characteristics, and the factors that have the greatest impact on performance, a detailed list of those should be documented to enable development as well as implementation of KPIs. This is compounded by the fact that service businesses operate in a very dynamic environment and thus need so-called Key Performance Indicators which can quickly adjust to alternative market conditions and different customer expectations. However, as organizations deal with these issues one common theme emerging is the need to look at performance measurement from a broader perspective within services. This must be adaptable to address both the nuanced complexity of service quality and inclusion of risk assessment, as well as value creation. Value in services is more than financial metrics, value can also be related to intangibles like customer loyalty and brand reputation or employee satisfaction.

In a recent 2022 study conducted by PwC, experience accounts for as much as sense in the way products and services get created that is aesthetic to data measurement. It makes business audit-speak: 73% of consumers say product knowledge influences their purchasing decisions -underlining from customer-centric KPIs into performance metrics. Although increasing, there is still a lack of knowledge around the use of KPIs to drive risk assessment and value improvement (see Heikkila et al., 2014) which has led to many studies that have focused on examining performance measurement in services. Existing studies have investigated different parts of service performance measurement, but an integrated approach to the KPIs, risk evaluation and value creation within services context is missing. Contemporary studies have attempted to ameliorate this problem (Neely et al., 2001). Fink et al. (2005) suggested a performance prism for stakeholder-centric measurement and Fitzgerald and Moon (1991) presented a result-determinant framework that is specifically designed for services organizations. Yet these frameworks do not adequately incorporate risk assessment and value creation metrics. However, the main aim of this study is to build a conceptual and validated model for linking KPIs (from financial reporting), risk assessment & value creation in the service sector. The research utilizes PLS-SEM, to focus on the vital relationships between these components and assist service organizations by actionable learnings towards improving their performance measurement practices (Al-Waely et al., 2021).

2. Theories

Service-Dominant Logic (S-D logic) and Resource-Based View (RBV) are the two most influential theories in performance measurement, risk assessment and value creation within services. These theories offered valuable structures for comprehending the distinctiveness of services and why service firms may have an edge over their rivals. This is because that paradigm, called Service-Dominant Logic (Vargo & Lusch 2004), presents value co-creation on services. S-D Logic is grounded on the view that service constitutes the fundamental basis in exchange, and value results from interactions between

customers/clients with providers of services. This view is particularly relevant to our research, given the key role of intangible resources (knowledge and skills) in value creation.

In S-D Logic, it is defined that value is not embedded in tangible goods but realized through application of specialized competences (knowledge and skills) by one entity for others benefits (Vargo & Lusch 2008). This is fitting due to the inherent more abstract product that mainly relies on human capital, much like what a service generally consists of. S-D Logic in Performance Measurement: According to the S-D logic philosophy, traditionally performance has been measured using output-based metrics. It rather supports metrics such that accounts for the value experienced by customers which is not created entirely by producers of any goods. One of the reactions from service quality perspective on finding in S-D Logic is that because most of the economic GDP spending occurs to utilization, consumer risk assessments related to use should be higher than with more goods for sale. This implies that co-creation involves risk and value is always ascertained by the beneficiary (the customer), not felicitated from a provider. This view in turn requires broader and more customer-focused performance measures that includes the whole service ecosystem (Lusch & Nambisan, 2015). In this context, the Resource-Based View presents a good theoretical support in addition to S-D Logic for analyzing how firms can obtain sustainable competitive advantage. The RBV (Barney, 1991) theorizes that firms can use their valuable resources and capabilities to obtain a competitive advantage if these are rare, hard-to-duplicate by competitors or substituted with something else.

The context of services is where RBV becomes particularly relevant as the emphasis it places on intangible resources, like organizational culture, knowledge and relationships are indeed critical in-service delivery. Service organizations where such resources are critical determinants of performance and value creation (Peteraf & Barney, 2003). The RBV is potentially quite important in the context of service performance measurement and risk assessment. The result is that it encourages KPIs to not only measure outputs, but also the creation and deployment of strategic resources/capabilities. Some examples would be the type of measures relating to employee skills, customer relationships or organizational learning that could be essential for a service firm's ability to develop sustained competitive advantage. Additionally, RBV allows us to risk proof some common services. Organizations will be able to acquire this essential element for the negotiations of risks in a dynamic service environment by identifying and then nurturing their strategic resources (Helfat & Peteraf, 2003). Thus, the integration of S-D Logic and RBV represents an in-depth theoretical base to this research. This expands two main business research themes: firstly, S-D Logic which elucidates the nature of value creation in services, and customer co-creation; and secondly RBV that provides a perspective on interpreting sources of competitive advantage (and risk mitigation).

2.1 Key Performance Indicators (KPIs)

Key Performance Indicators are a set of quantifiable measures that an organization uses to evaluate its success in meeting the strategic and operational targets. The services sector is of particular interest here, as the intangible nature and difficulty in measuring service quality have been well recognized (Fitzgerald & Moon 1991), leading to considerable focus on Key Performance Indicators. An early idea behind KPIs, this is services, was to move beyond the limited financial metrics (that may not be feasible without manufacturing systems) and focus on more holistic measurement frameworks that also capture intangible aspects of performance. The introduction of a Balanced Scorecard by Kaplan and Norton in 1992 marked this as the first multi-dimensional approach which included financial, customer, Internal process and learning and growth perspectives. It is a widely recognized framework in service organizations which offers a more holistic view of performance. Nevertheless, applying KPIs for services introduces several specific aspects. Compared with manufacturing, in which output is tangible and readily measurable, service characteristics tend to include intangibility (services almost by definition defying exact specification or pricing), heterogeneity (the tendency of the product itself to be different per transaction), inseparability from consumption...making it difficult for a consumer buying gas at an unfamiliar station such as Costco versus Shell knowing full well why they are there even without reading material details on receipt backs/outdoor. Since these characteristics, a different way of measuring performance needs to be applied. Parasuraman et al. The SERVQUAL model established by Parasuraman et al. (1988) states that the perception of quality should be evaluated from the customer's point of view, showing how KPIs in services must be focused on consumers.

Recent work has emphasized that KPIs should be context-specific for different service industries. For example, Parmenter (2015) made the case that KPIs should differentiate between result measures and performance measures with true KPIs being nonfinancial indicators usually of low frequency collected in real time for management actions. A framework for selecting and creating KPIs that comprise clinical, operational, financial measures was introduced by Loeb (2004) in the healthcare industry. KPIs have been around since businesses first went digital, and the shift to services-based delivery has muddied the waters even more. New metrics have appeared to allow user engagement, digital experience and measure of online service quality with the rise of e-services, Internet or digital platforms (Parasuraman et al., 2005). Frequently, these digital KPIs require to be combined with the standard support metrics for a complete view of efficiency. Despite the vast literature in services KPIs, there are still challenges to implement such metrics. A study by Bourne et al. (200) created a model identifying factors that prevent the accomplishment of key performance indicators determining among other things, lack of commitment from senior figures; resistance or reluctance towards measuring changes in established practices; insufficient IT support measures being available cc They highlight the importance of a more sophisticated appreciation for how KPIs can successfully exert pressure to improve performance in services.

2.2 Risk Assessment

Risk assessment of the services sector has received more attention than ever, especially when we consider the recent global disruptions and that services businesses are inherently associated with volatility. In services, which offer solid and physical products, there are usually many actors directing the actions of others on their behalf (like a stick being shaken in a macabre sequence dance), so measured risk is much more difficult to assess. Service providers: traditional risk assessment models have undoubtedly paved the way for possible adaptations of such models in the service context (COSO, 2004). However, many of these adaptations have struggled to consider how risk differs in the delivery of services. According to Power (2009), risk management in services should focus on more than mere compliance and become a strategic weapon of value creation. The adoption of models such as Value at Risk is typical of the financial services industry, which is at the forefront of risk management practices (Jorion, 2007). Yet these quantitative models have been criticized for their inability to model "black swans" and systemic risk in complex service systems (Taleb, 2007).

More recent perspectives on risk assessment in the service sector reflect a greater focus on operational risk. Business process-oriented risk management was introduced by Rosemann and Zur Muehlen (2005), who presented a model for embedding the risk perspective in business processes. This recognizes that services are often integrated into the processes of service delivery and customer interaction. Digital services have emerged and are creating new types of risks in different categories such as cyber security and privacy along with technology-related disruptions. Ongoing work currently being conducted by researchers such as Eling and Wirfs (2019) provides valuable insight into the potential impact of cyber risks on service organizations and draws attention to new risk assessment methodologies required to address these rapidly emerging threats. Given the nature of services, where customer trust plays a huge role, reputational risk has become a major concern for organizations providing such offerings. Gatzert (2015) proposed a way to assess and control reputational risk in services, mentioning the impact on financial and non-financial outcomes that could be lost. However, advances such as these are not the whole picture - it remains a challenge to develop complete risk assessment principles or frameworks for services. Complexity in services risk assessment. The intangible nature of many services risks, combined with their characteristic extreme dynamism and systemic nature, means that each has a disproportionate impact on others and therefore requires a down-to-earth rather than an overly theoretical approach (Zraqat, 2020).

2.3 Value Improvement

The last decade has seen a considerable evolution in the notion of value creation within services, where there is a shift from goods-dominant logic to one based upon service- dominant logic (Vargo & Lusch 2004). Then what does this transformation implies about the way we consider and must quantify value in service contexts? Historically, service value creation was measured by the exchange value of services such as salary. Though Grönroos and Voima (2013) delineated this complexity of value from an exchange perspective, the magazine indicated that they claim it to be a compound construct consisting of value-in-exchange/ transactional value, ephemeral/transient values and spatial/situational values. Value comes from co-creating with customers, rather than being delivered by providers in a service interaction. In service research, the idea of value co-creation is increasingly recognized. Prahalad and Ramaswamy (2004) posited that value creation is moving away from just a firm view of the customer, to being co-created through one-to-one interactions. This perception goes against conventional approaches to the value chain and instead focuses on customers as a full party of an ongoing process of creating value.

The next largest increase in dollar value of production occurred from its provision when a service orientation began to divide with the computer age. Lusch and Nambisan (2015) elucidated the ways through which digital platforms, as well as ecosystems alter services for creating value, and emphasized on service innovation and resource integration. In this new economy, providers and consumers are often the same; service oriented business models can create value that requires both contribution to a resource - be it physical or digital (Sundararajan, 2016; Ahmad et al., 2024). The assessment of value created by services is a difficult thing to do. The lack of ability to measure the impact directly has created challenges for these teams, as business objectives such as Return on Investment (ROI) and Customer Lifetime Value (CLV), among others, are quite important while forecasting service outcomes this way; however, making economic decisions based only upon those financial metrics provides incomplete picture about value generated through service interactions. As argued by Ostrom et al. (2015) (checksum stores) For example, Bloemer et al. (2015) argued that a “holistic model for the value of offerings” should be developed which combines quantitative methods with qualitative measures to specify how customers perceive service value across different services or expectations fulfilled by performing certain experiences offered through rental arrangements on collaborative consumption websites. At the same time, however, value creation in services was further extended due to a growing concern with sustainability and social responsibility - something that goes beyond consumer-generated-value ideas because it incorporates wider societal impact (and environmental issues as well). In the last few decades, the “triple bottom line” - valuing economic, social and environmental performance simultaneously (Elkington 1997; Alhawamdeh et al., 2023) has grown in prominence among service researchers and practitioners. However, these have not been fully closed as value creation in services often appears to be well outside the existing frameworks for performance measurement and risk assessment. The production of value in services is a dynamic and co-created process, posing many challenges for researchers as well as practitioners.

2.4 Implementation & Monitoring

Implementation & Monitoring involves the step-by-step execution of a strategic plan and continuous measurement of progress toward organizational goals. Implementation enables converting broad strategy into specific actions, allocating resources and duties specifically (Hrebiniak 2006; Ismaeel et al., 2023). On the other hand, monitoring is a routine collection and analysis of data to follow performance with respect to objectives set. It makes it possible for organizations to recognize variances from already planned results and correct such promptly (Okumus, 2003). Perhaps the importance of implementation and monitoring in organizational success is self-evident. According to Kaplan and Norton (2008); it is believed that a number of companies do not fail in strategy development but rather its implementation. They advocate a system view of implementation and provide tools such as the Balanced Scorecard to link organizational activities to an organization's vision. Similarly, Simons (1995) emphasizes the role of management control systems to track and direct implementation efforts in such a way as to make sure that organizational on-going actions are aligning with strategy.

2.5 Continuous Improvement

Continuous Improvement is a systematic, planned process that seeks to make sure everything gets better every day. It is characterized by a disciplined approach to finding areas for improvement, making changes and evaluating the results (Imai, 1986). Continuous improvement is by its very nature incremental, working on a "little and often" basis rather than making step changes (Bessant & Francis, 1999; Hussien et al., 2017). Continuous improvement as a primary element of quality management principles Continually improving is one of Deming`s (1986) quality management teachings, laid out in his Plan-Do-Check-Act (PDCA) cycle. The work of Edwards Deming, as it was expanded upon and further developed in the United States beginning in the 1980s through publications on Lean manufacturing, began to spread this iterative change management approach back into Japan. Over time, continuous improvement has expanded to encompass a larger organizational learning and innovation paradigm. Garvin (1993) supports that continuous improvement is one of those aspects in a learning organization, which are competent at doing this knowledge creation and acquisition, transferability; change behavior by converting lessons learned into actions. This view ties a steady stream of improvement directly to an organization's level of being able to adapt, and its ability to be competitive over time (Alhawamdeh et al., 2024).

3. Hypothesis Development

Effects of comprehensive performance measurement on the relation between high-performance work systems and industrial chances underlined that the nature of organizations calls for multi-dimensional measurements to capture the complexity entropy found within modern-day organizational structures (Neely et al., 2002). Ittner and Larcker (1998) presented nonfinancial measures that are leading indicators to financial performance or risks. According to Kaplan and Norton (1996) the balanced scorecard approach offers a comprehensive view of an organization's performance which includes all risk characteristics. Finally, Malina and Selto (2014) discuss the role of performance measurement systems in strategy implementation and risk mitigation. Franco-Santos et al. (2012) conducted a review about the impact of modern performance measurement systems on risk management. Bourne et al. (2000) review the development of performance measurement systems and their effect on organizational capabilities. Kennerley and Neely (2003) enhance contributors to our knowledge of the factors influencing performance measurement systems change including risk considerations. Linking performance drivers to risk outcomes:

H_1: *There is a significant and positive effect of Key Performance Indicators (KPIs) (Performance Drivers, Performance Measures, Objectives, and Importance) on Risk Assessment in Services Sector.*

Research by Ittner and Larcker (2003) demonstrated the extent to which non-financial measures can forecast customer behavior and financial results. According to Kaplan and Norton (2004), value creation is the result of strategy maps and balanced scorecards. The performance prism, which links stakeholder satisfaction to value creation, was introduced in this light by Neely et al. (2002). Parasuraman et al. (1988) defined service quality measures called SERVQUAL in relation to customer value. Service-dominant logic, the proposal of Vargo and Lusch (2004), portrays a view that emphasizes value co-creation via service. Service quality and profitability, performance measures and financial consequences are discussed in a review by Zeithaml et al. (1985). This study proposed that:

H_2: *There is a significant and positive effect of Key Performance Indicators (KPIs) (Performance Drivers, Performance Measures, Objectives, and Importance) on Value Improvement in Services Sector.*

Risk management practices at the organizational level are examined by Mikes (2009). See Power (2009) who wrote on the risk management of nothing and its consequences for implementation. Simon (1995), on the other hand, viewed enterprise risk management as an application of technology. Another piece of research into the implementation of enterprise risk management, this time in UK local government is by Woods et al. (2009). In earlier works, the presence of enterprise risk management initiatives different design and implementation dimensions (Bromiley et al., 2015). Qi et al. (2015) reviewed enterprise risk management research as well its implications for implementation. Gordon et al. (2009) investigated the effect

of ERM on firm performance. Hoyt and Liebenberg (2011) analyzed the role of enterprise risk management in business conditions. This study proposed that:

H_3: *There is a significant and positive effect of Risk Assessment on Implementation & Monitoring in Services Sector.*

Grönroos and Voima (2013) conceptualized value co-creation spheres in services. Vargo and Lusch (2008) discussed service-dominant logic and its implications for value creation processes. Parasuraman et al. (2005) defined technology used in service delivery and monitoring. In their own examinations, Edvardsson et al. (2011) showed how new service development could be examined from a S-D logic perspective. This study proposed that:

H_4: *There is a significant and positive effect of Value Improvement on Implementation & Monitoring in the Services Sector.*

The evolution of enterprise risk management practices is extensively discussed in the works of Mikes and Kaplan (2015). Power (2009) explored the organized uncertainty of risk management. Woods et al. (2009) investigated the continuous improvement approach in risk management in public services. Bromiley et al. (2015) analyzed the research of enterprise risk management and its implication for organizations, while Gordon et al. (2009) studied the relationship between enterprise risk management and firm performance. This study proposed that:

H_5: *There is a significant and positive effect of Risk Assessment on Continuous Improvement in the Services Sector.*

One stream of literature has explored the issue in service logic (Grönroos & Volima, 2013). Service-dominant logic and continuous improvement. Bitner et al. (2008) investigated service blueprinting as a method of service innovation. This study proposed that:

H_6: *There is a significant and positive effect of Value Improvement on Continuous Improvement in the Services Sector.*

Neely et al. (2001) reviewed research and practice related to performance measurement in the Processes between Organizations sub-dimension. This study proposed that:

H_7: *There is a significant and positive effect of Implementation & Monitoring on Continuous Improvement in the Services Sector.*

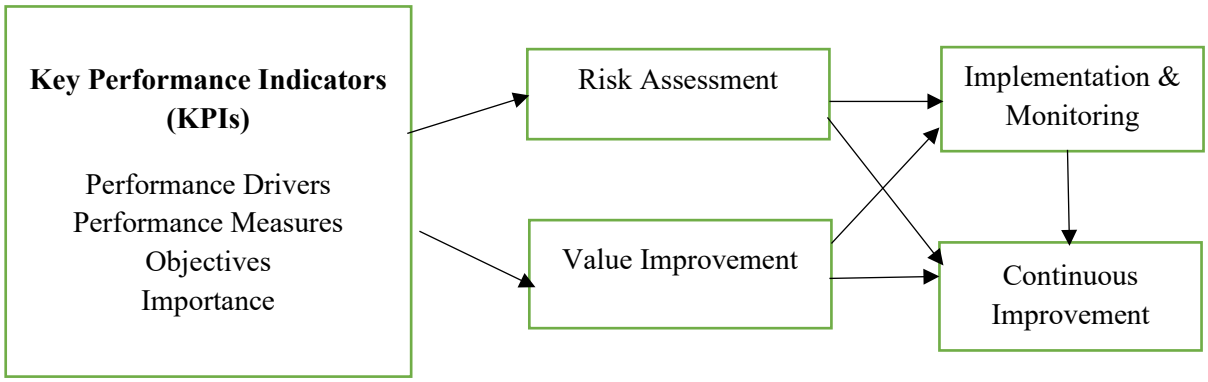

Fig. 1. Research Framework

4. Research Methodology

4.1 Research Design

The study uses a quantitative cross-sectional research study and investigates relationships among Key Performance Indicators (KPI), risk assessment capabilities, value creation in service organizations. A quantitative approach was used rather than a qualitative method because the study aimed to test hypotheses and generalize results across service sector companies (Creswell & Creswell, 2018). The cross-sectional design allows data to be collected at a single point in time, capturing the current state of practices and perceptions within an industry (Bryman & Bell 2015).

4.2 Target Population

This study targeted middle and senior managers in service organizations. There are about1.8 million management occupations in service-providing industries. We targeted this population as they play a critical role in benchmarking, risk evaluation and value-based projects for their organizations.

4.3 Determination of Sample Size

We determined the sample size using G*Power 3.1 software (Faul et al., 2009). As we had a large model and many predictors, again, to estimate $f^2 = 0.15$ (medium effect size). A minimum sample size of 146 was calculated with a desired statistical power of 0.95 and an alpha level at 0.05. Because some individuals may not respond to the verb conjugation task, we aimed for 190 assessments - a 30% increase from our minimum target of approximately 150 participants due to no responses and incomplete surveys.

4.4 Sample Size

The total sample size for this study is 215 respondents, which meets the minimum necessary designed according to a priori power calculation. This sample size is adequate to detect medium effect sizes and for robust statistical analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) (Hair et al., 2017).

4.5 Sampling Technique

To secure the variety of services for study and contribution, we adopted stratified random sampling. The service sector was divided into the following five broad NAICS categories: (1) Information, (2) Financial Services, (3) Professional and Business Services, (4), Education & Health Services, the Leisure & Hospitality. The sample consisted of all the employees within a group and a simple random sampling technique was used to select samples in each stratum (Sekaran & Bougie, 2016).

4.6 Research Instruments

The survey was developed by adapting scales from previous studies. The items were rated on a seven-point Likert scale ranging from 1 (Strongly Disagree) to7 (Strongly Agree). Fitzgerald and Moon (1996) 14-item Key Performance Indicators (KPI) scale incorporating four variables: -Performance Drivers - PD, Performance Measures- PM, Objectives -OBJ and ImportanceIMP (1991) and Parasuraman et al. (1988). Limitations Risk Assessment (RM) 6 items adapted from Mikes & Kaplan and Bromiley et al. (2015). Value Improvement (VI): 6 items adapted from Grönroos & Voima, 2013 and Vargo & Lusch, 2008. Continuous Improvement: 6-items modified from Verhoef et al. (2021) and Vial (2019). Implementation & Monitoring (IM): 5 items were adapted from Grönroos and Voima, 2013. Due to a seven-point Likert scale being capable of eliciting more nuanced answers and better contributing to the spread of data, which is good from a statistical point-of-view (Finstad 2010). In other words, empirical evidence has shown that seven-point scales are more reliable and valid than those with a lower number of response points (Krosnick & Presser, 2010).

4.7 Pretest and Pilot Study

Content validity was evaluated through a pretest on the initial version of the survey instrument among five academics with expertise in service management and performance measurement. Feedback from the veterans was used to make slight adjustments for items to be clearer and more relevant. After the pretest, a small sample pilot study was transacted with 30 managers from different service sectors. The pilot study was performed to assess the reliability of the scales and test out any problems with survey administration. Scores for each scale showed excellent internal consistency (Nunnally & Bernstein, 1994), as all Cronbach's alpha coefficients were higher than the recommended threshold of.70. Some minor modifications in the wording of some items were done according to the pilot's participants feed-back.

4.8 Method of Data Collection

The instrument was an online survey sent through email. The questionnaire was designed and deployed on a survey platform (Qualtrics). This mode was selected to minimise the cost of data collection, reach a more geographically spread sample and make things easier for respondents (Evans & Mathur 2018). ICMJE invited potential respondents to complete a survey, followed by 2 reminder e-mail messages at intervals of one week in order to improve the response rate. The data for this study was collected between March 1, 2024 and June 30,2024. They selected a window of four months for follow-up and to maximize response.

4.9 Method of Data Analysis

Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPls Data analysis was done using Partial Least Squares, implemented in the statistical software package PLS version 4.0. PLS-SEM was selected based on its suitability for dealing with complex models that contain multiple constructs and their relationships as well as its strength to non-normal data distributions (Hair et al., 2017). The analysis was performed using a two-step approach. Measurement model assessment:

This step required an examination of the reliability and validity of the constructs-specifically, composite reliabilities, average variance extracted (AVE), and discriminant validities. Evaluation of the structural model — we then looked at path coefficients, R^2 values and effect sizes to test our hypothesized relationships.

4.10 Ethical Considerations

This study was conducted with the approval of Research Ethics Boards (REBs) and in accordance with all appropriate ethical guidelines to protect the rights, safety, dignity of individuals. A commonly detailed information sheet about the purpose of the study, that they were not required to participate and could withdraw at any point. All participant responses were anonymized, and all data was stored securely on password protected servers No personally identifiable information was gathered or shared. Data was managed and stored according to European General Data Protection Regulation (GDPR) standards, along with other applicable American data protection laws. The study protocol was approved by the university IRB before data collection began. Subjects received explanation of risks and benefits, given the option to get a lay summary after study completion. Participants were informed of any potential conflicts of interest and these details were also listed in the final research report.

5. Results

In Table 1, the effectiveness of each indicator in predicting its intended construct is demonstrated via outer loadings which are significant for the measurement model.

Table 1
Outer Loadings

	Continuous Improvement	Implementation & Monitoring	Importance	Objectives	Performance Drivers	Performance Measures	Risk Assessment	Value Improvement
CI1	0.743							
CI2	0.846							
CI3	0.882							
CI4	0.872							
CI5	0.853							
CI6	0.847							
IM1		0.866						
IM2		0.874						
IM3		0.845						
IM4		0.912						
IM5		0.862						
IMP1			0.756					
IMP2			0.762					
IMP3			0.817					
IMP4			0.797					
OBJ1				0.900				
OBJ2				0.914				
OBJ3				0.902				
PD1					0.837			
PD2					0.907			
PD3					0.903			
PM1						0.784		
PM2						0.845		
PM3						0.839		
PM4						0.867		
RM1							0.774	
RM2							0.796	
RM3							0.846	
RM4							0.876	
RM5							0.861	
RM6							0.795	
VI1								0.808
VI2								0.828
VI3								0.855
VI4								0.860
VI5								0.832
VI6								0.857

Strong item reliability is indicated across all constructs in the results, with most outer loadings over 0.7 (Hair et al., 2017). All items also exhibit high enough loadings to consider their theoretical association: for the Continuous Improvement construct, all of them have statistically significant factor loadings, ranging from 0.743 (CI1) to 0.882 (CI3). The 6 Implementation & Monitoring items display strong loadings between 0.845 (IM3) and 0.912 (IM4), which indicates excellent item reliability as well. The Importance construct exhibits somewhat lower but still acceptable loadings, ranging from 0.756 (IMP1) to 0.817 (IMP3). Specifically, Objectives (OBJ1-OBJ3) and Performance Drivers (PD1-PD3) show high loadings above 0.8 supporting strong construct validity. The loading of Performance Measures (PM 1- PM4)-between 0.784 and 0.867-is also high; The loadings for Risk Assessment items (RM1-RM6) are quite high ranging from 0.774 to 0.876, indicating that this construct measures what it is intended aside from multicollinearity too. Similarly, the loadings on Value Improvement items (VI1-VI6) range between 0.808 and 0.860 as well consistent with Hulland (1999) and his recommendations that items whose loadings are 0. The high loadings for all constructs provide support that the indicators used are reliable and show evidence of convergent validity (Fornell & Larcker, 1981).

The reliability and validity measures of the study constructs are shown in Table 2. The Cronbach's alpha values vary from 0.757 (Importance) to 0.921 (Implementation & Monitoring), more than the threshold of recommendation is 0.7 (Nunnally & Bernstein, 1994). This shows very high internal consistency reliability across all the constructs as the diagonals' values range from 0.8 to 1. While the composite reliability (rho_c) values range from 0.845 (Importance) to 0. Figure 941 (Implementation & Monitoring) is way above 0.7 benchmarks (Hair et al., 2018). They also contribute to the reliability of the constructs that are operationalized by the items listed below. Therefore, all constructs' Average Variance Extracted (AVE) coefficients are above 0.5, ranging from 0.578 (Importance) to 0.82 (Objectives). This supports claiming a high cross-constructs convergence typical for the convergent validity and meaning that majority of the construct's indicators' variance are explained (Fornell & Larcker, 1981). The rho_a values, which are regarded as the measure of relational reliability of higher quality, stand at 0.775 (Importance) to 0.924 (Implementation & Monitoring) As a result, the analysis again underlines the reliability of the developed constructs in the course of empirical research (Dijkstra & Henseler, 2015).

Table 2
Constructs Reliability and Validity

Constructs	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Continuous Improvement	0.917	0.917	0.936	0.708
Implementation & Monitoring	0.921	0.924	0.941	0.76
Importance	0.757	0.775	0.845	0.578
Objectives	0.891	0.895	0.932	0.82
Performance Drivers	0.858	0.861	0.914	0.779
Performance Measures	0.854	0.862	0.902	0.696
Risk Assessment	0.906	0.906	0.928	0.682
Value Improvement	0.917	0.918	0.935	0.706

Table 3 shows the HTMT ratio which is used to test discriminant validity in the context of PLS-SEM (Henseler et al., 2015). The HTMT values calculated in this study vary between 0 and 1. The average of discriminant validity is 0.900 which reveals that discriminant validity is satisfactory between the most constructs. The least of the HTMT values are obtained for the relationships between Objectives and Performance Drivers with a value of 0. 359, and between Objectives and Performance Measures with a value of 0.359, implying discriminant validity between the two sets of constructs. The first dictum of this presupposes that these constructs are conceptually distinct and capture different dimensions of organizational performance Hair et al., (2017).

Table 3
Heterotrait-Monotrait Ratio

Constructs	Continuous Improvement	Implementation & Monitoring	Importance	Objectives	Performance Drivers	Performance Measures	Risk Assessment	Value Improvement
Continuous Improvement								
Implementation _& Monitoring	0.801							
Importance	0.666	0.699						
Objectives	0.473	0.522	0.424					
Performance Drivers	0.738	0.689	0.799	0.359				
Performance _Measures	0.655	0.630	0.826	0.359	0.9			
Risk _Assessment	0.749	0.651	0.613	0.445	0.665	0.661		
Value _Improvement	0.809	0.633	0.664	0.520	0.696	0.647	0.617	

Larger HTMT values are observed for the relation between Performance Drivers and Performance Measures which are equal to 0.900 and between Importance and Performance Measures which equals 0.826. Still these values are lower than the conservative measure of 0.90 as per the recommendations by Gold et al (2001), seem to suggest a higher level of agreement in these constructs. This means that while these constructs are different in form, they have some level of conceptual similarity, a situation that is not out of the ordinary in performance measurements architectures (Kaplan and Norton, 1996).

Table 4 shows the all square-root of AVE values being greater than the correlation coefficients between constructs, which fulfill the Fornell-Larcker criterion, a way of testing discriminant validity in structural equation modeling. The diagonal values in bold correspond to the square root of the AVE for the respective construct and the other values signify the correlation between the constructs. To check discriminant validity, it is required to have diagonal values greater than the off-diagonal values in the same row and column as suggested by Fornell and Larcker (1981). Regarding this criterion, it is satisfied for all the constructs in the model. For example, the Range of Application of Within Continuous Improvement equals to √AVE, where √AVE means the square root of Average Volatility. 842 which is higher than its correspondence with other constructs maxed at 0. 750 with Value Improvement. The most significant relationship is noted in between Risk Assessment construct and Implementation & Monitoring construct with the coefficient equal to 0.78. But this figure is still lower than the √AVE of both constructs; the constructs have been identified as 0.826 and 0.872 respectively, thus implying discriminant validity. The smallest values of intercorrelations allegedly exist between Objectives and other constructs, where the correlation coefficient ranges from 0.314 (with Performance Measures) to 0.477 (including Implementation & Monitoring). This implies that Objectives are a separate variable in the model on its own.

Table 4
Fornell-Lacker Criterion

Constructs	Continuous Improvement	Implementation & Monitoring	Importance	Objectives	Performance Drivers	Performance Measures	Risk Assessment	Value Improvement
Continuous _Improvement	**0.842**							
Implementation & Monitoring	0.745	**0.872**						
Importance	0.571	0.596	**0.760**					
Objectives	0.432	0.477	0.348	**0.906**				
Performance _Drivers	0.657	0.614	0.649	0.315	**0.883**			
Performance Measures	0.586	0.564	0.666	0.314	0.771	**0.834**		
Risk _Assessment	0.689	0.78	0.515	0.401	0.587	0.585	**0.826**	
Value _Improvement	0.750	0.761	0.565	0.472	0.618	0.577	0.736	**0.840**

In turn, Table 5 shows the values of Variance Inflation Factor (VIF), which evaluates the level of multicollinearity of the predictor variables in the structural model. It has been postulated that VIF values below 5 should be acceptable, meaning low multicollinearity (Hair et al., 2017). All of those VIF values presented in the table are less than this value, varying from 1.159 to 2.802. Further, the p-value of 1.159 is also obtained for the Objectives regarding Risk Assessment and Value Improvement, which indicates the model is not severely affected by collinearity between the independent variables and the filtered-out rows are not critical to the assessment of the variables' overall collinearity. The maximum amount of VIF is, however, Performance Measures has been found out to relate to Risk Assessment and Value Improvement in the context of 2.802. This means there is some relationship with the remaining predictors, which is not very high and does not raise severe multicollinearity issues at the critical value of 0.8. Implementation & Monitoring has a moderate amount of VIF values (2.056 for Continuous Improvement); thus, it is accepted that there is multi- collinearity between the predictor variables. In the same manner, Risk Assessment evidence low multicollinearity with Value Improvement with 2.321 correlation coefficients for Continuous Improvement and. 1.272 for Implementation & Monitoring. The findings of this study show that multicollinearity is not a problem in the model hence increasing the credibility of the path coefficients and their t-statistics. Subsequently, this lends a voice to the findings on the relationships between PM, RA and other related constructs in the services sector.

Table 5
Variance Inflation Factor (VIF)

	Continuous Improvement	Implementation & Monitoring	Importance	Objectives	Performance Drivers	Performance Measures	Risk Assessment	Value Improvement
Continuous Improvement								
Implementation _& Monitoring	2.056							
Importance							2.012	2.012
Objectives							1.159	1.159
Performance Drivers							2.699	2.699
Performance Measures							2.802	2.802
Risk Assessment	2.484	2.321						
Value Improvement	1.272	1.321						

Common method bias was examined using an exploratory factor analysis to create the Common Method Variance (CMV) adjusted correlation matrix, and the results are shown in Table 6. Before the rotation, the table indicates how much of the total variance of the items is accounted for by each extracted factor. The analysis without rotation shows that the first factor explains 47.841 percent of variation. The percentage of variance attributed to the first factor: 47.841%, which is still below the mark of 50% based on the Harman single-factor test (Podsakoff et al., 2003). This infers that common method variance is not expected to bias this research significantly. The consequence of rotation is shown in figure three, where the variance is spread over eight factors instead of one. This factor alone accounts for 22.881% of the total variation, and if we add variations for all eight factors it will be 79.281%. This distribution leads to the existence of a multidimensional structure of the data and strengthens the lack of a strong common method variance at the same time (Conway & Lance, 2010).

Table 6
Common Method Bias

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.525	47.841	47.841	10.525	47.841	47.841	5.034	22.881	22.881
2	2.339	10.630	58.471	2.339	10.630	58.471	3.950	17.955	40.837
3	1.094	4.973	63.443	1.094	4.973	63.443	3.243	14.742	55.579
4	1.057	4.803	68.246	1.057	4.803	68.246	1.822	8.281	63.860
5	.729	3.313	71.559	.729	3.313	71.559	1.318	5.992	69.852
6	.617	2.804	74.363	.617	2.804	74.363	.835	3.797	73.649
7	.546	2.481	76.844	.546	2.481	76.844	.656	2.981	76.630
8	.536	2.437	79.281	.536	2.437	79.281	.583	2.651	79.281

As shown in Table 7, the levels of explained variance of the endogenous constructs are high and verified by the R-square and Q-square indexes. Thus, these measures help to evaluate the ability of the model to explain the results and its predictive capacity (Hair et al., 2017). The R-square values are also low and hover around 0.436 to 0. 753, which is considered moderate to substantial for the proportion of variance explained (Chin 1998). Implementation & Monitoring shows the highest R-square of 0.753 which implies that the model has 75% means of variation. It means that 25% of variability of the measure is attributed to its predictors, namely, Risk Assessment and Value Improvement. This suggests a good level of fitness for this construct, under the demanding criteria of Hair et al., (2011). Where Continuous Improvement has an R-square of 0.606, implying 61%. Therefore, depending on the sample of study, Value Improvement with an R-square = 0. 499 and Risk Assessment with an R-square of 0.436 can be considered to have reasonably explained variance. All the Q-square values are greater than zero, the lowest value being 0.294. Some suggested that 566 is the appropriate value to set ford, which demonstrates the model's measure for the relevance of all endogenous constructs. Q-square, which measures the extent to which the indicators' correlations match those observed in the sample, ranges from 0 to 1; the higher this coefficient, the better the model fits the data Implementation & Monitoring has the highest Q-square of 0. 566, followed by Continuous Improvement that equals 0.414, which means that these constructs have an accurate predictive power. It is particularly noteworthy that the results significantly support the model's explanatory and predictive relevance in terms of the Implementation & Monitoring and Continuous Improvement factors for services organizations to support the validity of the proposed relationships in the context of performance measurement and financial risk assessment.

Table 7
Coefficients of Determination and Predictive Value

	R-square	Q-square
Continuous Improvement	0.606	0.414
Implementation & Monitoring	0.753	0.566
Risk Assessment	0.436	0.294
Value Improvement	0.499	0.349

Table 8 and Fig. 2 display the results derived from the path analysis, which indicate the associations between various variables included in the proposed model. Several significant correlations between KPI, Risk Assessment, Value Improvement, Implementation & Monitoring, and Continuous Improvement are presented by the analysis in the services sector. The findings obtained from this study support all the hypotheses formulated; therefore, suggest that KPIs' four dimensions, namely Performance Drivers, Performance Measures, Objectives, and Importance, have positive impacts on Risk Assessment (H1a-d). The impact of Performance Drivers is the greatest among all types of BPMS, with Formulation Performance extreme commonalities showing the highest standardized beta's (β) of 0.263, $p < 0.001$, followed by Performance Measures = 0.244, $p < 0.001$, Objectives = 0.203, $p < 0.001$, and Importance = 0.111, $p < 0.001$ This implies that performance of the organizations with an appropriate focus on these KPI components may contain efficient risk assessing procedures (Mikes & Kaplan, 2015).

Consequently, the hypotheses for all KPI components show the commission of positive effects on Value Improvement (H2a-d). Among these factors Performance Drivers show satisfactory and significant results with a regression coefficient of 0.318, $t = 7.216$, $p < 0.001$ while Objectives = 0.269, $t = 5.829$, $p < 0.001$ Importance = 0.179, $t = 3.930$, $p < 0.001$ and Performance Measures = These findings correspond with the literature that posits that KPIs are critical sources for value co-creation in service corporations (Grönroos & Voima, 2013). The analysis also reveals a significant positive relationship between Risk Assessment and Implementation & Monitoring (H3: $\beta = 0.200$, $p < 0.001$ we can conclude that implementation and monitoring processes are better when risk assessment practices exist. This finding underscores the suggested idea which states that risk management is a core component of strategy execution in service firms (Bromiley et al., 2015).

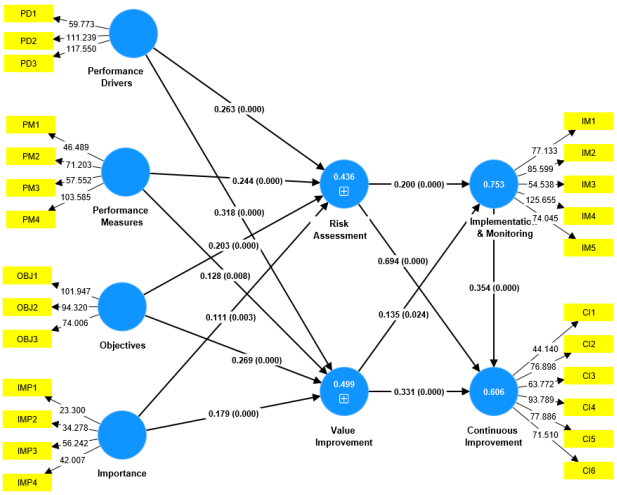

Fig. 2. Graphical Results

Table 8
Path Coefficients

Hypotheses	Path Analysis	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
H1a	Performance Drivers → Risk Assessment	0.263	0.048	5.457	0.000
H1b	Performance Measures → Risk Assessment	0.244	0.046	5.341	0.000
H1c	Objectives → Risk Assessment	0.203	0.041	4.984	0.000
H1d	Importance → Risk Assessment	0.111	0.038	2.937	0.003
H2a	Performance Drivers → Value Improvement	0.318	0.042	7.585	0.000
H2b	Performance Measures → Value Improvement	0.128	0.048	2.67	0.008
H2c	Objectives → Value Improvement	0.269	0.037	7.353	0.000
H2d	Importance → Value Improvement	0.179	0.031	5.74	0.000
H3	Risk Assessment → Implementation & Monitoring	0.200	0.037	5.404	0.000
H4	Value Improvement → Implementation & Monitoring	0.694	0.036	19.07	0.000
H5	Risk Assessment → Continuous Improvement	0.135	0.060	2.253	0.024
H6	Value Improvement → Continuous Improvement	0.331	0.058	5.755	0.000
H7	Implementation & Monitoring → Continuous _Improvement	0.354	0.049	7.295	0.000

Value Improvement shows a strong positive effect on Implementation & Monitoring (H4: Value improvement on the other hand had a moderate positive correlation with implementation and monitoring both. ($t = 14.\ 931$, $\beta = 0.694$, $p < 0.001$), which indicates that if organizations are aiming to improve on values, they are likely to have good standards in the implementation and monitoring of the quality of care. This corresponds with the S-D logic that puts its focus on value co-production in the delivery of service (Vargo & Lusch, 2008). Both Risk Assessment (H5: $\beta = 0.135$, $P = 0.024$) and Value Improvement (H6: $\beta = 0.331$, $p < 0.001$) have positive effects on CI. This implies that given that organizations that conduct

risk assessment and have improvement of value as strategy are more inclined to conduct improvement, the results of and continuous improvement are probable. Therefore, it can be concluded that in relation to the continuous improvement of service organizations, Value Improvement seems to have a stronger effect on attitudes than Risk Assessment (Verhoef et al., 2021). Lastly, Implementation & Monitoring shows a significant positive effect on Continuous Improvement (H7: $\beta = 0.354$, $p < 0.001$), this finding underlines the need to focus on implementing and monitoring professional developers' activities as a way of maintaining and enhancing a culture. This finding affirms the notion of Continuous organizational learning and improvement that arises from systematic approach to the implementation as well as monitoring of performance initiatives as postulated by Vial (2019).

6. Discussion

All KPI components (Performance Drivers, Performance Measures, Objectives Importance) are positively associated with Risk Assessment which is consistent with the RBV view. Regarding RBV, with which companies obtain competitive advantage by their unique resources and capabilities (Barney 1991) A way of viewing KPIs in this context is as organizational capabilities that could provide a better risk assessment. It allows for more complete identification, measurement, and management of performance drivers and measures that enhance the organization's ability to understand risks associated with an activity. This is also in line with the suggestion that performance measurement systems are important organizational resources for achieving risk management effectiveness (Mikes & Kaplan, 2015). Also, the functional part of each KPI influences Value Improvement in a similar way to S-D Logic. S-D Logic stresses co-creation of value from resource integration and embedding special competences (Vargo & Lusch 2004) This is in accordance with the finding that value increases significantly depending on nature of relationship between KPI components and Value Improvement as performance measurement systems operate like operant resources for value co-creation. Service organizations can use a central discussion of performance drivers, measures and targets as well their importance to link more precisely than before activities with customer needs and expectations in order to enable value co-creation processes. This is consistent with a proposition in S-D Logic that value is always co-created, as the beneficiary uniquely and phenomenologically determines it (Vargo & Lusch 2008).

This illustrates that risk management is intertwined with strategy execution and the positive effect of Risk Assessment on Implementation & Monitoring. Through an RBV prism, we can interpret risk assessment capabilities which enable proper implementation and monitoring as a valuable resource that is also hard to acquire. Such results underscore the view that provision for risk management should be integrated with strategic planning and execution, not merely confined to a separate risk-management department (Bromiley et al., 2015). This is key in an environment where the nature of service activities can change quickly and so how well risks get managed during implementation increases its adaptive capacity. ATT5: The strong positive relationship between Value Improvement and Implementation & Monitoring is consistent with S-D Logic, as well as RBV. Thus, drawing on the S-D Logic perspective this relationship showcases that value co-creation is an ongoing process with updated (ie more superior) value propositions facilitating enhanced implementation and monitoring processes which then lead to additional improvements in added-value [39]. This is consistent with the idea of value co-creation as an embedded and emergent process in S-D Logic (Grönroos & Voima, 2013). Viewing this from an RBV perspective, the capability to translate value enhancing initiatives into identifiable implementation and tracking systems may be considered a core organizational competency that drives competitive advantage.

The results of Risk Assessment and Value Improvement, reinforcing the fundamental relationship between these processes in service organizations as represented by Continuous Improvement. This result is consistent with S-D Logic and the integration of resources, where diverse organizational capabilities (risk assessment) as well as other ones not present in our work are combined to constantly improve services provision and performance. Moreover, it is consistent with the RBV contention that a firm's abilities to secure and maintain competitive advantage are largely contingent on its ongoing learning ability related to development reconfiguration of organizational resources and capabilities (Teece et al., 1997). This is to say that the strong overall correlation between Implementation & Monitoring and Continuous Improvement shows a clear positive linkage from executing well back to continuous organizational improvement. This conclusion is consistent with S-D Logic-its view of the dynamic nature of value co-creation, and how disciplined implementation and monitoring processes provide performance feedback that may inform continuous improvement initiatives. In the RBV, this relationship represents organizational learning as a process to accumulate and buttress their capabilities (Zollo & Winter, 2002). The result of Value Improvement having a stronger effect than Risk Assessment on Continuous Improvement implies that some service organizations may also be valuing value-driven initiatives in their continuous improvement. This is consistent with a S-D Logic emphasis on value co-creation as the primary reason for economic exchange to exist (Vargo & Lusch, 2004). While the statistically significant impact of Risk Assessment on Continuous Improvement showed that risk management is equally an important enabler in continuous organizational improvement, thereby supporting this RBV proposition that capabilities surrounding risk management also underpin sustained competitive advantage.

7. Implication of the Study

Implications for service providers: The insights from this study have important implications for practitioners in the service industry. For managers, the findings highlight the need to establish holistic Key Performance Indices (KPI) frameworks

including drivers of performance fulfilment, measures and objectives along with their associated weights. Service organizations' managers ought to take advantage of implementing these holistic KPI frameworks for better risk assessment and value creation functions. Because performance drivers played such a dominant role in both the evaluation of risk and value creation, this is also where managers should concentrate on identifying and cultivating their most important variables. At the theoretical level, this study might facilitate improving the existing body of information on multi-KPIs supporting risk assessment as well as value improvement for the continuous service sector. This advances our knowledge on the relationship of performance measurement systems to risk management and value creation processes, providing a deeper understanding of these dynamics in service organizations. They support and extend some theories of service management, performance measurement and risk which could be innovated in these research fields.

Equally, the study has practical implications for practitioners who are designing and implementing performance management systems. Findings provide evidence that practical implications for the development of KPI systems should go beyond mere performance measurement and target risk awareness and creative value improvement. This is indicative of the extensive effect implementation has on continuous improvement, and thus practitioners must find ways to construct solid bridges between strategy level initiatives down to operational practices. It also underscores the need to promote a culture of continual improvement, fueled by appropriate risk identification and value creation mechanisms. The social relevance of this study can be extended to the further socio-economic effects service organizations are able to have on their stakeholders and society as whole. The article reveals that with global standards of performance measurement and risk management, service firms can achieve greater consistency between practice, stakeholder requirements as well public interests. Increased risk assessment can make businesses better prepared, which in turn could mean less damage to employees, customers and communities. Additionally, this increased value uplift and focus on continuous improvement can help to improve the quality of service provided and as a result raise levels of customer satisfaction hence benefitting overall societal welfare. The implications of this study manifest themselves in service-related policy-making and regulation. The findings imply there is a need for more comprehensive performance measurement systems to be promoted by policy and regulation that include populations at both risks based on genetics and those likely to derive value improvement from proactive engagement with health services. Policy makers stand to support the formation of service organizations that are more resilient, value-driven operators by encouraging them. This study concludes by offering several implications for stakeholders, focusing on the need to adopt an integrated perspective about performance management (performance-based accountability), risk assessment/reporting and value creation in services.

8. Limitation and Future Study

Although this study offers insights into the interconnections among KPIs, risk assessment, value improvement and continual improvement in delivery within the service arena it has its shortcomings. This investigation was cross-sectional; however, it did not allow us to establish the possibility of causality between variables. This study was based on self-reported data from middle and senior managers, so it is subject to common method bias, social desirability bias and response set effect. To reduce these biases, several strategies were utilized but they could not be eliminated entirely. The sample size of this study, though sufficient for the analyses examined here, could also be increased to further increase generalizability. The study also cantered on service organizations in the U.S., which might hinder generalizability to other geographical or cultural settings. To overcome these limitations and to push the field ahead, four areas for further research are delineated. We would expect that longitudinal studies could test the dynamic relationships between KPIs, risk assessment and value improvement/continuous improvement over time. Such an approach would give more support to causal inferences and make possible the analysis of potential feedback loops built within the model. In addition, future research should consider including objective performance data to supplement self-report measures which would improve the validity of findings. A larger and more varied sample of service organizations from other countries would improve the generalizability so that cross-cultural analyses could be performed. Furthermore, qualitative studies (e.g., case study and interview data) could help us understand the causal relationships between KPIs towards risk assessment and value improvement more deeply. Future research may also investigate Nordic differences in associations highlighted in this study, and seek to illuminate potential organizational moderators (e.g., size, industry sub-sector or Organizational Culture) for the identified relationships. Finally, researching the influence of new technologies such as AI and big data analytics on performance measures and risk strategies within service organizations may provide further contributions to both theory development and practical application in practice areas.

9. Conclusion

The purpose of this study is to analyze the relationships between risk assessment capabilities, Key Performance Indicators (KPIs) and value creation in service organizations. More specifically, how KPI components (Performance Drivers and Performance Measures; Objectives; Importance) interact with Risk Assessment & Value Improvement which subsequently influences the Implementation & Monitoring process followed by Continuous Improvement. In all, the results of this statistical analysis strongly supported our model containing hypotheses (Figure 1). Each of the four KPI sub-factors exhibited a clear positive effect on Risk Assessment as well as Value Improvement. Performance Drivers emerged as the most important factor for all constructs including performance potential and Achievement of Value, revealing that it played an

essential part in organizations delivering services. The results also noted that Risk Assessment and Value Improvement have positive effects on Implementation & Monitoring, especially the latter. Additionally, the study confirmed that Risk Assessment, Value Improvement and Implementation & Monitoring are all significant positive predictors of Continuous Improvement. Continuous Improvement was significantly influenced by Value Improvement and Implementation & Monitoring efforts, while Risk Assessment had no effect. These will have a relatively greater importance in promoting continuous organizational enhancement as factored into the model design; Taken together, these findings highlight the notion that performance measurement is intertwined with risk management as well as value creation in service-based organizations. Here we see that effective KPI systems can help dramatically strengthen an organization's ability to evaluate risks and enhance the delivery of value, as this study verifies. Consumer Law further underscores the importance of operationalizing these capabilities and designing measures to transform them into benefits. The study extends the previous research by providing empirical evidence of these relationships in service organizations. It reinforces the need for comprehensive performance measurement systems that extend beyond traditional financial metrics to cover a range of measures reflecting both organizational priorities and salient stakeholders.

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