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Scaling operational risk management to leverage a firm's value configuration and creation

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Abstract

Operational risk management leverages a firm's value configuration and creation. However, research on the scalability of operational risk management as a catalyser of value configuration and creation seems yet elusive in most of the contemporary management studies.

To address such a gap, this research uses confirmatory factor analysis to test and validate the underpinning null hypothesis that operational risk management spawns value configuration and creation to spur a firm's overall competitiveness and effective market performance. If strategically linked to the process of value configuration and creation, findings revealed it is during the consistent process of analysis, identification and mitigation of operational disruptions, errors and wastes that operational risk management enhances identification of new value drivers and the enrichment of the existing value drivers.

Subsequently, all these were found to spur improved quality excellence, process efficiency and cost minimisation that in turn induce a firm's improved competitiveness and its overall effective market performance. Basing on these findings, the study concludes with a framework that businesses can replicate when seeking to scale operational risk management to leverage the overall effectiveness of a firm's value configuration and creation.

Key phrases

Firm's value configuration and creation; leveraging effects; operational risk management and value drivers

1. INTRODUCTION

Operational risk management leverages a firm's value configuration and creation. It edifies identification and minimisation of incidents and events that cause failures. It is this failure that often disrupts effective and efficient accomplishment of the required business activities (McShane, Nair & Rustambekov 2011:641). Operational risks are events or incidents that disrupt a firm's internal and external operational systems, process, people and technology to effectively and efficiently accomplish business activities required to deliver on a firm's business credo (Framjee 2016:3).

Operational management is the process of planning, organising and controlling how the sources of such operational disruptions and failures can be effectively analysed, identified, measured and mitigated or even prevented (McShane *et al.* 2011:641). It is during the consistent process of such analysis, identification and mitigation of operational disruptions, failures, errors, defects, losses and wastes that operational risk management leverages value configuration and creation.

Value configuration and creation are holistic strategic processes of analysing and identifying variables that must be added, subtracted or modified to create advantages that bolster cost minimisation, process efficiency and quality excellence (Kim & Mauborgne 2015:9). If consistent, operational risk management enables identification of new value drivers and enrichment of the existing value drivers. This is explained by the fact that operational risk management enhances radical review and modifications, reconfiguration and improvement of operational processes and systems to consistently provide enormous benefits that catalyse a firm's effective financial performance, even in the midst of discontinuities and uncertainties (Framjee 2016:3).

However, as most of the scholars focus on the statistical properties of operational risk management, the question as to the suitable business model that businesses can replicate to scale operational risk management as a catalyser of a firm's value configuration and creation seems yet largely elusive in most of the contemporary debates on the concept of a firm's value configuration and creation (Kraus & Othmar 2012:91; Torben & Roggi 2012:17).

It is such a question that this research deals with by using confirmatory factor analysis (CFA) to test and validate the underpinning null hypothesis in Figure 1 that a strategic linkage of operational risk management with value configuration and creation processes enhance identification and development of value drivers that in turn catalyse the improvement of a firm's overall competitiveness and market performance.

2. LITERATURE REVIEW

Edifying effects of operational risk management on a firm's value configuration and creation often emerge from the application of a four steps' process that entail risk analysis, identification, measurement and intervention (Amarjit, Manjeet, Neil & Harvinder 2014:259; Duarte, Brito, Serio & Martins 2011:29; Framjee 2016:3; Ghazali & Manab 2013:913; Torben & Roggi 2012:18).

2.1 Operational risk management

In the context of a business' existing strategies, plans and credo, risk analysis and identification require analysis of the probability of the event's occurrence and how its consequences can affect the achievement of the desired business goals. Risk analysis and identification are often accomplished using techniques such as brainstorming, event inventories and loss data analysis, interviews, SWOT analysis, risk surveys and scenario analysis (Altuntas, Berry-Stolzle & Hoyt 2011:414).

To gain more information on the probability of the event's occurrence and how its consequences can affect the achievement of the desired business goals, such analysis may also require the use of self-assessment questionnaires and workshops with key relevant stakeholders and business associates. Most incidents and events that disrupt an enterprise's effective operation and value creation are often linked to people, machineries, processes, methods, information management, and other business relationships and networks (Dafikpaku 2011:5).

In that context, risk analysis may therefore aid assessment of whether operational risks associated with people may arise from poor skillfulness that cause errors, and labour unrests that cause redundancies, decline of productivity, throughput and revenues (Dafikpaku 2011:5). Risks may also arise from employees' negligence that cause failure to effectively use methods prescribed for the accomplishment of the required different organisational activities. Just as poor maintenance or procurement evaluations can also affect machineries' functionalities to cause failures and errors that affect commitment to quality excellence (Jongh, Jongh, Jongh & Vuuren 2013:364). Unless relevant measures are put in place, less effective operational processes, methods and systems may also induce errors and failures that in turn precipitate risks. This is often compounded by poor data and information management that affect the accumulation of relevant critical business data against which relevant critical business decisions can be based (Jongh et *al.* 2013:364).

Risks may also arise from an enterprise's dealings and relationships with other businesses that in certain cases turn into the sources of risks. This signifies an effective internal business measures to identify and mitigate risks can be undermined by poor operational risk management in any of the firms in the value chain or business relationships and networks (Tahir & Razali 2011:32).

To therefore enable analysis and identification of all the other related risks like supply chain, strategic, compliance, financial and economic risks that may also affect an enterprise's effective operation and performance; it is of essence to adopt an approach akin to enterprise-wide risk management framework (Ghazali & Manab 2013:913; Merschmann & Thonemann 2011: 43). In the application of such a framework, the analysis and identification of supply chain risks may require evaluation of supply and demand related risks as well as contextual incidents and events that disrupt the smooth flow of activities along the supply and value chains. Such disruptions often cause delays that interfere with production efficiency and productivity (Framjee 2016:3; Torben & Roggi 2012:18).

Compliance risks are associated with non-observance of relevant industrial practices, and health and safety legislations and policies that attract hefty compensations or fines for damages caused as a result of non-compliance (Ghazali & Manab 2013:913). It may also cause delays as litigations unfold. Financial risks are precipitated by the changes in interest rates, credit risks and emergence of the imbalances in the global economic system (Framjee 2016:3).

The identification of these risks and analysis of their associated drivers enhance quantification of all risks and their underlying drivers, so as to understand the likelihood and probability of risk occurrence. Risk quantification is a process of risk ranking and mapping that entails the use of techniques like Tornado charts, scenario analysis, benchmarking, net present value analysis, co-relation analysis, probabilistic risk analysis models, cash flow and risk earnings (Arnold, Benford, Canada & Sutton 2011:171). It is the results of risk quantification that determine decisions on whether to use intervention measures like risk avoidance, reduction, sharing and insuring or risk acceptance on the basis of cost/benefit analysis (Jongh *et al.* 2013:364; Lam 2016:5).

Operational risk mitigating measures may also require investment in relevant infrastructures and technologies, corporate culture alignment, and change and transformation to support the operational risk management measures to be introduced (Lam 2016:5). Implementation of such intervention measures are often followed by constant evaluation to identify and correct deviations that may limit the effectiveness of operational risk management to create values that leverage a firm's overall effective market performance (Lam 2016:5).

However, unless operational risk management is entrenched as part of an enterprise's operational culture, it is often unlikely that it can leverage a firm's value configuration and creation. To develop and entrench a culture of operational risk management, Minsky's (2006) risk maturity model (RMM) highlight the process to be measured and improved by a combination of seven drivers that encompass (enterprise-risk management) ERM-based approach, ERM-process management, risk appetite management, root-cause discipline, risk uncovering, performance management, and business resiliency and sustainability.

ERM-based approach measures how operational risk management measures are integrated across multiple processes, functions, business lines and roles (Hess 2011:23; Minsky 2006:8). It also evaluates how operational risk management is supported by the existing communication mechanisms, technology, compliance, control as well as risk management and reporting systems.

Whereas ERM process management examines the degree of the integration of critical operational risk management processes in procurement, manufacturing, inventory management and recruitment, risk appetite management evaluates variance emerging from the acceptable and actual risks (Johnson & Johnson 2015:3).

Root-cause discipline analyses the entrenchment of operational risk management culture to support consistent analysis to identify and resolve the actual root causes of the identified operational risks. As on the other hand, risk uncovering explores how a combination of the available quantitative and qualitative techniques are applied to identify and respond to all the identified operational risks and opportunities (Hess 2011:23; Minsky 2006:8).

It is the motive of risk performance management to assess how strategy executions, financial plans, internal business processes and innovative and growth improvement measures are either exposed to risks or are deviating from the prescribed plans and expectations. Finally, business resiliency and sustainability facilitate evaluation of how operational risk management measures are consistently and sustainably ingrained beyond critical technological platforms to cover risks arising from vendor and distribution networks, supply chain disruptions, dramatic market pricing changes, cash flow volatility and business liquidity (Hess 2011:23).

To measure the overall maturity of an enterprise's operational management systems, a scale of 5 to 1 is often recommended, with 5 indicating greater level of maturity (Duarte *et al*. 2011:29; Lai 2015:111). It is such an entrenched operational risk management culture that scales operational risk management to leverage a firm's overall value configuration and creation as a separate business function.

2.2 Business values: operational risk management

Research conducted on the effects of operational risk management on a business' performance imply operational risk management leverages process efficiency, quality excellence, human resource effectiveness and resource optimisation (Amarjit *et al.* 2014:259; Duarte *et al*. 2011:29; Framjee 2016:3; Ghazali & Manab 2013:913; Torben & Roggi 2012:18).

2.2.1 Process efficiency

As the evaluation and analysis of operational risks are undertaken, it facilitates simultaneous identification and mitigation of risks and operational glitches that constrain process effectiveness and efficiency (Amarjit *et al.* 2014:259). Effective utilisation of techniques like Tornado charts and risk mapping can enable enterprises identify some of the mundane underlying sources of operational deficiencies even without the application of radical process improvement methodologies such as six-sigma and business process re-engineering (PriceWaterHouseCoopers (Pwc) 2009:4).

Such operational deficiencies often arise from poor quality management practices, poor machine maintenance and replenishments, poor activities' coordination and liaison and communication between different departments. This enhances elimination of disjointments and disconnectedness between processes and systems to improve the overall level of process synchronisation across different divisions, departments and units (Johnson & Johnson 2015:13).

Improvement of process synchronisation often paves way for the improvement of efficient flow of activities across all units, departments and partner organisations. It also reduces delays that often affect activities' flow and coordination. In the endeavour to improve process efficiency, operational risk analysis also supplements the effectiveness of different process improvement methodologies like six-sigma and business process re-engineering. It accomplishes this by eliciting critical operational statistical information for relevant process diagnosis and interventions to be undertaken to improve the overall process efficiency (Johnson & Johnson 2015:13).

Improved process efficiency enhances a firm's dynamic capabilities to remain sustainable by effectively responding to the changes in market trends. It is not only through the edifying effects of operational risk management on process efficiency that firms are often able to deliver on their business credo of offering superior customer values, but also through significant improvement of quality excellence (Wang, Lin & Huang 2010: 601).

2.2.2 Quality excellence

Operational risk management edifies quality excellence by enhancing effective application of operational management techniques such as risk mapping and intranet facilitated technologies to consistently profile risks and identify and mitigate defects, failures and errors that undermine quality management in the manufacturing processes (Wang *et al.* 2010: 601).

Quite often, this is further bolstered by the fact that a consistent utilisation of a cyclical process of operational risk analysis, identification, measurement and response may induce practices that can easily morph as part of a culture of quality excellence (Wang *et al.* 2010: 601). Quality excellence refers to the consistent commitment demonstrated by the business to produce and deliver quality and defect-free products (Johnson & Johnson 2015:3).

As a culture of quality excellence emerges, it aids quality management as well as effectiveness of operational risk management by consistently identifying and mitigating events and incidents such as machine breakdowns, material shortages, accidents and absenteeism that often cause manpower shortages to affect production efficiency as well as quality management (Williams 2010:11). This instigates the development of value drivers that often spur improved product quality as well as the quality of customer services.

Besides consistent responses to all customer complaints, supply chain analysis, total quality management and value chain analysis undertaken as part of the ordinary ethos of quality excellence may also minimise risks as well as incidents that affect the management of quality along a firm's supply and value chains (Williams 2010:11). This reduces lead and cycle time to impact positively on a firm's responsiveness to shortages and delays that can affect customer satisfaction with the quality of customer services. Besides the emergence and entrenchment of a culture of quality excellence, operational risk management also leverages improvement of the quality of a firm's human resource assets (Amarjit *et al*. 2014:259).

2.2.3 People

Entrenchment of a culture of operational risk management may require firms to also evaluate and mitigate risks linked to the people it deals with (Amarjit *et al*. 2014:259). This implies improvement of employees' competencies and capabilities may turn into a critical prerequisite. As the executives invest in necessary training and development to proactively reduce risks arising from poor skillfulness, and deliberate and negligent errors, it spurs improvement of the quality of human assets (Amarjit *et al*. 2014:259).

Improved employees' skillfulness may also improve adherence to relevant prescribed risk free procedures and methods. This not only minimises risks, but also improvement of process efficiency, product quality and the quality of customer services. Its positive effects on the improvement of customer satisfaction, competitiveness and profitability may also be bolstered by the adoption of measures that improve employee remunerations (Duarte *et al.* 2011:29).

Poor remunerations cause dissatisfactions, poor commitment and low motivation. It also causes labour unrests and strikes that usually cause plant redundancies, destruction of equipments and facilities, as well as declining productivity and reduced efficiency. Labour unrests constrain ability to meet schedules and cycle time that may all affect customer satisfaction (Ghazali & Manab 2013:913). Improved employee education and reduction of dissatisfiers as part of the proactive operational risk management measures not only spurs improved quality of a firm's human asset, but also plant and asset optimisation.

2.2.4 Assets' optimisation

If consistently undertaken over time, effective operational risk management may catalyse resource optimisation (Duarte *et al.* 2011:29). This is attributable to the fact that operational risk management induces improved cost savings that may be used in the other investment initiatives to create values that spawn improved product features and quality. In turn, all these may catalyse improvement of customer satisfaction and a firm's overall effective market performance. Asset optimisation may also emerge from cost savings resulting from the elimination of the cost of interventions to deal with delays, errors, and damages and compensations for non-compliance with relevant health and safety regulations. Improved plant optimisation may also result from consistent elimination of incidents and events whose consequences disrupt the smooth flow of activities (Duarte *et al.* 2011:29). Yet, as all the production systems and processes are running efficiently, machine redundancies and the idleness of the entire production plant often also tend to be reduced to impact positively on a plant's overall productivity.

Productivity increment edifies the improvement of a firm's throughput that in turn also causes significant reduction of marginal costs (Duarte *et al.* 2011:29).This is often bolstered by the use of operational risk intervention mechanisms like the adoption of the appropriate health and safety measures as well as maintenance and asset replenishment policies. It is also often edified by quality controls and constant training and development of the employees' risk averseness competencies (ManMohan & Seongha 2007:9). These intervention measures influence improvement of good operational practices and the minimisation of the emergence of incidents that can interfere with effective plant utilisation and optimisation.

In other words, if linked to a firm's value configuration and creation processes, these enormous business values of operational risk management can be scaled into critical strategic value drivers that catalyse the creation of enormous other values to spur improvement of a firm's overall effective market performance (Lam 2016:5; Merschmann & Thonemann 2011: 43).

2.3 Value configuration and creation

To edify the overall effectiveness of value configuration and creation, LEK's (2015:2) value creation theory highlights the essence for the utilisation of a three steps' process that entail identification and development of value drivers, testing value driver sensitivities, and controllability testing. The identification and development of value drivers are often preceded by intense analysis and mapping of different business operations so as to identify areas where value drivers lie. In the process of such analysis and mapping, strategic attentions are directed towards critical business areas such as process efficiency, technological capabilities, supply chain and its linkage with value chain systems, and core product quality, features, designs and attributes (Edgett & Phillips 2014:5).

Besides ease of purchase, delivery, customer usage and disposal, some of the critical value drivers are also often linked to customer service quality, and skills and competencies of the staffs involved in critical business areas. Holistic analysis and mapping of value drivers offer the foundation for analysis and testing the sensitivities of the identified value drivers to assess how they interact with each other to leverage a firm's overall effective market performance (Alawneh and Samer 2010:3; Edgett & Phillips 2014:5). This enables identification of the less value creating activities.

Such analysis is often accompanied by the evaluation of value driver controllability to assess the value drivers that the management has control over and the ones that the management cannot easily influence. This is attributable to the fact that whereas certain value drivers are internal, the external value drivers that the management may not have influence over are often linked to the degree of industry volatility and market attractiveness and rivals' capabilities (Alawnehand Samer 2010:3; Edgett & Phillips 2014:5).

To exert influence over the external value drivers, business executives often evaluate the internal value drivers that must be developed and improved to reshape and change industry conditions in favour of the firm. The notion of using new value configuration and creation to reshape the existing industry boundaries and render irrelevant the existing competition is well documented in Kim and Mauborgne's (2015:5) concept of blue ocean strategy.

Besides the abandonment of the conventional strategic logic in favour of the strategic value innovation logic, it is also the fundamental reasoning in the blue ocean strategy theory that the process of new value innovations is often accomplished using strategy canvass, Eliminate-Reduce-Increase-Create (ERIC) Grid, buyers' experience and utility cycle, and pioneer-settler-migrator map (Kim & Mauborgne 2015:5).

Strategy canvass aids value configuration and creation by analysing factors like product quality, marketing strategies, pricing, distribution and quality that the competitors consider as the competition enhancing values so as to identify gaps that can be filled through new value innovations (Kim & Mauborgne 2015:14). This is often aided by the use of ERIC Grid to identify values taken for granted by most competitors that must be eliminated to reduce wastes and costs. It also enhances identification of over-offered values that are of less importance to the customers that must be reduced below the existing industry standards. Through the use of ERIC Grid, firms are also able to evaluate values cherished by customers, but offered below industry standards that their standards must be increased and new values that must be created to fill the previously unfilled needs (Kim & Mauborgne 2015:14).

The use of ERIC Grid is often supplemented by the use of buyer experience cycle curve and utility map to analyse the cycle that customers undergo during purchase, delivery, use, supplement, maintenance and disposal (Kim & Mauborgne 2015:14). When accompanied by the analysis of six utilities like customer productivity, simplicity, convenience, risk, fun, image, and environmental friendliness, it enhances mapping and understanding of the factors that influence positive customer experience as they undergo purchase and consumption of different products.

Although Kim and Mauborgne's (2015) concept of blue ocean strategy influenced the development and evolution of the contemporary notion of value configuration and creation, the concept of value creation is not a new concept. It first emerged in theories articulated by Porter's (1985) model of value chain analysis, Kaplan and Norton's (1992) balanced scorecard, and Porter and Linde's (1995) theory which was also in turn echoed in Lubin and Esty's (2010) value creation theory.

2.3.1 Porter's (1985) model for value chain analysis

Porter's (1985:98) model for value chain analysis heralds variables that can edify or constrain a firm's value creation initiatives to be linked to primary activities such as inbound logistics, operations, outbound logistics, marketing and sales, and service. To create the desired values, these primary activities are supported by certain generic functional activities like procurement, technological development, human resource management and a firm's infrastructure.

Although Porter's (1985:98) model for value chain analysis facilitates mapping and identification of critical primary and support functions that must be further developed to edify a firm's value creation initiatives, it is still often criticised as less applicable in purely service settings. To configure the flow of services along primary and support activities, value shop analysis model facilitates the configuration and mapping of value drivers in service oriented firms such as insurance companies or banks (Zizlavsky 2014:210).

In value shop model, primary activities are linked to processes and activities such as problem-solving, choice, execution, control and evaluation that are also in turn largely supported by human resource and technology. Despite criticisms, it is still evident from theories that Porter's (1985:98) model for value chain analysis offers the appropriate foundation for the identification and improvement of the major sources of value drivers. In contrast, Kaplan and Norton's (1992:71) balanced scorecard imply value creation and improvement are predicted by constant diagnosis and improvement of a firm's performance on a combination of four perspectives encompassing customer, internal business process, learning and growth, and financial performance.

Customer perspective enhances analysis of customer perception of time, quality, cost, performance and service. Internal business process perspective maps and configures how cycle time, quality, technological capabilities, skills, productivity, operational efficiency, cost management, and product development are enhancing the delivering of values that meet customer expectations and satisfaction (Zizlavsky 2014:210). Depending on the analysis of customer and internal business perspectives, innovation and learning perspective enable a firm configure new innovations and improvements that must be undertaken to spur improvement of a firm's overall profitability, financial bottom-line and returns on shareholders' values (Zizlavsky 2014:210). However, Lubin and Esty (2010:2) construe the sources of value creation not to be linked to the use of a combination of financial and non-financial measurement systems.

2.3.2 Lubin and Esty's (2010) theory on value creation

Instead, as firms strive to be innovative by developing and applying new measures that improve their operational efficiency and compliance with relevant legislations, Lubin and Esty (2010:2) construe the positive effects of such initiatives to spur cost reduction, risk mitigation, efficiency levels and improved reputation and brand recognitions. Over time, these benefits turn into value drivers that catalyse a firm's competitiveness, market performance, revenues and returns on shareholders' values.

Such a view is echoed in the fundamental reasoning in the United Nations' (UN) Global Compact Lead's (2013:3) value driver model that the quest for improvement of a firm's sustainability drives investment in innovations that in turn spur new value innovations to edify a firm's overall financial performance and growth. It emphasises the essence for measuring and improving performance linked to three metrics encompassing sustainability-advantaged growth, sustainability-driven productivity and sustainability-related risk management. In terms of sustainability-advantaged growth, measurement of revenue and growth rate of the products considered to be the major value inducing products tend to influence the assessment of the necessary modifications that can be undertaken to spur improvement of their performance and an enterprise's sustainability (UN Global Compact Lead 2013:3).

Sustainability-driven productivity, however focuses on measuring the financial impact of the adopted efficiency driven measures, cost structures and human resource management. Sustainability-related risk management assesses the extent to which an enterprise's operational risk management strategies are effective for identification and mitigation of turbulence and disturbances that interfere with the effectiveness of an enterprise's operation and sustainability (United Nations' Global Compact Lead 2013:3).

The logic in the UN Global Compact Lead's (2013:3) value driver model seems to accentuate the opinions in Porter's (1985:4) model of value chain analysis, Kaplan and Norton's (1992:1) balanced scorecard, as well as Porter and Linde's (1995:97) arguments that a firm's critical value drivers are often linked to improved process efficiency, technology, strong customer base, staffs' skills, product differentiation, effectiveness of risk management systems, unique value creating strategies and leadership. That signifies an entrenched culture of operational risk management leverages a firm's value configuration and creation.

However, insufficient research on theories linking the process of operational risk management to value configuration and creation seems to have limited the identification of a suitable business model that businesses can replicate to improve the scalability of operational risk management as a catalyser of a firm’s value configuration and creation.

3. THEORETICAL FRAMEWORK

To address such a gap, this research uses the underpinning null hypothesis in Figure 1 to argue that a strategic linkage of operational risk management with value configuration and creation processes leverages identification and development of business value drivers. In turn, these business value drivers spawn improvement of a firm’s competitiveness and market performance.

As the operational risk management process (risk analysis, identification, measurement and intervention) is linked with an enterprise-wide risk management framework, it facilitates the identification of occupational, strategic, economic, compliance and supply chain risks. This edifies effective identification and elimination of operational failures, errors, defects, losses and wastes.

The linkage of this process with value configuration and creation enhances effective analysis, identification, mapping, evaluation and improvement of value drivers. The effective application of these techniques may tend to edify the identification and development of critical value drivers derived from improved process efficiency and technological capabilities. It may also enhance improvement of strategy implementation, risk management, culture, innovation, networking, sustainability, quality of staffs and supply chain efficiency.

Besides improved value chain efficiency, the values of the linkage between operational risk management and value configuration and creation are also often latent in bolstering product and service quality, features, designs, attributes, customer services, and ease of purchase, delivery, customer usage and disposal (Shenkir & Walker 2007:19).

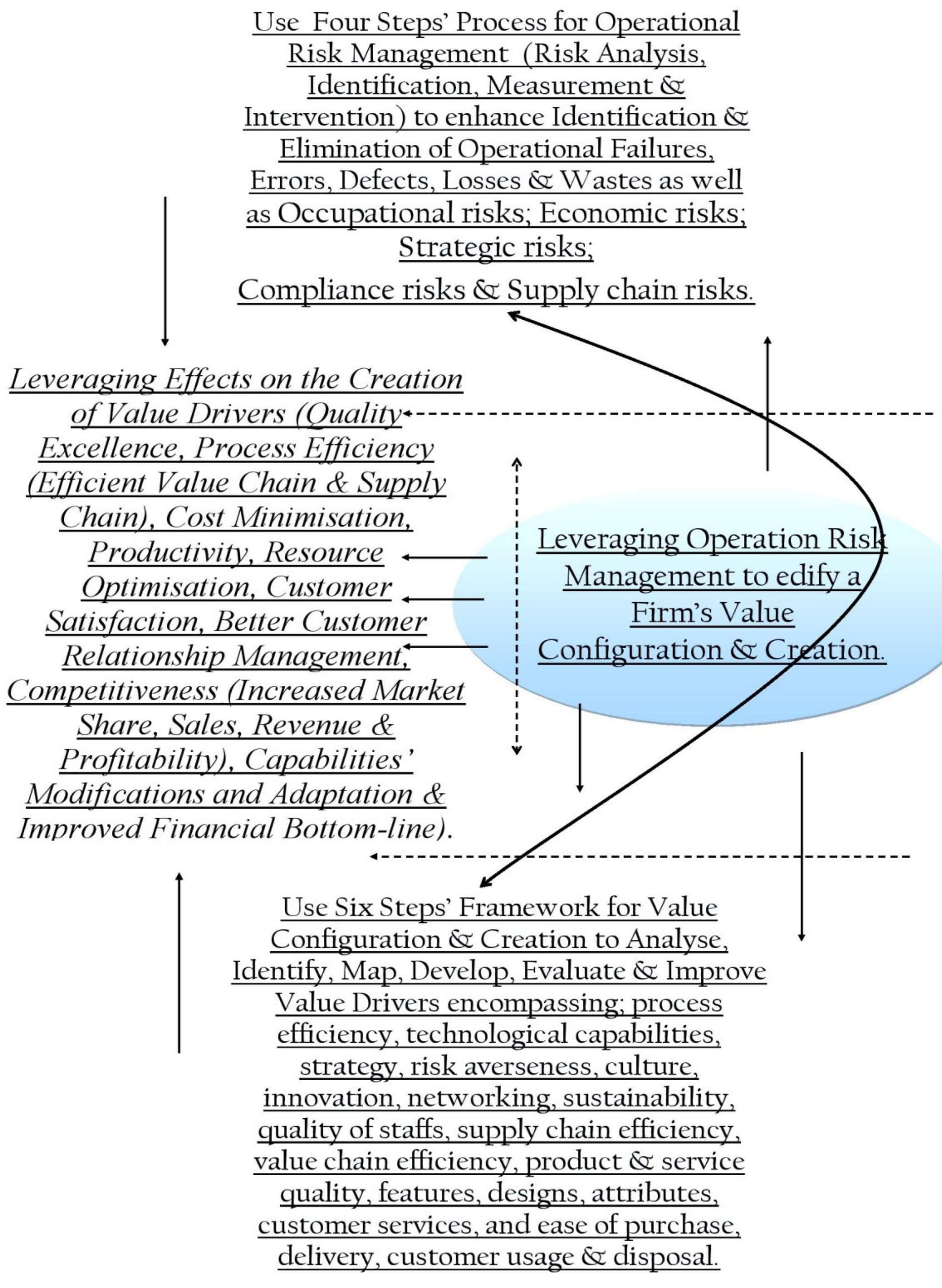

FIGURE 1: A business model for leveraging a firm's value configuration and creation using operational risk management

Source**:** As derived from Linking operational risk management Theories (Amarjit et al. 2014:259; Duarte et al. 2011:29; Framjee 2016:3; Ghazali & Manab 2013:913; Torben &Roggi 2012:18) to Value configuration and creation theories (Kaplan 2010; LEK 2015; Lubin & Esty 2010:2; Porter & Linde 1995; Porter 1985).

As the link between operational risk management and a firm's value configuration and creation is perfected, it also tends to leverage the creation of critical value drivers that also catalyse other value drivers that may emerge from improved quality excellence, process efficiency (efficient value chain and supply chain systems), cost minimisation, productivity, resource optimisation, customer satisfaction, better customer relationship management, competitiveness (increased market share, sales, revenue & profitability), capabilities' modifications and improved financial bottom-line.

4. RESEARCH STATEMENT

Lack of a theory linking operational risk management to value configuration and creation limits the scalability of operational risk management to drive improvement of a firm's value configuration and creation.

5. PURPOSE OF THE RESEARCH

The purpose of this research was to use confirmatory factor analysis to test and validate a theory that scales operational risk management as a driver of a firm's value configuration and creation.

6. METHODOLOGY

To test the underpinning hypothesis in the model in Figure 1, the study used a positivist research paradigm to undertake relevant critical statistical analysis (Hair, Black, Babin & Anderson 2010:315).

6.1 Positivist research paradigm

A positivist research paradigm refers to the ontological process of inquiry in which the process of research commences by a hypothetical theory formulation against which relevant theoretical analysis and statistical data collection are undertaken and tested to assess whether the observed sample covariance matrix perfectly matches the view in the postulated hypothetical model (Malhotra & Dash 2011:5). The application of positivist research approach in this study is motivated by the fact that increasingly most of the contemporary business enterprises are searching on how to create and develop value drivers that spawn the overall effectiveness of their market performance.

However, a challenge arises from the fact that apart from the early theories on value creation such as Porter's (1986) value chain analysis as well as Kaplan and Norton's (1992) balanced scorecard, such a quest has not been correspondingly accompanied by studies exploring and enriching theories that link concepts such as operational risk management with axiomatically obvious effects on value creation to the notion of a firm's value configuration and creation. This has affected the development of a variety of other techniques that businesses can replicate in their quests to bolster their value creation capabilities.

In effect, the application of a positivist research paradigm was motivated by the fact that by the use of the underpinning hypothesis in Figure 1, this research would introduce a new theory that uses operational risk management to leverage value configuration and creation. To accomplish this, the study used a quantitative research method and specifically confirmatory factor analysis (CFA) aligned to five critical steps encompassing; path specification, sample size estimation, specification of the measuring instrument, path analysis, and analysis of discriminant and convergent validity and reliability.

6.2 Path specification

Path specification has already been undertaken in Figure 1. It is indicated in the model in Figure 1 that there are three constructs; operational risks management (OPRM), value configuration and creation (VCC), and the leveraging effects of operational risk management on the creation of value drivers (LECVD). As indicated in Figure 1, with these constructs and their measuring variables or regressors defined, path specification was followed by sample size estimation.

6.3 Sample size estimation

In confirmatory factor analysis, the criteria used for sample size estimation is $n > 0.50$ (Hair *et al.* 2010:315). While using this criterion, the study was based on the operational departments or units of the medium size and large scale businesses located in Central Uganda in Uganda and in the Gauteng Province in South Africa. The study focused on the businesses operating in the manufacturing, banking, retail, transport and logistics, and tourism and hospitality sectors. Attributable to such a decision is the argument that these are the sectors in which constant quest for value creation is critical for creating enormous customer values that in turn leverage a firm's overall competitiveness and financial values. In effect, the target sample respondents were operational managers or any senior employee from the operational department with about five or more years of work experience.

To obtain a sample of 100 respondents that could be used in the statistical testing of the model in Figure 1, a total of 120 questionnaires were in the period of eight months (March-October, 2016) distributed and collected from the operational departments or units of the medium size and large scale businesses located in Central Uganda in Uganda and in the Gauteng Province in South Africa.

Of these 120 questionnaires, 60 were distributed in the operational departments or units of the medium size and large scale businesses located in Central Uganda in Uganda, as the other half (60) were distributed in the operational departments or units of the medium size and large scale businesses in Gauteng, South Africa. The first 100 questionnaires (83%) i.e.; 50 from Central Uganda and 50 from Gauteng that were collected were used in the study to meet the criteria of $n > 0$ 50.

6.4 Research instrument

The questionnaire was designed along a five-point-Likert-Scale. It contained three sections aligned to three constructs in the underpinning hypothesis in the model in Figure 1.

The first section was aligned to the first construct: operational risks management (OPRM) that measured latent variables encompassing occupational risks (OCR), economic risks (CR), strategic risks (SR), operational risk (OPR), compliance risks (CR), and supply chain risks (SCR).

The second section was linked to the second construct: value configuration and creation (VCC) that measured six logical steps for value configuration and creation that encompassed: analysis (A), identification (I), mapping (M), development (D), evaluation (E), and value improvement (V).

The third section of the questionnaire was aligned to the third construct: Leveraging effects on the creation of value drivers (LECVD) that measured regressors linked to quality excellence (QE), process efficiency (PE), cost minimisation (CM), productivity (P), resource optimisation (RO), customer satisfaction (CS), customer relationship management (CRM), competitiveness (C), capabilities' modifications and adaptations (CMA), and improvement of financial bottom-line (IFBL).

After the calculation of a Cronbach alpha which was 0.78 and indicating reliability of the measuring instrument, questionnaires were distributed.

6.5 Path analysis

The collected data was analysed using Amos version 22 of the SPSS. Path analysis was accomplished using standardised regression weights (β-beta), squared multiple correlation coefficients (r^2), chi-squared (x^2) analysis and a combination of non-centrality and relative fit indices such as root mean square error of approximation (Armstrong 2012:689; Hair *et al.* 2010:94).

Although these statistical indices aided the assessment of the validity and reliability of the model in Figure 1, other statistical measures were also integrated to assess the discriminant and convergent validity and reliability. The model in Figure 1 was found to meet discriminant and convergent validity and reliability if composite reliability (CR) was > 0.7 and $>$ AVE (Fornell & Larker 1981:39). All these were used in conjunction with the analysis of average shared variance (ASV) to assess the entire discriminant and convergent validity and reliability of the model in Figure 1 (Fornell & Larker 1981:10; Hair *et al.* 2010:144; Malhotra & Dash 2011:15). The details of the findings are as follows.

7. FINDINGS

Findings on the assessment of the overall fitness of the model in Figure 1 are presented and discussed according to three main subsections that include:

- standardised regression weights (β-beta) and squared multiple correlation coefficients (r^2)
- discriminant and convergent validity and reliability

- chi-squared (x^2), non-centrality and relative fit indices

The details are as follows.

7.1 Standardised regression weights (β-beta) and squared multiple correlation coefficients (r^2)

It is the fundamental argument in Figure 1 that if well accomplished, operational risk management leverages a firm's value configuration and creation. This creates combined value effects that in turn induce other business values that catalyse a firm's overall effective market performance. This underpinning hypothesis seems strongly echoed in the results of standardised regression weights (factor loadings) (in Table 1 & Figure 2), squared multiple correlation coefficients (r^2) (in Table 2 & Figure 2), as well as chi-squared (x^2) and modification indices (in Table 4).

In terms of the results of standardised regression weights (factor loadings) in Table 1 and Figure 2, most of the endogenous variables loaded quite significantly on their associated latent constructs. Figure 2 implies operational risk management process entailing risk analysis, identification and mitigation is significantly associated with the identification and mitigation of operational risks (OPR=0.97). Such a process is also noted to be linked with the processes for the identification and mitigation of occupational (OCR=0.61), economic (CR=0.63), strategic (SR=0.89), compliance (CR=0.67), and supply chain risks (SCR=0.81). It is a conventional statistical logic that endogenous variables scoring $> \pm 0.50$ or even $>.\pm$ 0.7 are more significantly associated with their latent constructs as contrasted with those scoring ± 0.30 or ± 0.40 (Fornell & Larker 1981:10; Hair *et al.* 2010:144).

Using a rule of thumb of a score $> \pm 0.50$ as the criteria for assessing statistical significance of factor loadings, an overview of face validity of the first construct (OPRM- operational risk management) in Figure 2 would suggest all the measuring variables are statistically significant.

As the integral four logical steps' (analyse, identify, measure and intervene) framework of operational risk management is linked with the identification and mitigation of occupational, economic, strategic, compliance and supply chain risks, the results of confirmatory factor analysis imply that it tends to influence not only operational risk identification and mitigation, but also value configuration and mapping. This enables a firm identify key value drivers that must be developed to create other values that subsequently leverage a firm's overall effective market performance.

TABLE 1: Results of standardised regression weights (factor loadings) & squared multiple co-relations coefficients

Standardised Regression Weights (β -*beta*) and Squared Multiple Correlation Coefficients (r^2)			
Latent Constructs & Indicators	β -*beta* ($\beta > \pm .50$)	r^2 ($0 \leq r^2 \leq 1$)	Interpretation
OPRM-Operational Risk Management			
OCR-Occupational Risks	0.61	(0.37)37%	Significant
ER-Economic Risks	0.63	(0.39)39%	Significant
SR-Strategic Risks	0.89	(0.80)80%	Significant
OPR-Operational Risks	0.97	(0.94)94%	Significant
CR-Compliance Risks	0.67	(0.45)45%	Significant
SCR-Supply Chain Risks	0.81	(0.65)65%	Significant
LECVD-Leveraging Effects on the Creation of Value Drivers			
QE-Quality Excellence	0.89	(0.80)80%	Significant
PE-Process Efficiency	0.87	(0.75)75%	Significant
CM-Cost Minimisation	0.88	(0.78)78%	Significant
P-Productivity	0.85	(0.72)72%	Significant
RO-Resource Optimisation	0.87	(0.75)75%	Significant
CS-Customer Satisfaction	0.90	(0.80)80%	Significant
CRM-Customer Relationship Management	0.88	(0.77)77%	Significant
C-Competitiveness	0.91	(0.83)83%	Significant
CMA-Capabilities' Modifications & Adaptation	0.90	(0.82)82%	Significant
IFBL-Improvement of Financial Bottom-line	0.95	(0.91)91%	Significant
VCC-Value Configuration & Creation			
A-Analysis	0.78	(0.61)61%	Significant
I-Identification	0.80	(0.64)64%	Significant
M-Mapping	0.71	(0.50)50%	Significant
D-Development	0.85	(0.73)73%	Significant
E-Evaluation	0.77	(0.59)59%	Significant
VI-Value Improvement	0.83	(0.96)69%	Significant

Source: As extracted from the results of confirmatory factory analysis

Findings in Figure 2 signify as firms utilise operational risk management in the analysis, identification and mitigation of the typical sources of operational failures, errors, defects, losses and wastes, they tend to spur the effectiveness of the process of value configuration and creation.

Likewise, as the process of value configuration and creation that entail analysis, identification of value drivers, mapping, development, evaluation and value improvement is undertaken, it also tends to influence the effectiveness of the process of operational risk identification and mitigation. Statistically, this is demonstrated in Figure 2 in which the results of standardised regression weights (β-beta) reveal the co relationship between operational risk management (OPRM) as a first construct with value configuration and creation (VCC) to be statistically significant at 1.

It suggests operational risk management co-relates with value configuration and creation (VCC) to edify effective accomplishment of VCC's six logical steps that encompass analysis (A=0.78), identification (I=0.80), mapping (M=0.71), development (D=0.85), evaluation (E=0.77), and value improvement (V=0.83). The overall effectiveness of operational risk management flows to enhance the effectiveness of the process of value configuration and creation to assess, sense, configure and mitigate operational glitches that constrain efficiency, quality excellence and cost minimisation. These create values that in turn translate into improved customer satisfaction; competitiveness and the improvement of a firm's overall financial bottom-line.

Attributable to this reasoning is the fact that Figure 2 signifies that BVOPRM (Business values of Operational Risk Management) as an endogenous variable load quite significantly at 0.55 on value configuration and creation (VCC) as a common factor. As on the other hand, the overall effectiveness of operational risk management is also revealed to influence the achievement of business values similar to the values of VCC at a statistically significant level of 0.43.

Considering that co-relationships between two or more variables are significant when values fall in the range of 0 and 1, and factor loadings are significant if score$s > \pm 0.50$ (Malhotra & Dash 2011:15), this implies since operational risk management may influence the achievement of enormous business values that create new value drivers that in turn catalyse the creation of other business values, failure to link such a process to the six logical processes of value configuration and creation can undermine its positive effects on value creation.

In effect, in businesses with systems that integrate and link the process of operational risk management to the process of value configuration and creation, the combined business values of such a synchronised system are statistically indicated in Figure 2 to be latent in the improvement of quality excellence (QE=0.89) and process efficiency (PE=0.87). It also leverages cost minimisation (CM=0.88), productivity (P=0.85), resource optimisation (RO=0.87), customer satisfaction (CS=0.90), customer relationship management (CRM=0.88), competitiveness (C=0.91), capabilities' modifications and adaptations (CMA=0.90), as well as improvement of a firm's overall financial bottom-line (IFBL=0.95).

Using a rule of thumb of a score $> \pm 0.50$ as the criteria for assessing statistical significance of factor loadings, it is easily discernible that all these ten variables significantly load onto BVOPRM as the common factor. The statistical face validity of the model is not only demonstrated in the results of standardised regression weights-β-beta, but also in the results of squared multiple correlation coefficients (r^2). It is through r^2 that firms are able to measure the statistical importance of each variable as compared to the other variables. It evaluates the degree to which each variable influences the equation and the extent to which a particular construct and other variables would be affected if it was removed.

Using Bollen and Davis' (2009:536) criterion of $0 \leq r^2 \leq 1$, the interpretation was that a variable is insignificant if r^2= 0, of weak significance if r^2 was closer to 0 and of strong significance if r^2 was closer to 1. In line with this statistical logic, it is evident from Figure 2 and Table 2 that whereas strategic risks (SR=80%), operational risk (OPR=94%), and supply chain risks (SCR=65%) are of stronger significance in the process of operational risk management (OPRM), on the other hand, occupational risks (OCR=37%), economic risks (CR=39%) and compliance risks (CR=45%) may only cause moderate effects on the effectiveness of operational risk management (OPRM).

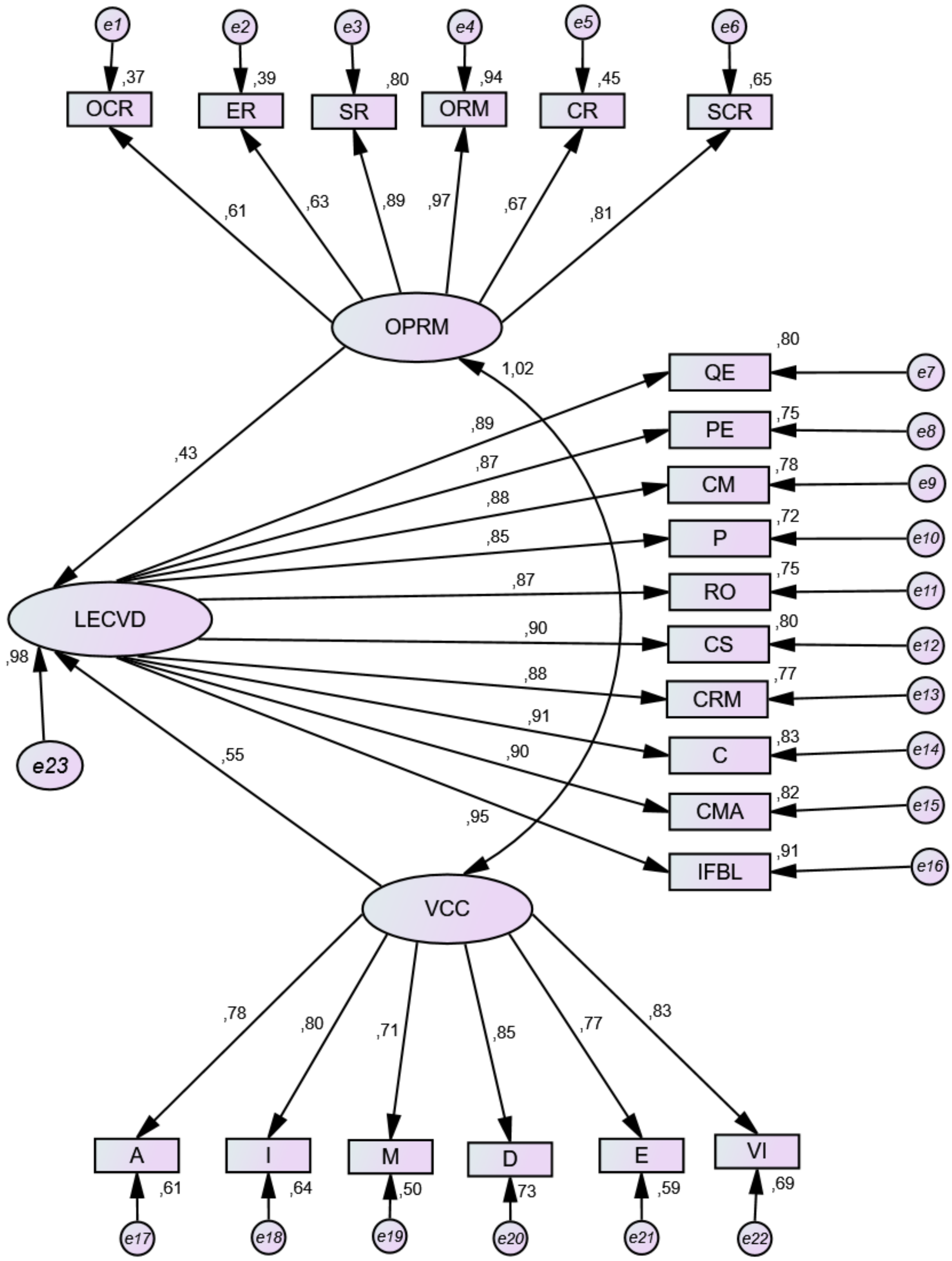

FIGURE 2: Results of standardised regression weights (factor loadings) and squared multiple correlation coefficients (r^2)

Source**:** As extracted from the results of confirmatory factory analysis

This is attributable to the fact that the score for occupational risks (OCR= 37%), economic risks (CR=39%) and compliance risks (CR=45%) take central positions that are neither closer to 0 nor 1. It implies in the process of operation risk management, businesses tend to prioritise the application of effective operational risk management measures as well as measures for identifying and mitigating strategic and supply chain risks.

Strategic risks may tend to be core to the effectiveness of risk management on the basis that it enables identification and mitigation of operational disturbances that may arise from strategy failure, new rival innovations, technological changes, competition and negative reputation. Just like strategic risks, supply chain risk management may also take a central position in the process of operational risk management for the reason that the effectiveness of operational risk management may depend on the extent to which a firm is also able to evaluate and diffuse glitches along value chains that may affect the efficient flow of the operational activities.

However, as operational risk management are prioritised in conjunction with supply chain and strategic risk mitigating measures, it is still often critical that the framework adopted also integrates the identification and mitigation of occupational, economic and compliance risks.

On the other hand, value analysis (A-61%), identification of value drivers (I-64%), development of value drivers to instigate the creation of other values (D-73%), evaluation of the resulting business values of value drivers and whether the other new values can be created (E-59%), and value improvement (VI-69%) emerged as more important factors in the process of value configuration and creation as compared to mapping of value drivers (50%).

In other words, the results of standardised regression weights-β- (factor loadings) in Figure 2 and Table 1 and squared multiple correlation coefficients (r^2) in Table 2 echo the fundamental argument in Figure 1 that if well accomplished, operational risk management leverages a firm's value configuration and creation to create combined value effects that in turn create other business values that catalyse a firm's overall effective market performance. Such a view is further supported in the results of discriminant and convergent validity and reliability using average variance extracted (AVE) and composite reliability (CR).

7.2 Discriminant and convergent validity and reliability [average variance extracted (AVE) & composite reliability (CR)]

The analysis of discriminant and convergent validity and reliability confirmed the model in Figure 1 is measured by its associated constructs and variables rather than certain other exogenous factors. In terms of the first construct (OPRM-operational risk management), this is illustrated in the results of average variance extracted (AVE) and composite reliability (CR) in Table 2. Statistically, a model indicates discriminant and convergent validity and reliability if average variance extracted (AVE) > 0.5, and composite reliability (CR) > 0.70 and $>$ AVE.

In the context of the illustration in Table 2, AVE= 0.71753 > 0.5 implies variables such as operational, occupational, economic, strategic, compliance and supply chain risks are significantly associated with their common factor (OPRM-operational risk management) other than any other exogenous factors or latent constructs specified in Figure 1. Such a view is further echoed in the results of composite reliability which is noted in Table 2 to be CR = 0.89733. To indicate discriminant and convergent validity and reliability of a construct, composite reliability (CR) must not only be > 0.70, but also $>$ AVE.

Although from the analysis of the results in Table 2, composite reliability (CR) = 0.89733$>$ 0.70 as well as $>$ AVE = 0.71753 suggest discriminant and convergent validity and reliability, quite often discriminant and convergent validity and reliability are not measured by only AVE and CR. Instead, the analysis of AVE and CR is also undertaken in relation to the evaluation of maximum shared variance (MSV) and average shared variance (ASV). Maximum shared variance (MSV) and average shared variance (ASV) enhance the analysis of the extent to which a variable or a latent construct explains or is explained by another variable in the model. In the model in Figure 1, it was stated that operational risk management process links with value configuration and creation processes to edify the identification and creation of value drivers that edify the creation of other value drivers.

Although this hypothesis was confirmed in the results of standardised regression weights-β-beta in which the co relationship between operational risk management (OPRM) with value configuration and creation (VCC) was found to be statistically significant at 1, further analysis using MSV and ASV facilitated the evaluation of the discriminant and convergent validity and reliability of the model as a basis from which business decisions can be undertaken.

TABLE 2: Average Variance Extracted (AVE) & Composite Reliability (CR) for OPRM and VCC

Average Variance Extracted (AVE): OPRM (Operational Risk Management)		Composite Reliability (CR): OPRM (Operational Risk Management)	
Sum (Squared Standardised Loadings)	Sum (Indicator Measurement Errors-1)	Sum (Standardised Loadings)^2	Sum (Indicator Measurement Errors-1)
(.61)^2=.3721	(1-.61)=.39	.61	(1-.37)=.63
(.63)^2=.3969	(1-.63)=.37	.63	(1-.39)=.61
(.89)^2=.7921	(1-.89)=.11	.89	(1-.80)=.2
(.97)^2=.9409	(1-.97)=.03	.97	(1-.94)=.06
(.67)^2=.4489	(1-.67)=.33	.67	(1-.45)=.55
(.81)^2=.6561	(1-.81)=.19	.81	(1-.65)=.35
Ave = 3.607/3.607 + 1.42 = 0.71753 > 0.5; $\sqrt{(Ave = 0.71753)}$ = 0.84707		Cr = (4.58)^2 = 20.9764/20.9764 + 2.4 = 0.89733 > .70 & it's > $Ave = 0.71753$	

Average Variance Extracted (AVE): VCC (Value Configuration and Creation)		Composite Reliability (CR): VCC (Value Configuration and Creation)	
Sum (Squared Standardised Loadings)	Sum (Indicator Measurement Errors-1)	Sum (Standardised Loadings)^2	Sum (Indicator Measurement Errors-1)
(.78)^2=.6084	(1-.78)=.22	.78	(1-.61)=.39
(.80)^2=.64	(1-.80)=.2	.80	(1-.64)=.36
(.71)^2=.5184	(1-.71)=.29	.71	(1-.50)=.5
(.85)^2=.7225	(1-.85)=.15	.85	(1-.73)=.27
(.77)^2=.5929	(1-.77)=.23	.77	(1-.59)=.41
(.83)^2=.6889	(1-.83)=.17	.83	(1-.96)=.04
Ave = 3.7711/3.7711+1.26= 0.74956 > 0.5; $\sqrt{(Ave = 0.74956)}$=0.86577		Cr= (4.74)^2=22.4676/22.4676 + 1.97 = 0.91941> .70 and it's > $Ave = 0.74956$	

Source: As extracted from the results of confirmatory factor analysis

Just like maximum shared variance (MSV)$< \sqrt{\text{AVE}}$, average shared variance (ASV)$< \sqrt{\text{AVE}}$ indicates the extent to which a variable or a latent construct is explained or explains another variable or latent construct in the model. In terms of the influence of operational risk management (OPRM) on value creation and its other edifying business values, MSV = $(0.43)\text{^}2 = 0.1849 < \sqrt{\text{AVE}} = 0.84707)$ as well as ASV= [(0.43)^2+(1.02)^2+(0.55)^2)/3=0.4958$< \sqrt{\text{AVE}} = 0.84707$] confirmed the overall effectiveness of operational risk management to spawn effectiveness of value configuration and creation. All these in turn jointly influence the creation of other enormous value drivers that subsequently drive the effective performance of an enterprise. Such a view was also confirmed in the analysis of discriminant and convergent validity and reliability for value configuration and creation (VCC).

As it is indicated in Table 2, the average variance extracted for value configuration and creation was (AVE) = 0.74956 > 0.5 which suggested discriminant and convergent validity and reliability for VCC. When combined with the fact that CR $= 0.91941 > 0.70$ and $>$ AVE = 0.74956, it can be argued that the results of discriminant and convergent validity and reliability confirm the effectiveness of the process of value configuration and creation are not influenced by any other exogenous variables, but by the stated six logical steps. The six steps encompass analysis, identification of value drivers, mapping of value drivers, development of value drivers, evaluation of the resulting business values of value drivers and value improvement.

In the analysis of the business values of operational risk management as a driver of value creation, these value drivers were confirmed in the analysis of average variance extracted for business values of operational risk management to be linked to quality excellence, process efficiency, cost minimisation, productivity, resource optimisation, customer satisfaction, customer relationship management, competitiveness, capabilities' modifications and adaptations, and improvement of financial bottom-line.

This is illustrated in Table 3. In terms of the relationship of VCC as a construct with the other constructs in the model, MSV = $(0.55)\text{^}2 = 0.3025 < \sqrt{\text{AVE}}$ =0.86577), and ASV= [(0.43)^2 + (1.02)^2+(0.55)^2)/3 = 0.4958$< \sqrt{\text{AVE}} = 0.86577$] corroborated the results of standardised regression weights-β- (factor loadings) in Figure 2 and Table 1 and squared multiple correlation coefficients (r^2) in Table 1 and Figure 2.

TABLE 3: Average Variance Extracted (AVE) & Composite Reliability (CR) for LECVD

Average Variance Extracted (AVE): LECVD- (Leveraging Effects on the Creation of Value Drivers)=Sum (Squared Standardised Loadings)/ Sum(Squared Standardised Loadings) + Sum of Indicator Measurement Errors-1)	
Squared Standardised Loadings	Indicator Measurement Errors-1
(.89)^2=0.7921	(1-.89)=0.11
(.87)^2=0.7569	(1-.87)=0.13
(.88)^2=0.7744	(1-.88)=0.12
(.85)^2=0.7225	(1-.85)=0.15
(.87)^2=0.7569	(1-.87)=0.13
(.90)^2=0.81	(1-.90)=0.1
(.88)^2=0.7744	(1-.88)=0.12
(.91)^2=0.8281	(1-.91)=0.09
(.90)^2=0.81	(1-.90)=0.1
(.95)^2=0.9025	(1-.95)=0.05
AVE=7.9278/7.9278+1.1= 0.87815 $>$ 0.5; $\sqrt{(Ave = 0.87815)}$ =0.9371; AVE = 0. 87815 $>$ 0.5.	

Composite Reliability (CR): LECVD- (Leveraging Effects on the Creation of Value Drivers)- (Sum of Standardised Loadings)^2/(Sum of Standardised Loadings)^2 + Sum of Indicator Measurement Errors-1)	
(Sum of Standardised Loadings)^2	Indicator Measurement Errors-1
0.89	(1-0.80)=0.2
0.87	(1-0.75)=0.25
0.88	(1-0.78)=0.22
0.85	(1-0.72)=0.28
0.87	(1-0.75)=0.25
0.90	(1-0.80)=0.2
0.88	(1-0.77)=0.23
0.91	(1-0.83)=0.17
0.90	(1-0.82)=0.18
0.95	(1-0.91)=0.09
Composite Reliability (CR) = (8.9)^2 = 79.21/79.21+2.07 = 0.97453. Cr = 0.97453 $>$ .70 and it's $>$ Ave = 0.87815.	

Source: As extracted from the results of confirmatory factory analysis

Such findings suggest the overall effectiveness of value configuration and creation edifies identification and mitigation of operational risks. This is further illustrated in the results of average variance extracted (AVE) and composite reliability in Table 3.

Table 3 illustrates the value drivers derived from the linkage of operational risk management with value configuration and creation are often associated with the improvement of quality excellence, process efficiency, cost minimisation, productivity, resource optimisation, customer satisfaction, customer relationship management, competitiveness, capabilities' modifications and adaptations and improvement of financial bottom-line.

As noted in Table 3, AVE for the construct of the leveraging effects of operational risk management on the creation of value drivers (LECVD) was AVE = 0.87815 > 0.5.

On the other hand, composite reliability was CR $= 0.97435 > 0.70$ and $>$ AVE = 0.87815. Combined with the average shared variance which was ASV [(0.43)^2+ (1.02)^2+(0.55)^2)/3 = 0.4958< $\sqrt{\text{AVE}} = 0.91963$], it can be argued that the results of discriminant and converged validity and reliability imply the overall effectiveness of operational risk management often precipitate a process that edifies the identification and creation of value drivers that influence the improvement of quality excellence and process efficiency.

These value drivers also catalyse the creation of other value drivers such as cost minimisation, improved productivity, resource optimisation, customer satisfaction, customer relationship management, competitiveness, capabilities' modifications and adaptations and improvement of financial bottom-line. Statistically, it is not only the results of standardised regression weights-β- (factor loadings) in Figure 2 and Table 1 and squared multiple correlation coefficients (r^2) in Table 2 that corroborate such a view, but also the results of chi-squared (x^2) analysis and the analysis of non-centrality parameter and relative-based indices in Table 4.

7.3 Chi-squared -x^2, non-centrality and relative fit indices

Although x^2 analysis did not indicate good model fitness, all the modification indices confirmed the null hypothesis in the model in Figure 1 that operational risk management leverages a firm's value configuration and creation.

TABLE 4: Chi-squared (x^2), Noncentrality and Relative Fit Indices

Results of Chi-Squared (x^2), Noncentrality and Relative Fit Indices		
Category of Indices	Value	Interpretation
Chi-Squared (x^2)		
x^2 (Sig.; p-value > 0.05); x^2/df (Sig. x^2/df falls in the ratio of 1to 3)	$x^2 = 249.577$; df= 215; p-value = .000; [$x^2 = 249.577$ / df=215= 1.09474]	Sig.-reject the model $x^2 = 249.577$;p-value = .000 < .05); accept, x^2/df = 1.1 falls in the ratio of 1 to 3).
Noncentrality-based Indices		
RMSEA -[$\sqrt{(x^2 - \text{df})}/\sqrt{(df(\text{N-1})}$]; (Sig.-RMSEA < 0.08 with Pclose > 0.05).	RMSEA = 0.0403 (with a Pclose = 0.106)	Accept the Model, RMSEA= 0.0403 < 0.08 (with a Pclose = 0.106 > 0.05)
CFI = d_{null} = [$(x^2_{null} - df_{null})$ - d_{model} = $(x^2_{model} - df_{model})/(x^2_{null} - df_{null})$]; (Sig.; CFI > .95).	CFI-Comparative Fit Index = 0.9457	Significant (Level of Acceptance, CFI= 0.9457 = .95).
Relative Fit Indices		
TLI=[$x^2_{null}/df_{null} - x^2_{model}/df_{model}/x^2_{null}/df_{null}$ (Sig.; TLI > .95).	TLI- Tucker Lewis Index = 0.94444	Marginally Significant (TLI= 0.94444 falls in between .90 & .95)
NFI-Normed Fit Index; [$x^2_{null} - x^2_{model}/x^2_{null}$] (Sig.; NFI > .95).	NFI-Normed Fit Index = 0.70871	Insignificant (NFI= 0.70871 < .95)

Source: As extracted from the results of confirmatory factory analysis

Statistically, a null hypothesis is acceptable if x^2; p-value $>$ 0.05. However, in this research x^2= 249.577 (df = 215, p-value = 0.000) did not meet the statistical criteria of x^2(p-value $>$ 0.05). It therefore implies the observed sample covariance in Figure 1 did not perfectly replicate the estimated SEM covariance matrix.

Nonetheless, the fact that x^2 is susceptible to the influences of the variations in sample sizes renders its value unreliable for making necessary interpretation about the model's fitness. That explains why besides the use of x^2/df, the other non-centrality and relative fit indices like RMSEA were also used in conjunction with x^2 to avoid type 1 (risks of rejection of a true null hypothesis that should have been accepted) or type 11 error (risks of acceptance of a false null hypothesis that should have been rejected). x^2/df indicates the observed sample covariance matrix to match SEM estimate covariance matrix ($\sum = S$) if it falls in the ratio of 1 to 3. In line with such a criterion, x^2/df = (Cmin (249.577) /df (215) = 1.16082 falls in the ratio of 1 to 3 to support the overall ratiocination in the null hypothesis in Figure 1.

Such a finding corroborates the results of standardised regression weights-β- (factor loadings) in Figure 2 and Table 1 and squared multiple correlation coefficients (r^2). It also echoes the results of discriminant and convergent validity and reliability that support the null hypothesis that operational risk management leverages a firm's value configuration and creation. However, it is not only the results of Cmin/df that indicate good model fitness, but also the results of Root Mean Square Error of Approximation (RMSEA):

$$\sqrt{}[(x^2 = 249.577) - (df = 215) = 34.577]/\sqrt{}[(df = 215(N = 100 - 1) = 21285)]$$

$$\sqrt{34.577}/\sqrt{21285} = 5.88022/145.8938 = 0.0403$$

Root mean square error of approximation indicates good model fitness if RMSEA $<$ 0.08 with Pclose $>$ 0.05). In this equation, RMSEA = 0.0403$<$ 0.08 just as its Pclose = 0.106$>$ 0.05 to thereby reinforce the null hypothesis that the use of the model in Figure 1 would enhance effective linkage of operational risk management with the process of value configuration and creation to create value drivers that also create the other values for an enterprise. Such logic is also supported in the results of Comparative Fit Index (CFI):

$$\text{CFI} = \frac{d_{null} = [(x^2_{null} - df_{null})] - d_{model} = [(x^2_{model} - df_{model})]}{d_{null} = (x^2_{null} - df_{null})},$$

$$\frac{(856.801 - 220 = 636.801) - (249.577 - 215.577 = 34.577) = 602.224}{(856.801 - 220 = 636.801)}$$

Comparative Fit Index (CFI)=602.224/636.801=0.9457

Comparative Fit Index (CFI) indicates good model fitness if it scores > 0.95. In this case, CFI= $0.9457 = 0.95$ supports the results of x^2/df and RMSEA about the fitness of the model in Figure 1.However, while also using a criteria of a score > 0.95, it can be noted that the results of Tucker Lewis Index (TLI) is only marginally significant.

$$\text{TLI} = \frac{\left(\frac{x^2_{null}=856.801}{df_{null}=220}=3.89455\right)-\left(\frac{x^2_{model}=249.577}{df_{model}=215}=1.16082\right)}{\left(\frac{x^2_{null}=856.801}{df_{null}=220}=3.89455\right)-1}$$

Tucker Lewis Index (TLI) = 2.73373/(3.89455-1) = 0.94444

It is a recent consensus that in the analysis of relative and incremental fit indices, values falling in the range of 0.90 and 0.95 only indicate marginal significance of the fit index. Using this statistical logic, it can be argued that TLI = 0.94444, only marginally corroborates the results of standardised regression weights-β- (factor loadings) in Figure 2 and Table 1 and squared multiple correlation coefficients (r^2) that operational risk management leverages a firm's value configuration and creation. Whereas a TLI score of 0.94444< 0.95 falls in the range of 0.90 and 0.95 to only imply that it is marginally significant, the results of Normed Fit Index (NFI) = 0.70871<.95 is not statistically significant:

$$\text{NFI} = \frac{x^2_{null}=856.801-x^2_{model}=249.577}{x^2_{null}=856.801} = 0.70871$$

Normed Fit Index (NFI) = 0.70871

In other words, apart from x^2 and NFI that did not indicate good model fitness, it is still evident from the findings that standardised regression weights-β- (factor loadings), squared multiple correlation coefficients (r^2), average variance extracted (AVE), composite reliability (CR) and x^2/df statistically corroborate the results of Root Mean Square Error of Approximation (RMSEA), CFI and TLI about the validity and reliability of the null hypothesis in Figure 1 that operational risk management leverages a firm's value configuration and creation. This creates combined value drivers that in turn drive the creation of enormous other business values to catalyse a firm's overall effective market performance.

8. DISCUSSION

Operational risk management creates the pillar against which value driven enterprises base their business decisions to configure and create value drivers that create other values to spur the improvement of a firm's overall effective market performance (KMPG 2015:2). It entrenches an operational culture in which firms may continuously strive for operational excellence in which quality, efficiency and waste minimisation are also strongly emphasised. It is not only the entrenchment of such a culture that leverages the effectiveness of value configuration and creation, but also consistent utilisation of the four steps' process of operational risk management that entail risk analysis, identification, measurement and intervention to enhance identification and elimination of operational failures, errors, defects, losses and wastes.

The resulting business values of all these may tend to be latent in the improved quality excellence, efficiency and waste minimisation. However, the effects of such operational risk management process on value configuration and creation may only be limited, unless it is linked to the process of identification and elimination of other risks such as occupational, economic, strategic, compliance and supply chain risks through an appropriate enterprise-wide risk management framework. As operational risk management process focuses on identification and elimination of errors in the operational processes, occupational risk management enhances identification and mitigation of circumstances that cause injury, harm, and health and safety incidents.

Whereas economic risk management mitigates risks linked to compensation for damages, fines, reputational damage, market and economic failures, on the other hand, strategic risk management edifies identification and mitigation of uncertainties resulting from strategy failure, new rival innovations, volatile changes and competition. Compliance risk management enhances the minimisation of risks arising from non-observance of relevant industrial practices, and health and safety legislations. This contrasts with supply chain risk management that controls supply and demand related risks as well as contextual risks.

Although it is such integrated operational risk management process that enhances the effectiveness of value configuration and creation, it is still often critical that an effective framework for value configuration and creation is developed and linked to an operational risk management framework. LEK's (2015:3) value creation theory emphasises the essence for the application of a four steps' process for value creation and configuration that include analysis and mapping value drivers, testing sensitivities, developing value drivers and controllability testing. Porter's (1985:71) value chain analysis agitates for the analysis of primary activities encompassing inbound logistics, operations, outbound logistics, marketing, sales and service, as well as support activities such as procurement, technology, staff and infrastructure.

However, the results of confirmatory factor analysis imply that the use of a combination of such techniques often get meta-morphed into a six steps' process for value configuration and creation that include analysis, identification, mapping, development, evaluation and improvement of value drivers. If linked to operational risk management, such a process influences identification and development of value drivers that induce quality excellence, process efficiency (efficient value chain and supply chain), and cost minimisation. It also spurs improvement of productivity, resource optimisation, customer satisfaction, better customer relationship management, competitiveness (increased market share, sales, revenue and profitability), capabilities' modifications and adaptation and improved financial bottom-line.

In other words, these value drivers are interactive and significantly co-related with each other to spur each other's' further creation and improvement of a firm's overall effective market performance. Unfortunately, as it had been indicated in the problem statement and the research hypothesis, lack of a theory linking operational risk management to a firm's value configuration and creation had been a limitation that constrained the extent to which firms were able to use operational risk management as part of the critical techniques for leveraging value configuration and creation.

9. MANAGERIAL IMPLICATIONS

To therefore scale operational risk management as part of the critical techniques for leveraging value configuration and creation, it is argued in Figure 5 that managers must focus on developing an operational risk management culture that facilitates consistent effective application of the four steps' process of operational risk management that include risk analysis, identification, measurement and intervention.

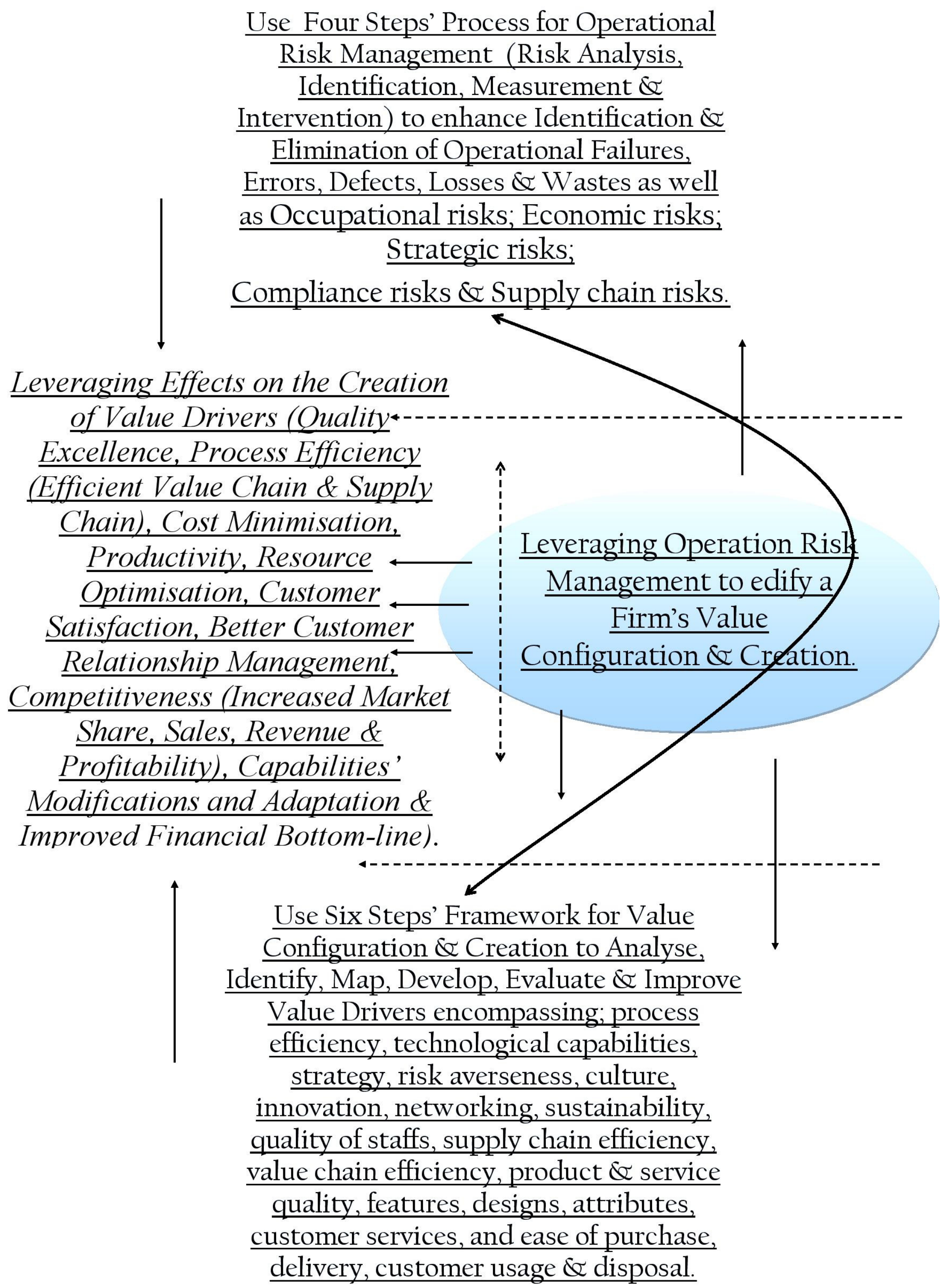

FIGURE 5: A business model for using operational risk management to leverage the overall effectiveness of a firm's value configuration and creation

Source: As extracted from the interpretation of the results of confirmatory factory analysis

Consistent use of such a framework will create a culture for constant identification and elimination of operational failures, errors, defects, losses and wastes.

Although it is the emergence of such a culture that will create the foundation for the development of operational risk management processes that edify value configuration and creation, it is still critical that the use of an enterprise-wide risk management framework as well as the process of operational risk management must be linked to the other processes for the identification and mitigation of the other forms of risks like occupational, economic, strategic, compliance and supply chain risks. This integrated operational risk management process leverages the effective use of the six steps' framework for value configuration and creation that entail value analysis, identification, mapping, development, evaluation and improvement.

The effective use of these six steps enhances identification and enrichment of value drivers linked inter alia to improved process efficiency, technological capabilities, strategy, risk averseness, culture, innovation, networking, sustainability, quality of staffs, supply chain efficiency, value chain efficiency, and product and service quality. Combined with the overall effectiveness of operational risk management, all these may spur the improvement of quality excellence, process efficiency and cost minimisation. It also leverages improvement of productivity, resource optimisation, customer satisfaction, better customer relationship management, competitiveness, capabilities' modifications and adaptation as well as improved financial bottom-line.

10. CONCLUSION

In the increasingly value driven contemporary markets, firms are increasingly searching for how best to improve value configuration and creation to spur the improvement of their competitiveness. However, limited studies on the domain of value configuration and creation has limited the development and evolution of an array of alternative theories that businesses can replicate in the endeavour of improving the effectiveness of value configuration and creation.

Even if it is evident that operational risk management edifies effectiveness of value configuration and creation, lack of a theory linking operational risk management to a firm's value configuration and creation had been a limitation. Such a limitation seems to have constrained the extent to which firms were able to use operational risk management as part of the critical techniques for leveraging value configuration and creation.

Although this research attempts to deal with this conceptual deficiency by suggesting the model in Figure 6, future studies can still explore how the other strategic management theories can be linked to value configuration and creation to enrich theories in the areas that seem important, but yet still largely ignored by most of the contemporary scholars.

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