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PMA 2014 Conference Abstract Deadline



Conference Abstract Submission Deadline Extension

In response to a number of requests for extensions, the deadline for submitting structured abstracts for presentation at the 2014 Performance Management Association Conference in Aarhus, Denmark has been extended until **31 January 2014**.

The conference is co-hosted by the University of Cambridge and Aarhus University and runs from 25-27 June 2014 with opening reception hosted by the Mayor of Aarhus on the evening of 24 June. The theme for PMA2014 is **Performance Management: Designing the High-Performing Organization**. Exploring the latest thinking, trends and research into how to drive enterprise performance through organizational design including but not limited to enterprise processes and systems, intellectual capital, innovation-driven social & environmental relevance, and excellence principles and practices.

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Questions may be directed to conference co-chair Rick Edgeman at RLEDGE@ASB.DK

Getting Alignment Right: There's More at Stake Than You Might Think

By: Maria Hetzel

An employee's commitment to help the organization achieve its goals is associated with the employee's level of engagement (Gagnon et al. 2008). In his examination of employee engagement, Saks (2006) distinguished between job engagement and organization engagement concluding that the latter is the stronger predictor of engagement consequences. Furthermore, he determined that the strongest antecedent of organization engagement is perceived organizational support (POS) (Saks, 2006). Importantly, POS creates an obligation for an employee to care about the organization's welfare and help it reach its objectives (Saks, 2006). The alignment process enables employees to engage in actions that support the organization (Gagnon et al. 2008; Kaplan & Norton, 1996; Kathuria et al. 2007). Defined herein as the vertical alignment of the organization's goals to team level performance measures, the alignment process includes a number of steps: communicate; translate broad strategic goals into operational terms; link to individual performance and rewards; review performance feedback; and learn (Kaplan & Norton, 2006; Neely et al, 2002). A plausible question to investigate is "in what ways does the alignment process influence POS and, thus, organization engagement?"

Methodology

A case study method was used in a large, national non-profit organization and a qualitative methodology was selected in order to explore the "how" and "why" associated with the research question. As such, what is presented herein does not provide a basis for scientific generalization but rather can be used to encourage dialogue and debate and the development of areas for further research. In addition to a literature review, data was collected through document reviews, informal observations, and in-person, semi-structured interviews with individuals at three levels of management (senior, mid, and entry) who had direct responsibility for aligning their team's performance to organizational goals. The interview guide included questions about the process of alignment and how it impacted the interviewees' perceptions of organization engagement and POS using the attributes associated with each concept.

Case Study Organization

Like many public sector organizations, the case study organization serves a large number of stakeholders with diverse objectives sometimes in conflict with one another. Its mission, vision, and goals are broad and it has a highly ambiguous work environment. Its performance measurement practices are limited to the use of a diagnostic performance measurement tool ("dashboard") that includes a number of short term, output oriented performance measures articulated in absolute terms and associated with the organization's goals; however, it does not include performance measures related to business process. In addition, it is used for legitimacy-seeking purposes and is decoupled from operations. As such, the organization's environment can be defined in a limited perspective akin to a "culture of performance measurement" in contrast to a "culture of performance management" (Micheli, 2008).

The organization has a proud history in leading social change and one of its greatest strengths is its employees' commitment to the mission and vision. However, it has matured and entered the decline stage of the organizational lifecycle as evidenced by characteristics such as poor communication, commitment to past strategy, resistance to change, and a rigid structure (Gupta & Chin, 1994). It is also experiencing a decline in organizational performance, such as diminished market share and compromised perceptions of relevance among its stakeholders – neither of which is included in the dashboard. Indeed it can be argued that it has drifted strategically (Johnson, Scholes & Whittington,

2008). Recognizing that the current orientation is insufficient to meet the demands of today's changing environment and would put the organization at risk of further decline, the CEO initiated change to create what can be described as a learning orientation.

Findings

The communication of the organization's goals can be described as passive which does not facilitate understanding resulting in varied and, at times, conflicting interpretations, which creates a frustrating work environment. The ability of the interviewees to understand how they support the organization's goals is compromised not only by the passive communication but also the lack of a step to translate the organization's goals into team level performance measures. In fact, there are not team level performance measures, but, the interviewees reported that they and their direct subordinates have individual performance objectives ("IPOs"). However, the line of sight from the IPOs to the organization's goals is reported as being weak. There is a review of alignment for IPOs but that is alignment between the supervisors and their direct subordinates. It supports the annual performance review process, which informs the individual-based incentive pay, but does not include a learning step.

"There are high level organizational goals that are not explained."

Senior Manager

The organization's performance measures do not include any measures related to business processes but all of the interviewees mentioned it as being important, its absence therefore created alignment tensions (Johnston & Pongatichat, 2008; Kathuria et al. 2007). Although the interviewees took no action to alleviate alignment tensions at the higher levels of the organization, they solve for it at the lower levels by engaging in business process activities as needed and noting it in their IPOs. This behaviour can likely be explained by expectancy theory (Gomez-Mejias & Franco-Santos, 2010). As long as IPOs are achieved, performance is considered at least adequate and is rewarded regardless of alignment to organizational goals. As such, the employee is motivated to act accordingly. It can be concluded that a step in the alignment process that links the organization's goals to individual performance and reward is lacking.

"There is the need to keep the function functional. There are not any goals or performance measures related to building capability and capacity and developing processes. This creates a resource issue too."

Senior Manager

It was difficult for the interviewees to determine if they are aligned to the organization's goals. In fact, none of the interviewees could say that they were aligned. The problems caused by the lack of alignment, such as duplication of activities, ambiguity in roles and responsibilities, and conflict, are categorized in the literature as role stressors, which are antecedents to POS (Rhoades & Eisenberger, 2002). It can be argued that such problems compromise the support the organization provides to its employees and reduces their belief that the organization is committed to them (Rhoades & Eisenberger, 2002; Saks, 2006). In addition, alignment is a factor controllable by the organization. To the extent that employees attribute role stressors to conditions that are controllable by the organization there should be a reduction in POS (Rhoades & Eisenberger, 2002).

"How does the lack of clarity suggest the organization cares about my well-being? It does not. Now that I think about it I would say that alignment would impact this in a positive way if it was done right – and 'done right' are the operative words."

Mid-Level Manager

From an exploratory perspective, the lack of an alignment process creates role stressors that compromise POS. Since POS predicts organization engagement, it can be further suggested that it too will be compromised. In the case study organization, the interviewees reported that POS was especially compromised by the lack of an alignment process and more so

"The current lack of alignment is inconsistent with my goals and values."

Entry Level Manager

Getting Alignment Right Cont...

when compared to organization engagement. It is possible that a mediating factor to organization engagement could be the commitment many employees have to the organization's mission and vision, something mentioned by one of the interviewees and also evident in the annual employee satisfaction survey.

Discussion

An organization in decline can go in one of two directions, and revival is not easily accomplished (Gupta & Chin, 1994). For the case study organization, there are a number of change paths available but the one being implemented by the CEO is transformational but incremental and, hence, evolutionary in nature (Balogun & Hope-Hailey, 2004; Johnson, Scholes & Whittington, 2008). As such, it is significant change and involves communicating a clear strategic vision and empowering the organization (Jamali, Khoury & Sahyoun, 2006; Johnson, Scholes & Whittington, 2008; Yukl, 2009).

An organization in decline will give customer issues proactive attention as it seeks to build a new market or rebuild market share (Jawahar & McLaughlin, 2001). However, Rey-Marston and Neely (2010) hypothesized that misaligned performance measures will lead to tensions in the relationship with the customer and ultimately affect performance. In addition, in the decline stage of the organizational lifecycle, technical efficiency may be an important concern (Jawahar & McLaughlin, 2001). However, in the case study organization, there is an alignment tension in the area of business process. It is suggested that, in some cases, misalignment may not be accidental but understood and created by managers due to the tension between "top level" strategic metrics and "bottom line" operational metrics (Melynk et al. 2005). However, this is in contrast to Ittner and Larcker (2003) who highlight the frequent failures of management to link performance measures to an organization's strategy, and the alignment between strategy and performance measures being associated with higher performance (Abernathy & Lillis 1995; Ittner & Larcker 1995; Rey-Marston & Neely 2010; Miles & Snow 1984). Thus, it is argued that the lack of a well-executed alignment process in the case study organization could in fact further the organization's decline.

A well-executed alignment process can likely be considered as an assurance that support is available from the organization since it enable employees to carry out their jobs effectively. Indeed, Kolehmainen (2009) argues that alignment can help with engagement and empowerment when managers take central responsibility for the relevance of performance measures, which can be used as a dynamic lever for alignment. Newens (2008) suggests that employees can be more engaged with their organization by participating in goal setting, goal integration, individual assignment and personal accountability. Therefore, it is also argued that a well-executed alignment process may address the compromised POS and indeed facilitate the empowerment needed for change.

Micheli and Neely (2007) suggest that alignment may not be feasible or desirable in the public sector – a sentiment shared by Kaplan (2001) and Franco and Bourne (2003). Some argue that alignment is most often a condition to be strived for rather than accomplished (Miles & Snow 1984). For the case study organization, it is suggested that it strive for alignment and deploy a well-executed alignment process in order to improve management's understanding of how their teams align to the organization's goals and enable POS, both of which will facilitate change – there is much more to lose by not doing so.

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Triple 'P' Approach (Power, Performance, and Precision) and Supply chain Management

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Supply Chain Management has evolved in various forms, the journey started with SCM philosophy, moved to theory than to concept, flourished as strategies and currently practiced by every organization for its sustainability. The current orthodoxy in SCM revolves around efficiency and effectiveness which are chasing the universally followed principle to get the right thing at right time and at the right cost. But then the question arises can effectiveness and efficiency define the term 'right'? Are there any other dimensions which contribute to the principles of getting the 'right'? (Quinn 1997, Farmer, 1997, Inman and Hubler, 1992, Ellram and Cooper 1993, Ragatz et al., 1997; Morgan and Monczka, 1995, Cox et al., 1995, St. Onge, 1996, Lummus and Alber, 1997, The Supply Chain Council 1997).

More than 15 years of academic and consultancy experience of mine reinforces to this question assertively; it's not just effectiveness or efficiency but it's how the organizations balance among the three 'P' – 'P'ower, 'P'erformance and 'P'recision and the approach combining these three Ps collectively named as the Triple P Approach. In this era of cut throat competition for survival, every organization has to adopt multidimensional tactics which vary from chain to chain and among the various stakeholders who form the supply chain. Supply chain management theories and literature's richness are acknowledged among academicians and practioneres since 1980, ranging from supplier strategies to partnership qualities, from tangible to intangible measures, from logistics management to distribution patterns, from layout design to zero defects, from customer satisfaction to the latest environment friendly green supply chain and much more. All the developments, innovations in the theory, frameworks or models were grounded with the base of efficiency and effectiveness. However there is immense necessity to understand the same SCM from Triple 'P' approach perceptive.

Power of supply chain lies in its strength to deal with the different uncertainties that it comes across, its flexibility to accommodate changes and in supply chain power is synonym to value. Power can be defined with many aspects but with respect to supply chain Power is defined as 'the ability of a firm to own and control critical assets in markets and supply chains that allow it to sustain its ability to appropriate and accumulate value for itself by constantly leveraging its customers, competitors and suppliers' (Cox et al., 2002). Huand Sheu (2005) viewed power in terms of a strategy-influencing source that is oriented from one channel member to another. As a result, power is viewed as an effectively applied means to gain certain objectives by utilizing influence strategies, once the power over another firm was attained (Hu and Sheu, 2003; Payan and McFarland, 2005). An examination of all of these definitions of power from different perspectives allows us to conclude that power generally refers to the ability, capacity or potential to get others do something; to command, influence, determine or control the behaviours, intentions, decisions or actions of others in the pursuit of one's own goals or interests against their will.

As essentially, business is about appropriating value for oneself; it is not about passing value to customers unless circumstances decree that this is the only (and it is normally the least desirable) option available to a company in order for it to sustain itself in business. Despite this, it is important to recognise that if one was in this position then assuming that customers value what we provide for them, we would be in a situation of power over the others in our supply chain relationships. This must be the ideal position to be in, yet the concept of power is rarely discussed in supply chain writings except to deny it as important. Both of these views are misguided. This

is because most writers operate with a theoretical understanding of the causes of sustainable business success, and focus their analysis on the description of what companies do, rather than have a theoretical understanding of what it is that allows companies to be successful in the first place. It can be argued that companies are only successful if they possess power over something or someone. This is because, only by having the ability to appropriate value from relationships with others whether these are with customers, employees or suppliers can business success be sustained (Cox, 1997). There must, therefore, be objective conflicts of interest between vertical participants in supply chains, just as there are between those competing horizontally in the markets that form around specific supply chain resources. This is because everyone in the chain is seeking to appropriate value for themselves from participation and, assuming economically rational behaviour, must wish to appropriate more of the value for themselves if they are able to do so. Because certain players in the chain recognise that they have limited power to appropriate value from others, is not the same as saying that they would not seek to leverage more value for themselves if circumstances allowed them to do so.

Why is this discussion important? The reason is that in understanding how to manage supply chains strategically and operationally, it is essential that practitioners properly understand the power structures that exist in their supply chains. If they do not, then both practitioners and academics may well be guilty of recommending strategies and operational practices that are inappropriate for the supply chains in which they operate. This is because they may fundamentally misconceive the factors that are causal in the successful appropriation of power.

Performance of the supply chain initiated with the basic argument of this writing is that business success will be derived from companies managing to enhance the total performance of the supply chain, so that it can deliver improved management of supply chain which further improves the business activity. But it might lead to a million dollar question that How Do Companies Measure the Performance of their Supply Chains?

Academicians, practitioners and research scholars are investing their time, efforts and knowledge to come up with a set of measures and a generalized definition. Few pioneering definitions which describe performance of supply chain are; Performance is defined as the operational excellence to deliver leading customer experience (Simchi-Levi et al., 2003) and Neely et al, (1991) define performance as the process of quantifying effectiveness and efficiency of actions.

It has been widely reported that there has been a revolution in performance measurement in the last 20 years. The enormous interest in measurement has manifested itself in practitioner conferences and publications as well as in academic research (Neely, 1998). The growing importance of the management of supply chains has motivated researchers and practitioners to develop and implement measures that can be used to establish supply chain performance. Performance measurement can only help to identify the problems existing in the current supply chain, while it is helpless in exploring the root causes of these problems and thus choosing corresponding actions to improve supply chain performance (Kocaoğlu et al, 2013). There are number of definitions added to body of knowledge by numerous authors.

The measurement of supply chain performance requires the creation of an inter-organisational and intra-organization assessment system. Such systems can feasibly be used to identify opportunities for improved supply chain efficiency and competitiveness, to help understand how companies operating in supply chains affect each other's performance, to support the supply chain in satisfying consumer requirements and to assess the result of an implemented initiative (Lyons et al, 2012). Performance of supply chains is measured on the basis of appropriate

Triple 'P' Approach Cont...

key performance indicators (KPI) of the firm. Three supply chain measures set (SCS) are evident in SCM literature: cost efficiency, time responsiveness and hybrid, of the two which are popularly studied as financial measures. With precision, if the performance of supply chains is measured, then it will be recognized as critical feature in gaining competitive advantage for every organization as it is rightly said which can get measured is better controlled, which in turn is the answer for the basic objective of the organisation to know 'where they are and where they want to go'.

Precision means accuracy in almost every process which is and are the integral part of supply chain, whether the precision required is in information sharing or demand forecasting, managing quality or design of goods and services, process strategies or capacity planning, inventory management or human resources management etc. Precision in decision making determines the smooth or precarious functioning of supply chain. It's difficult to get a definition in literature that defines precision of supply chain, as there are no specific KPIs or strategies or practices which determine precision, is more about the management thinking, than what exactly is management thinking?

"a way of thinking that is devoted to discovering tools and techniques that provide for increased operational effectiveness and efficiency throughout the delivery channels that must be created internally and externally to support and supply existing corporate product and service offerings to customers". - Cox, 1997

This way of thinking has its lineage in the work that will lead to the phenomenal success of the organization or its supply chain.

Conclusion

Goals need to be challenging, but also realistically achievable so far all the three 'P' are addressed in silos which result in some or other deficiency in the supply chain. Thus the need of the hour for every organization is to combine the three 'P's. This Triple 'P' Approach when integrated possesses the potential to change the scenario of the organization. The conclusion that can be drawn from this article is, that there cannot be any one single approach to supply chain management that is appropriate in all circumstances. Clearly, certain approaches will be more or less conducive to particular supply chain structure. While there are still a considerable ways from completing and competing the proper analytical categorisation of supply chain power types, performance measures and precision, the linkage of these triple 'P's with the most appropriate management strategies for appropriating value, I believe this would be the first step in that direction.

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The bad performance measurement habits that our colleagues don't know they have

Stacey Barr, Director of Stacey Barr Pty Ltd

Just about all the things that most of us currently do to choose, implement, and use performance measures are the same things we've always done and the same things that everyone else does. But common practice doesn't mean good practice. Our struggles with performance measurement are caused by common practices that are actually bad habits. Below, I've distilled eight of what I consider the most insidious of bad performance measurement habits.

Bad Habit #1: Using measures to judge

'Whenever there is fear, you will get the wrong figures'. – W. Edwards Deming¹

Measuring people, or using measures to judge or assess how people are performing, is a bad habit because it causes people to fear what the measures will show. The consequences are especially bad when measures are used for rewarding or punishing people. To protect themselves, people will make excuses, fudge the figures, and sweep problems under the rug. Measuring people, or using measures to judge people, does not encourage true performance improvement.

An example from when I worked for the railways was people leaving cancelled trains out of the calculation of the On Time Running measure so that the measure would look okay. People would also cancel train services that were running late enough to affect their On Time Running measure!

In call centres, Average Call Handling Time is a common measure. What do you think a call centre operator is going to focus on when he or she talks to a customer if the target is to keep average call durations under three minutes? The primary focus will probably not be helping the customer with his problem especially if it looks like a problem that will take longer than three minutes!

We don't need to measure people's performance. Managers need to coach and facilitate people's performance, but measuring it only causes fear. And we don't need to measure people in order to reward them financially either. Dan Pink is just one of many contemporary experts who credibly discusses the problems with the out-dated method of using money as a motivator. One problem is that people are actually intrinsically motivated by fulfilling a purpose more than they are extrinsically motivated by increasing a company's profits or their own. Another is that people want their work to be creative and self-directed; as soon as we start measuring them, it turns their work into drudgery. Humans are not economic robots. Let them use measures to creatively improve the work they do, not as rods to flog their backs.

Bad Habit #2: Using weasel words

'There have been signs of decay in the language of politics and academia for years, but the direst symptoms are in business; and the curse has spread'... – Don Watson²

Using management jargon, motherhood and apple pie clichés, and other infamously wishy-washy words to write our goals or objectives is a bad habit – a bad habit that people joke about but still accept as the way things are done. The following kinds of words are becoming well known as 'weasel words':

adaptive, balanced, capacity, dynamic, effective, foster, empowered, fit for purpose, growth, holistic, inclusive, key, leveraged, needs, outcomes, productivity, quality, reliability, sustainable, transparent, utilised, value, well-being...

Using weasel words is a bad habit because these words have multiple undefined meanings – or no clear meaning at all – so they make goals and objectives near impossible to measure. Imagine trying to quickly find meaningful measures for goals like these:

‘Provide efficient, unique, unbiased, and responsive, high-quality support’ (from a military organisation)

‘Strengthen student engagement and learning outcomes by enhancing student support and intervention services’ (from a government education department)

‘Be a leader in articulating and characterizing the dynamic system of scholarly communication’ (from a library association)

I’ll bet you can’t quickly find a measure that would determine whether any of these goals are achieved. And I’ll bet many of you grimaced because your organisation or business has goals or objectives like these too.

Bad Habit #3: Brainstorming KPIs

‘If it matters at all, it is detectable/observable. If it is detectable, it can be detected as an amount (or range of possible amounts). If it can be detected as a range of possible amounts, it can be measured’. – Douglas Hubbard³

Choosing performance measures or KPIs by brainstorming ideas and then voting on them is a bad habit because it produces lists of measures that are as useful as screen door on a submarine. Typically, brainstorming results in too many suggested measures and no way other than a popularity contest to work out which ones to choose. Often, the ideas that are proposed aren’t even performance measures, and this little fact goes unnoticed by just about everyone. Later, we all wonder why we can’t implement the measures or why those measures don’t seem to be very useful.

Imagine brainstorming measures for innovation: ‘Okay, everyone: what are some measures for innovation?’ The first suggestion is ‘Innovation Survey’. But that’s not a measure, it’s a data collection method. Another suggestion is ‘innovation training’. Again, that’s not a performance measure, it’s an action. The next suggestion is ‘number of ideas generated’. It’s a measure but a very trivial one that gives little evidence of the results we likely want from innovation. Someone suggests ‘Innovation Success Rate’. It sounds fabulous, but no one can describe exactly how to calculate it.

Brainstorming is a creativity tool, not a technique for selecting performance measures.

Bad Habit #4: Ask people to simply sign off

‘[M]easurement is not something that should be reserved for the select few; in a high-performing organisation, measurement is everybody’s job’. – Dean Spitze^{r4}

Saving people the pain of getting involved in measurement by doing it for them and then emailing a measure report to get their sign-off is a bad habit. It’s a bad habit because we don’t

The bad performance measurement habits that our colleagues don't know they have

get true buy-in or ownership when they are simply asked to indicate their acceptance of a list of measures that others chose or designed. People will take a cursory look at what we produced, make some assumptions, and tick their sign-off. Then later on, they will debate the measures, complain about data quality problems, and make excuses for not hitting targets.

A few years ago I was invited to submit a proposal for assisting an agency in designing a set of landscape fire performance measures on behalf of several other government agencies. They declined my proposal because they felt it required too much time and input from their stakeholders. A few years later I was invited by three of those stakeholders to help them come up with some landscape fire performance measures that suited them because they didn't buy into what the original agency had ended up producing.

Bad Habit #5: Rush to data and dashboards

'Today, everybody wants a dashboard. Like many newcomers to the technology scene, dashboards are sexy. Software vendors work hard to make their dashboards shimmy with sex appeal. They taunt, "You don't want to be the only company in your neighborhood without one, do you?"' – Stephen Few⁵

Handing over poorly detailed performance measures to analysts and expecting them to collect and analyse the relevant data – or to dashboard teams to plug into a performance dashboard – is a bad habit. It's a bad habit because what usually ends up in the performance report or dashboard is not what the measure owners intended. Sometimes that's obvious to the measure owners, and they'll complain that the dashboard isn't useful or trustworthy. Sometimes it's not obvious to them, and they go right ahead and make decisions with what they don't realise is the wrong information.

How many different ways do you think you can calculate a measure of on-time performance? If that's all the operations manager asks for, then she's going to end up with one or more of a range of possible values, each based on different types of statistics (such as a percentage or an average), different sources of data, and different rules about scope. The same goes for many other seemingly innocent performance measures, including customer satisfaction, employee engagement, return on investment, and even profit. These could all be calculated in numerous very different ways.

Bad Habit #6: Use reports to CYA

'The annual report is a prime example of a document of declaration. It is a marketing document, and CEO letters and interviews that are part of the annual report provide sound bites that cannot be verified. The abuse of the annual report through exaggeration and marketing hype has almost rendered this expensive document a useless artifact'. – A. Larry Elliot & Richard J. Schroth⁶

Filling performance reports with lots of detail – tables of numbers, assorted graphs, progress reports, action milestones, and reasons (excuses) for not hitting targets – is a bad habit. Usually this kind of padding happens because people are worried that managers will ask questions about unacceptable performance, so the report preparer adopts the CYA (cover your arse) principle. When bad habit #1, using measures to judge, is alive and well, the CYA style of performance report is made as thick as possible. Detail might sound potentially useful, but this is a bad habit because reports like these fail to answer the three fundamental questions that would enable users of the reports to take the right action to improve performance. The

questions are:

1. What is performance doing relative to target?
2. Why is it doing that?
3. Now what do we need to do to move it closer to target?

The questions that CYA-style reports do answer are more about program management or statistical status reports:

- How was performance for last month?
- Who did what during last month?
- What are all the related measures and analyses related to what we did?
- What are the projects we worked on?
- How many milestones did we hit?
- Why didn't we hit all the planned milestones?

The focus is in the weeds, so no one is managing the landscape.

Bad Habit #7: Compare this month to last month

'Thus we have the two mistakes that we can make when we attempt to use data. Either we can interpret noise as a signal and chase after explanations that do not exist. Or, we can interpret a signal as a bit of noise and fail to learn that which could be learned'. – Donald Wheeler⁷

Deciding whether performance is getting better or worse based on what this month did compared to last month is one of the most insidious of the bad habits, and it's more invisible to people than any other. This is a bad habit because it ignores the fact that all things naturally vary. What makes last month an appropriate baseline to evaluate this month's performance? What if last month was unusually good or abnormally bad? Do we really think that every variation is a signal of change? All things vary routinely to some extent, even when in a stable and unchanging system. The real question should be: how can we know when the pattern of routine variation has changed?

If we set arbitrary cut-offs for percentage-difference comparisons between this month and last month, how do we know whether the percentage cut-off we chose is smaller than or larger than the routine variation of the measure? We don't know unless we've measured the routine variation of each of our performance measures. If we use statistical techniques, we have to also use statistical thinking. Comparing this month to last month, or to target, or to year-to-date, or to the same month last year are all statistically flawed methods for attempting to get the truth out of our measures.

Bad Habit #8: Use educating, resourcing, & funding as improvement initiatives

'As organizations begin to accurately specify value, identify the entire value stream, make the value-creating steps for specific products flow continuously, and let customers pull value from the enterprise, something very odd begins to happen. It dawns on those involved that there is no end to the process of reducing effort, time, space, costs, and mistakes while offering a product which is ever more nearly what the customer actually wants'. – James P. Womack & Daniel T. Jones⁸

Fixing performance problems by educating people, increasing staffing levels, or seeking more funding or a bigger budget is a bad habit. This is a bad habit because all these methods do is

The bad performance measurement habits that our colleagues don't know they have

compensate for sub-par performance rather than fix the underlying causes of it. This approach assumes that the work processes, policies, or systems that were designed to deliver the results that we're measuring are working as well as they can. It assumes that the cause is 'out there', so, rather than changing something we are doing 'in here', we need more resources to cope with the problem.

I listened recently to a radio program about a researcher trying to find a way to increase the number of patients in rural communities who stick with long-term medical treatment. Educating the patients about the importance of continuity of treatment wouldn't have made a difference. Neither would have throwing more government funding at rural health programs. And neither would have increasing the staffing levels in rural health clinics. Why? Because the root cause was the discomfort that rural men have with being treated by female health practitioners, who happen to make up the vast majority of health practitioners willing to work in rural communities. Before we can improve performance problems, we need to understand their root causes. When we fix the root causes instead of compensating for them, we generally get a bigger and longer-lasting result for a smaller investment.

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5. Stephen Few. Information Dashboard Design: The Effective Visual Communication of Data. O'Reilly, 2006.
6. A. Larry Elliot & Richard J. Schroth. How Companies Lie: Why Enron is Just the Tip of the Iceberg. Nicholas Brealey Publishing, 2002.
7. Donald J. Wheeler, Ph.D. Twenty Things You Need to Know. SPC Press, 2009.
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PMAA Australasia (PMAA) Conference Report

The first PMA Australasia (PMAA) Conference was held at Rydges Lakeland Resort, Queenstown, New Zealand between 30 October and 1 November 2013. This two-and-half-day conference was chaired by Ralph Adler, Richard Greatbanks and Carolyn Stringer, all from the University of Otago Business School, and attracted participants from as far away as UK, Norway, Denmark, Hungary, UAE, Indonesia, and many from Australia and New Zealand. Keynote addresses were provided by Prof. Margaret Abernathy, University of Melbourne, Australia, Prof. Mike Bourne, Cranfield School of Management, UK, and Mr Adam Feely, CEO Queenstown and Lakes Council, New Zealand.

The main focus of this conference was to provide a performance measurement and management conference event in the southern hemisphere, which brought together practitioners and academics, and to this end delegates presented papers in the areas of public sector, sustainability and not-for-profit, accountant practice, quantitative analysis techniques, and performance planning and systems.



In addition to the Keynotes and presented papers, delegates attended the first PMAA Annual General Meeting to discuss how the discipline of performance measurement and management could be developed particularly within the Australasia region. The meeting concluded with a commitment to support and raise awareness of performance measurement and management issues within the region with future conferences and events.

The after dinner speaker at the conference dinner was Hamish Bond (MNZM), the New Zealand Olympic gold medalist at the 2012 London Olympic Games. He has won four consecutive World Rowing Championships gold medals and has set two world best times. Hamish presented conference delegates and guests with a candid, and often humorous glimpse into his life as an elite gold winning athlete, and the training and personal focus which goes into achieving success and the top of his sport. Hamish provided the chance for all delegates to hold his London 2012 Olympic gold medal!

On the final afternoon conference delegates were taken on a cruise of Lake Wakatipu aboard the iconic steamship the TSS Earnslaw. This conference demonstrated the continued interest in performance measurement and management within the Australasia region, and provided a relatively small but friendly and engaging academic, practitioner and social event.

Richard Greatbanks, University of Otago Business School, Dunedin, New Zealand.

Hoshin Kanri through the eyes of English Language Texts

Harry Witcher, University of East Anglia, UK

This article is based on a review of the English language hoshin kanri literature and hoshin kanri research carried out at the Norwich Business School. The objective is to explain the hoshin kanri approach, and by so doing, to contribute an insight into the usefulness of the Deming cycle (PDCA) for managing the deployment of objectives in strategic planning. This principle is additional to the existing concepts discussed in the literature of managing by objectives and the balanced scorecard. A PDCA approach to managing the strategy process may not sit easily an outside-in view of strategy thinking, but the conclusion of the article is that when strategy calls for an organization-wide effort, hoshin kanri is an effective and managed way to achieve this.

Introduction

This article examines the foundations for thinking about the scope and practice of hoshin kanri in English language publications since the late-1980s. A full annotated English language hoshin kanri bibliography of 130 publications has now become available for the first time (see Witcher 2013). The years, 1990-1995, saw a peak of publications that roughly corresponded to the high water mark of total quality management (TQM) in Western countries. Another peak came during 2006-2010; a time when the popularity of TQM revived and a general interest grew in lean production. Overall the content and context of the literature are little changed up until the present, and publications almost all fall within the quality management and operations literature, rather than in that of strategy and strategic management. While quality management emphasizes the strategic power of hoshin kanri, there are virtually no available sources within the mainstream strategy and strategic management canon about hoshin kanri.

Learning from the Japanese

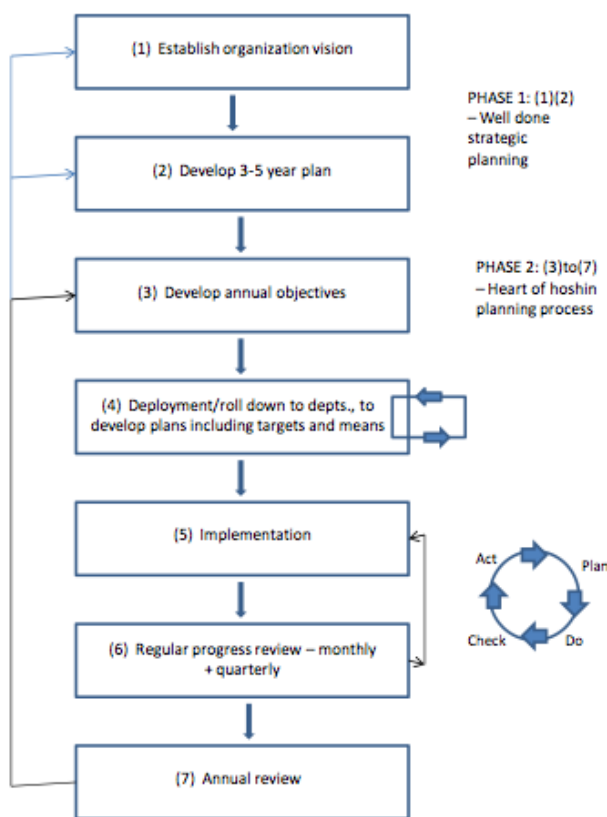
The competitive success of Japanese companies during the 1980s saw the rise of new institutions that sought to learn about total quality. One of these was GOAL/QPC, a nonprofit educational institute, formed in 1978 as a community-based group to promote jobs (GOAL stood for the Growth Opportunity Alliance of Greater Lawrence). It took an early leadership position in advocating hoshin kanri (Cole 1998) and in 1988 formed a members' research team to promote Hoshin Planning/Management by Policy. Members included Dow Chemical, Procter & Gamble, Hewlett-Packard, and IBM. It produced the first English language report about hoshin kanri (GOAL/QPC 1989). In the same year, Bob King, a GOAL/QPC executive, published his text, which was based on a visit to Japan by GOAL/QPC delegates the previous year (King 1989).

The GOAL/QPC report identified three areas for total quality: daily control, cross functional management, and hoshin planning. Daily control maximises an individual's departmental performance, cross-functional management maximises coordination and cooperation among related functions, and hoshin planning maximises a focus extending from the CEO to line employees on strategic targets. Hoshin Planning is described as "simply PDCA applied to the planning and execution of a few critical (strategic) organizational objectives." PDCA is the Deming cycle of phases needed to manage a business process: that is, plan the process, do the work to plan, check that the plan is being carried out effectively, and act if it is necessary to change the plan or to do things differently. A model is given of the 'core hoshin planning process' (see figure 1):

While the model looks similar to any planning process, the difference lies in the application of

planning tools with quality principles and tools; such as PDCA, a small number of focus points for developing annual objectives (the Pareto principle), the strong customer focus, fact-based data, and root-cause problem solving. The last step in the model involves reviewing the hoshin process itself – this concern with process is unusual in conventional strategic planning.

The one year plan starts the ‘heart of hoshin planning process’. Annual objectives are developed out of vision and longer-term plans into a few key objectives that must be achieved during the year (step 3). The key departments/functions are then involved in the development of sub-objectives and plans. Coordination is worked out during deployment through a process of reaching agreements about how plans can be achieved; because this involves throwing possibilities to and fro between effected parties it is likened to a game of catchball (in step 4, figure 1).



Source: GOAL/QPC 1989, p.13

Figure 1: The core hoshin planning process.

The Bob King text reports on a visit to Japan by GOAL/QPC delegates, where they found hoshin kanri to be the only system common to the companies visited. *“Hoshin planning helps to control the direction of the company by orchestrating change within a company. This system includes tools for continuous improvement, breakthroughs and implementation. The key to hoshin planning is that it brings the total organization into the strategic planning process, both top-down and bottom-up. It ensures that the direction, goals, and objectives of the company are rationally developed, well defined, clearly communicated, monitored, and adapted based on system feedback.”*

King translates hoshin as policy or target and means, and kanri as planning or management. The term, hoshin planning, was used by Yokogawa Hewlett-Packard, and another name, policy deployment, companies were the pioneers - Florida

Light and Power. These Light and Power was the first Western company to adopt hoshin kanri, and both companies were winners of the Japanese Deming Prize.

Management by objectives

A major theme that runs through the literature is to distance hoshin kanri as a deployment system different to management by objectives (MbO). The origins of hoshin kanri owe much to the adoption there of MbO ideas, but its development owed much to Schleh (1963), who advocated that the “specific accomplishment expected of each individual [should be accomplished] ...so that the work of the whole management group is soundly blended at a particular moment of time” (1963:19). Objectives and means should be determined so it is to the advantage of one person to help another. Otherwise a strong drive toward one particular result may lead to an imbalance in

Hoshin Kanri through the eyes of English Language Texts Cont..

the company; in particular, each objective should be carefully scrutinized to determine the optimal point beyond which the objective might be detrimental to the achievement of other objectives. This is discussed in Akao.

Yoji Akao

The most cited work in the English language is an edited text by Yoji Akao (1991). Published originally in Japanese (1988), its chapters were written by a group of Japanese academics. It is a difficult introduction for managers unfamiliar with quality management, but it is full of insight. The book explains the 'impetus to systematize hoshin kanri' noting the term appears first in an internal document in 1962 of the Bridgestone Tire Company. The formulation and implementation of strategies and plans had previously been understood as stand-alone management items rather than as an organization-wide managed business process. Akao outlines a ten step process, which is similar to that of GOAL/QPC. A diagrammatic definition of the hoshin kanri process is also given by Nomi (Akao et al. 1991: 22-23). This clearly shows how the steps relate to the overall PDCA cycle for the process, and for the overall annual management of annual priorities.

Much of the book is devoted to the relationship of hoshin kanri to cross-functional and daily management, in particular how the daily and cross-functional control items are used to manage policy. According to Nomi cross-functional management can be defined as control activities that include planning for elements like quality, cost, delivery, and employees (QCDE). Daily management or departmental/functional management is defined as all the activities that each department must perform for itself on a daily basis, which are necessary to most efficiently achieve their business goals. He defines hoshin kanri "as all organizational activities for systematically accomplishing the long and mid-term goals as well as yearly business targets, which are established as the means to achieve business goals" (Akao et al. 47).

Nomi states that daily control is like paying attention to one's health every day: this might include getting enough sleep, eating properly, drinking in moderation, and exercising. Hoshin kanri on the other hand, is paying attention to critical events, such as illness, and includes long-term health measures such as joining a health club. The same control items (typically categorised throughout the an organization under the QCDE objective scheme) are set up for daily control and hoshin management and are evaluated throughout the organization so that further action can be taken on them as required.

Sheridan (1993), a manager who worked in the management services department of Florida Power and Light, refers to the role of an executive-level policy committee to conduct the hoshin kanri process, and executive cross-functional committees, which oversee performance in the areas of QCDE. Cross-functional committees provide input to the policy committee and later to the quality committee to draft and check policies. The cross-functional committees review project work that relate to the QCDE areas and which is additional to routine work. The use of cross-functional committees is almost unknown in Western organizations. At the time when the Japanese were first introducing cross-functional structure in the 1960s, Western corporations were moving away from management by committee towards more devolved and divisional forms of corporate control (Jantsch, 1967).

Hewlett-Packard

Hewlett-Packard was influential for its standardised materials, including an annual hoshin planning table, implementation (Gantt style) table, review table, and a business fundamental table

– this last one defined QCDE objectives (Witcher and Butterworth 2000). The hoshin plans and business fundamentals were kept separate; the former concerned with a very few breakthrough objectives, and the latter with more numerous key performance indicators (KPIs) for driving incremental improvement. This dual model provides a basis for the concepts explained on the web pages of Total Quality Engineering, which are explained more fully in Babich (1996).

The balanced scorecard

The division in thinking between breakthrough and improvement is evident in Kaplan and Norton's discussions of the balanced scorecard. To ensure that scorecard objectives and measures remain low enough in number to be proactively manageable at a senior level, Kaplan and Norton argue that a strategic scorecard should be based on vision: a strategic change that moves the organization to a new position. This contrasts to a performance management scorecard, which relates to business fundamentals and KPIs that are used to monitor fitness for purpose – or the health of the organization to carry out its present mission. KPIs are diagnostic measures that involve a senior level only when significant corrective action is required. In this sense, a breakthrough policy is a scorecard strategic initiative to advance vision, which are likely to bring changes to the existing business model and may as policy is deployed require making changes to KPIs.

There are obvious linkages between the balanced scorecard as a strategic management system and hoshin kanri. Arthur Schneiderman developed the prototype scorecard in 1987 while Vice President of Quality and Productivity at Analog Devices Incorporated (Schneiderman 1999: 7). Analog is mentioned in the original Kaplan and Norton (1992) article and is the anonymous semiconductor company referred to as ECI. Hoshin kanri was used to deploy the scorecard at Analog. The balanced scorecard's four-part objective set is very similar to the cross-functional management of QCDE objectives: quality corresponds to the customer perspective, and the cost, delivery, and employee objectives correspond to the financial, internal business process, and learning and growth perspectives, respectively.

Since the 1990s there is little evidence to show that hoshin kanri has been used very much to deploy the scorecard. This could suggest that the two may be competitors as alternative ways of thinking about strategy: that is a Western and a Japanese way. The scorecard is centred on selecting and monitoring the right measures to drive change, while hoshin kanri is primarily focused on the capability of the organizational processes that deliver value to the customer. The balanced scorecard is strong on what should be done, but has little to say about how it should be done. There is an assumption with the balanced scorecard that an organization has the understanding of its processes to make sure of deployment and implementation.

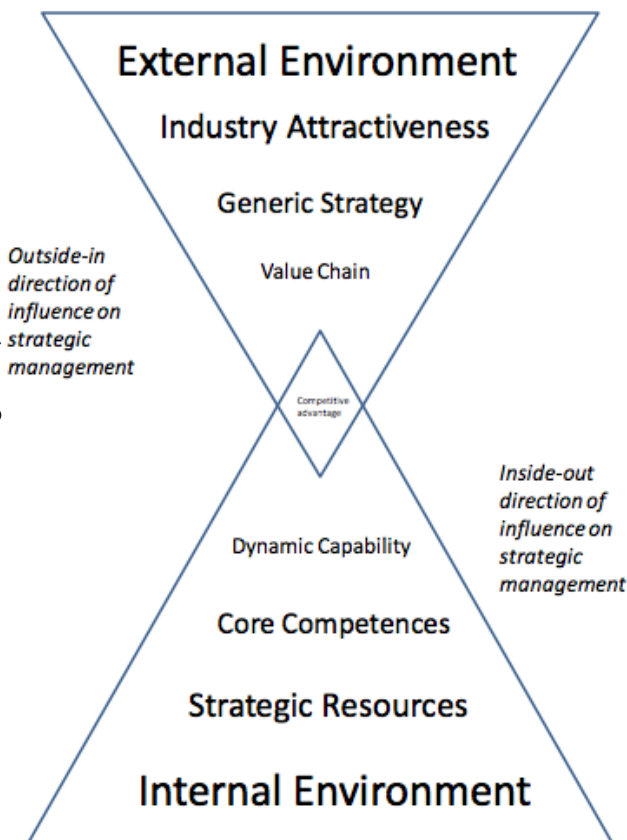
Strategic planning

In an excellent paper by Kano (1993), giving a Japanese view of TQM in Western organizations, it is pointed out there are two categories of strategy implementation: one is effective immediately after decision making, such as involves personnel, budgeting, or mergers and alliances; and another that is effective only with an organization-wide effort such as hoshin kanri favoured by the Japanese. This difference is a reflection of two traditions in strategic management. One is a market-based view and the other a resource-based view of strategy. The most significant scholar of the last thirty years has been Michael Porter and his ideas place an importance on the external environment as a determining influence for successful strategy. The direction of influence is outside-in, see Figure 2.

Hoshin Kanri through the eyes of English Language Texts Cont..

Figure 2: Outside-in and inside-out influences on strategy

(Source: Witcher and Chau 2012: Figure 1)



The order of strategy thinking starts with the external environment, the determination of an industry's attractiveness, the formulation of a strategy to achieve above-average returns in the chosen industry, and a value chain to manage organizational activities to sustain the chosen strategy.

The second strand of thinking in strategic management is centred on the internal, especially an individual organization's strategic resources. This is an inside-out approach to strategy thinking. At its heart is the idea that strategic resources are not economic resources as such, but are organization-specific, which makes them difficult for rivals to understand and emulate. So the emphasis is on the internal rather than the external environment and the direction of influence on forming strategy is inside-out. The direction of managing strategy follows from understanding of an organization's internal environment, the configuration and development of strategic resources, the

integration and alignment of core processes and core competences, and development of dynamic capabilities. The purpose of inside-out thinking is essentially to build a framework for marshalling the learning abilities of an organization around those core business areas that are of most importance to the creation of value for its customers. The aim is to achieve an internal fit of strategic resources so that they sustain above average returns.

However, hoshin planning looks to an outsider to be systematized to a degree that is probably unprecedented for most organizations. Hoshin kanri texts in general introduce a world of management philosophies and business methodologies that seem to make for a mechanistic operational world, as some have put it, of 'tool heads'. All this does mesh easily with thinking about strategic planning over the last fifty years, which has seen a retreat from formalization and long-term planning to favour a looser view of strategy formation as a creative, if an uncertain mix of strategy formulation and implementation. As a result, strategic planning as a detailed subject is rarely included in strategy and strategic management textbooks.

Yet an over-whelming number of organizations continue to use strategic planning and the current consensus among business people and consultants is that strategic planning should be tight enough to set direction and overall priorities, but loose enough to facilitate organization-wide learning and local initiative. However, from our research it is clear that hoshin kanri is often perceived by senior strategists as an activity for operations. In particular, organizational annual review and the need for senior managers to manage the strategic management process to PDCA principles, is not understood in Western circles. The adoption of related management philosophies and business methodologies as an integrated process exemplifies what is termed an autocatalytic process: that is, one that catalyzes itself in a positive feedback cycle, going faster and faster once it has started. This requires time, patience, and a long-term organization-wide ability to learn. A

tipping point into holistic management has never really occurred in many industries.

Automobiles

Virtually all vehicle and car companies use hoshin kanri. This is partly a consequence of the success of companies such as Toyota and Nissan and their suppliers (Witcher and Butterworth 2001). However, the experience is patchy. For some companies, including Ford, there is little real organizational connection between business strategy and hoshin kanri being carried on plant level. Ford recently sold its British brands, Jaguar and Land Rover to India's Tata Group, which has a very different approach to Ford. During the mid-1990s Tata Sons, the groups' holding company, introduced a Brand Equity and Business Promotion Agreement, which requires the group's companies to pay a percentage of their annual revenues for using the Tata name and brand. Companies must also apply the group's code of conduct, which documents its general principles and its Tata Business Excellence Model (TBEM), which is based on the Baldrige Excellence Framework and used by Tata to deliver strategic direction and drive business improvement (Witcher and Chau 2014).

The TBEM is managed as an annual review process, which includes checking and assessing the core values of the Tata group, including business methodologies and management philosophies, such as customer driven processes, a long-range view of the future, and a systems perspective. A key part is the strategic planning process: how a Tata company develops strategy, including its strategic objectives, action plans and related human resource plans, and how plans are deployed and performance-tracked. The TBEM provides a framework for the Tata group to understand how strategy is being applied in the Tata companies and how it works at an operational level. Executives from other Tata companies participate in a company's annual audit activity and play a part in assessing the extent to which a company like Jaguar Land Rover conforms to the criteria laid down in the group's Brand Equity and Promotion Agreement. The feedback is used to promote best practice in the group at large through regional forums.

In fact Jaguar Land Rover does not use the hoshin kanri label and understands it only as a method for deploying its annual corporate scorecard. The scorecard objectives are deployed using a framework called the Value Triangle with twenty cross-functional objectives and targets. From these, priorities are determined and cascaded as projects for the whole organization to address. In the words of the senior manager who manages this process, hoshin kanri is now part of the company's DNA, which makes it possible to ask fundamental questions about the business.

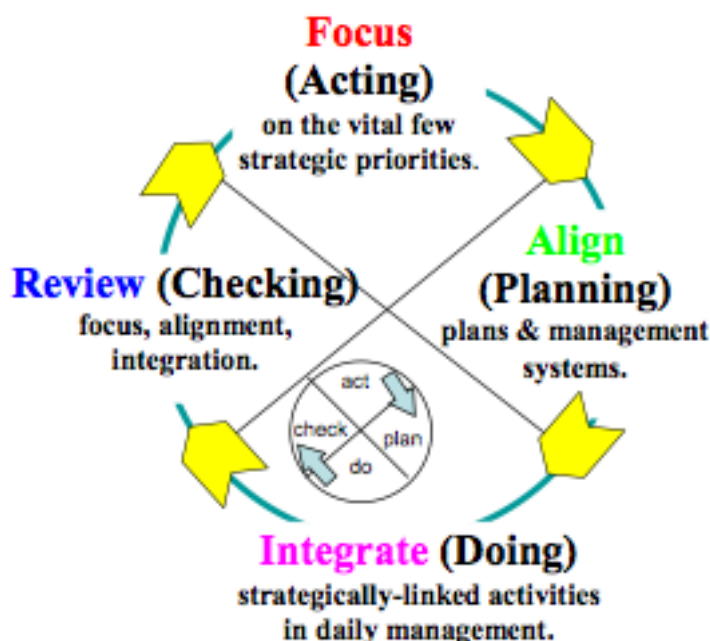
The FAIR model for strategic management

At Xerox UK, a service organization for Xerox Corporation, an approach was developed much more loosely to suit marketing people, rather than the parent company's Management for Results, a name more in keeping with an engineering culture (Witcher and Butterworth 1999). This emphasized the steps in the process in terms of those principles that are central: the need to provide focus on a vital few policies (called programmes at Xerox); to align everybody's plans and management systems with the vital few through catchball; to integrate the PDCA principle in daily management, and to manage annual review as the check on the annual cycle. This is the FAIR model of the PDCA annual cycle, which on occasion has been called the British model (Cwiklicki and Obota 2011), see figure 3.

Hoshin Kanri through the eyes of English Language Texts Cont..

Figure 3: The FAIR phases for Managing Strategy as a PDCA annual process

(Source: Witcher and Butterworth 1999, Witcher and Chau 2014)



The complexity of associated ideas and the importance of taking an integrated approach to the management of processes, gives rise to issues of understanding and organizational culture. The adoption by Western organizations of Hoshin Kanri to a mature level of implementation is long-term, and any assessment of its impact on organizational strategy and organizational effectiveness is difficult to gauge for what is really an adoption of an alternative organizational state of being. A key part of FAIR is the annual review and the involvement of senior executives. This is evident at Xerox and Tata, which both use a form of

business excellence model after the European and American ones respectively.

Nissan uses a corporate business model that is comprised of thirteen core business areas or cross-functional capabilities (one of these is its hoshin kanri process itself) (Witcher et al. 2008). It also specifies seven corporate-wide core competencies: daily control, the determination of hoshins, the coordination of hoshin development and deployment, the establishment of control items (that is, functional-based incremental objectives), analytical and problem-solving abilities, check and action taken, and leadership and participation by high-ranking personnel. This last is important as it defines a form of leadership that involves understanding how strategy is implemented and executed.

Corporate headquarters reviews annually its subsidiaries to understand and to influence how its managers and other employees are developing and using their core competencies in the thirteen core business areas. The seven core competencies comprise the items for audit to enable them to be appraised for their use in each of the thirteen capabilities. Afterwards, a two-page summary is issued across the corporate group as a whole that compares how the subsidiaries score in terms of the level of development they have reached in each of the core competencies. In this way the auditing activity is visible and acts to demonstrate a top-level commitment to the Nissan Way – a set of published cross-functional values that underpin the core competencies of the group as a whole.

Varieties of capitalism

Richard Whittington (2001), a strategy scholar from the UK, has written that for a period between 1960 and 1990, was an era of large scale mass-production of cars, consumer electronics, and chemicals, when economies were largely stable and strategic planning was important. The core strategic concerns of this period were continuous improvement in quality, cost, delivery, and employee development. This changed around 1990 (and probably until the onset of the global financial crisis in 2008), it looked "like the fast-moving, flexible and sometimes ruthless

strategizing of the Anglo-Saxon economies is better suited to the emergent economic conditions of the twentieth-first century than the careful instrumentalism of Germany and Japan” (op cit.: 5).

There is perhaps an inbuilt bias in Western capitalism that favours outside-in thinking (Witcher and Chau 2012). The generality of strategic resources make them easier to switch between organizations than the more specific and sticky strategic resources of an organization and its industry where longer-term strategic planning is more important. Outside-in suggests it is easier to assemble, break up, and reassemble project teams, and chop and change structure. Companies may be acquired and divested speedily by organizations through equity markets, and venture capital is available to entrepreneurial scientists and engineers to start up new enterprises. A concentration of strategic decision-making in a few hands at the top of an organization, allows business leaders to implement decisions very quickly and any consequential reorganization is relatively straightforward to implement. In terms of Kano’s two approaches for implementing strategy; it is the one that is effective immediately after decision making that is important rather than one which requires a company-wide effort such as hoshin kanri. In many organizations hoshin kanri is likely to be perceived as strategic operations; such as in a Ford case rather as in a Tata example.

This article has considered the English language hoshin kanri literature. In principle the approach is sound and it offers a participative form of management by objectives and a ready way to deploy balanced scorecard objectives. However, for many organizations a PDCA approach to managing the strategy process may not sit easily with an outside-in view of strategy thinking. This is a pity if one thinks that strategic management should be a managed process that requires an organization-wide effort from everyone. The hope here is that this article will go a little way to create a greater understanding for strategic performance management, of how hoshin kanri has the potential to close the often gaping gap between top-down strategy and its bottom-up realization.

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Improving Performance by Predicting and Diagnosing Chances of Failure in Organisational Management Systems

AN INTEGRATED APPROACH OF EVENT TREE ANALYSIS [ETA] AND FAULT TREE ANALYSIS [FTA]

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As Sauer (1993) put it in his study for systems failures: *"All kinds of technological and Organisational systems suffer failure"*. There is no generally agreed account of the nature of failure of organisations especially in the era of globalisation and answers are needed to the question of the causes of their failure. Failure can be caused by a vast number of factors, which may interactively contribute towards the failure of the organisation's performance as a whole. Earlier Harvey (1982) had addressed the problem of organisation managers' success and failure in directing their firms through an analysis of real examples of organisations operating in different industrial and managerial fields. The result of his analysis showed that managers in top levels, due to the strategic decisions they make, can be the main reason for these differences in organisational effectiveness. To remedy this possible cause of failure, organisations' managers have to clearly analyse their management systems and put together all the factors that can hinder the success of their organisations. For doing this they have to firstly diagnose the chances of failure in their organisation sections and departments and then find the means to remedy those potential failures as quickly as possible before facing bad consequences of delays and overrun in budget on the long run.

FOCUS AND SIGNIFICANCE OF THIS WORK

The focus of this research is to help managers predict and diagnose the possible chances of failures in their organisations. The process can be easily implemented using a powerful integration approach of both the Event Tree Analysis [ETA] and Fault Tree Analysis [FTA] to assess the organisation with its structure to ensure the design of a reliable and an effective one with minimum errors in performance. The integration of the ETA and the FTA had proven to be valid and justified in reliability analysis applications and hence can be employed to serve the idea of the research. The procedure of such integration is explained in this paper with more considerations given to its possible dual application, by top managers and systems' designers, to firstly predict the possible chances of Organisations' failure and then take reasonable courses of action to reduce the bad consequences of such failure. The aim is to increase the chances of Organisations' long term (continuous) performance success i.e. reliability. The significance of this work can be seen in quantifying the process of identifying failures in organisational departments and sections using a combined inductive approach of the ETA and deductive approach of the FTA. The promise of this combination is in enhancing managers' abilities to predict and diagnose failures in their departments as early as possible and finding the appropriate procedure to remedy any bad consequences, which appears as a final result of the ETA. Thus, by anticipating scenarios of success and failures in all sections managers can improve the managerial process and hence the performance within their Organisations.

COMBINED QUALITATIVE AND QUANTITATIVE APPROACH OF THIS WORK

By adopting the ETA alone, as used to be the case, managers can only identify and analyze the consequences of the failure after they have already happened; i.e. managers have no big control on the consequences of failures from happening or on stopping their occurrence earlier in the process. Unfortunately, because they could not stop such failure, managers can only work inductively to find **"What"** happens if these failures occurred. This means that they only act to remedy only the consequences of failures and/or disasters that happened and attempt to find

Improving Performance by Predicting and Diagnosing Chances of Failure in Organisational Management Systems Cont...

possible, but not necessary reliable, courses of action. Fortunately, the FTA came to improve the process not only for diagnosing and predicting the possible areas of failures but also for preventing the occurrence of such failures. This is a big improvement to the analysis of failures in systems. The idea depends on finding the branches of failures on the **Qualitative Event Tree Diagram [Qual_ETD]**, then go deductively to find “**How**” these failures (**i.e. undesired events**) can be developed and propagated further. This step is done by going down a so-called **Qualitative Fault Tree Diagram [Quant_FTD]** until reaching and identifying the **basic events** at the bottom of the tree causing the problem. This procedure in itself is a useful technique for analyzing the whole organisation with its departments and sections. It allows more control by managers and systems’ designers to predict the chances of weaknesses and areas of potential failures in their management systems as early as possible then defining more reliable courses of action for remedy. By understanding, studying and analysing all systems’ possible scenarios of failures and success along both diagrams of the qualitative ETD and FTD, managers can effectively improve their departments and management systems situations adversely and reduce chances of their weaknesses and failures on the long run of the business.

Quantifying both diagrams by predicting values of those previously identified failures enhances the analysis in a way that improves systems’ performance. This process is a team-based approach in organisations where every manager in his/her level has to contribute to the process by identifying the possible values of failures to the basic events causing the problem. This collective work of all teams of the organisation increases managers’ abilities at any managerial level to quantify the failure analysis process all over the organisation. This quantification in itself is an approach of improvement in the managerial style of managers following the famous says which, states that you can easily manage what you can quantify. Additionally, there is a growing need for quantitative measures to make qualitative methods more realistic with the feel of numbers, percentages or scales of rating especially when managers from non-numerical background are involved as mentioned by Pilcher (1992).

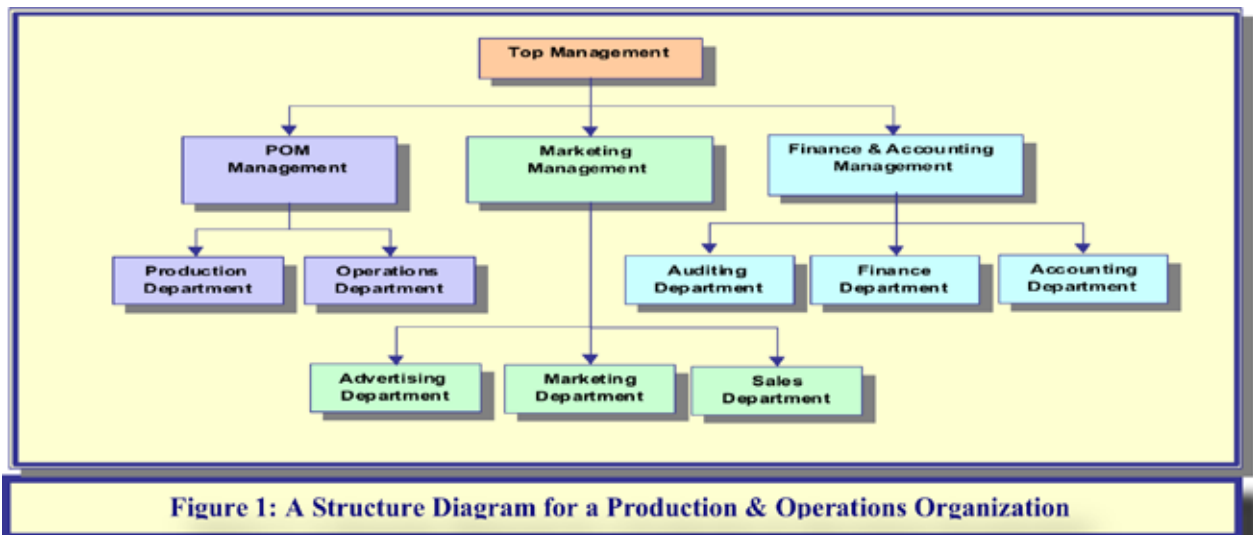
THE INTEGRATION OF THE ETA AND FTA ANALYSES FOR PREDICTING AND DIAGNOSING ORGANISATIONS’ CHANCES OF FAILURE

The integration of the ETA and the FTA are considered to be complementary to each other. The procedure of integration can be explained generally as follows: Aside from the initiating event, each of the subsequent events in the ETD can be considered in themselves a top (undesired) event in a FTD. They can be decomposed into basic (primary) events through appropriate fault tree diagrams, from which the probabilities of the top event (**i.e. the subsequent event on the ETD**) may be systematically calculated. Then by analysing the various paths of the ETD the different potential consequences of the ETD can be easily evaluated using the probability values obtained from the FTDs. of each subsequent event. The integration procedure is well illustrated in a general example derived by Ang and Tang (1984) of analysing the causes of human death and injuries caused by a fire initiated in a house and showing its consequences. Similar works was done by SIAM (1975) in identifying risk in nuclear power reactors. In engineering structures this integration procedure was used by Arroyo and Shih (1991) for stochastically assessing the risk involved in the design of reinforced concrete structure. In ground engineering Connely and Dodds (1993) used both ETA and FTA for identifying failure due to sudden inflows of ground water into underground excavations. More examples illustrating both ETD and FTD can be found in literatures by Barlow and Lambert (1975), Billinton and Allan (1983), Ang and Tang (1984) and Andrwes and Moss (1993). For more works on FTA and risk analysis and reliability assessment refer to Adamyan and David (2002), Aksu, Aksu, and Osman, (2006), Rajiv and Pooja (2010) and Toshio and Wakabayashi (2009).

Application in Example

The Organisational Structure of a Production and Operation Management Organisation [POM]

The example used here to explain the steps and process of integrating the ETA and FTA is a structure tree of a production and operations organisation operating in the textile industry in Cairo, Egypt. The example is derived from a consultancy work done by the author for helping the organisation to predict and diagnose the failures in the structure of their management



systems. As represented in Figure 1, the structural system of the organisation consists of three management systems; production and operations management [POM], marketing management, finance & accounting management systems connected in parallel. Each management system with its own departments is also connected in parallel as can be seen in the figure.

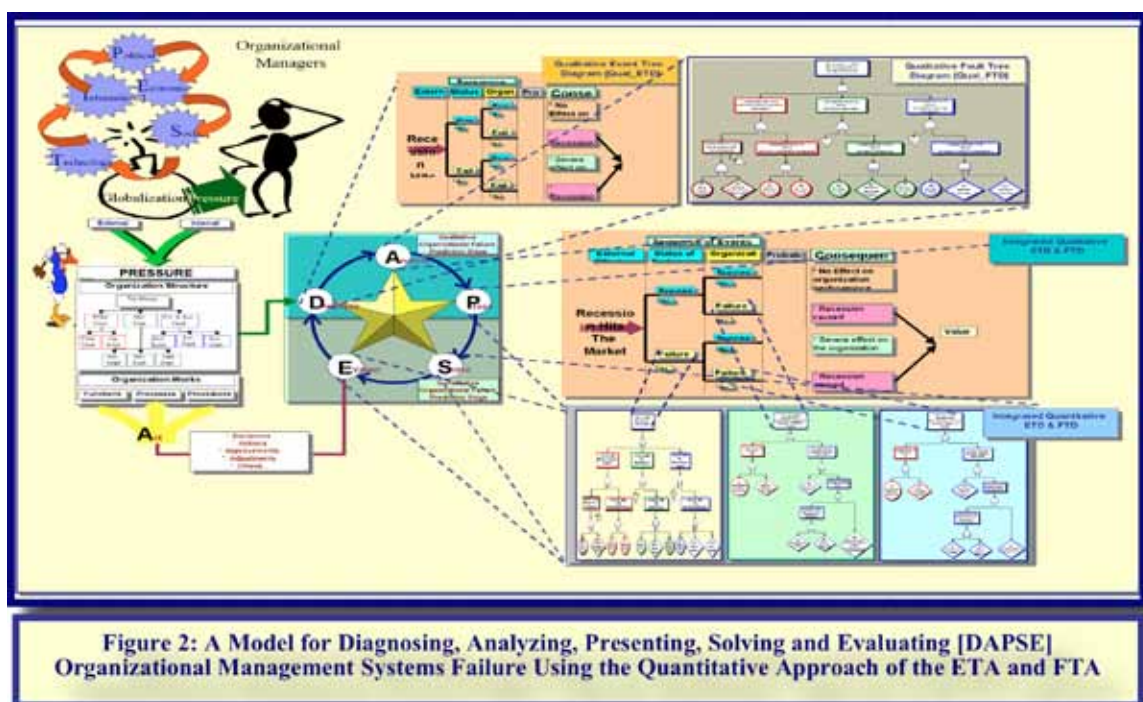
The Problem

Since globalization calls for powerful and stable Organisations to withstand any type of pressure, managers have to study the effect of all the factors impinging on the performance of their production and operations Organisation. These pressures cause external and/or internal factors that can be classified under **Political, Economical, Social, Technological or International [PESTI]** factors. In response to these pressures the Organisation has to study: on one hand the stability in performance of its Organisational management systems, and on the other hand its daily works in terms of its functions, processes and procedures as illustrated by the schematic diagram at the left side of Figure 2.

The Suggested Model for ETA and FTA Integration [DAPSE]

The aim of the whole process is to help managers in **Diagnosing, Analyzing, Presenting, Solving and Evaluating** the effect of an initiating event on the performance of the Organisation, hence a model named **DASPE**, by the author, is suggested and introduced in this section as shown in Figure 2. It demonstrates the idea of the integration of the cause to effect [ETD] and effect to cause [FTD] approaches in an attempt to give managers a systematically well stepped process to solve external and/or internal problem encountered.

Improving Performance by Predicting and Diagnosing Chances of Failure in Organisational Management Systems Cont...



The Steps of the DAPSE Model [As Shown in the Star Shape in Figure 2]:

Following structured algorithm managers of the organisation can follow the following steps as shown in the star presented in the middle of Figure 2:

- Define the type of pressure or forces impinging on the Organisation from the PESTI factors either external or internal.
- Identify the initiating event caused by this pressure **e.g. Severe recession hits the market.**
- Follow the steps of **DAPSE** model:
Diagnosing the problem [D]: using the Qualitative ETD.
Analyzing the problem [A]: using the Qualitative FTD.
Presenting the problem [P]: using the integrated approach of the qualitative ETD and FTD
Solving the Problem [S]: using the integrated approach of the quantitative ETD and FTD
- **Evaluating the problem [E]:** using both qualitative and quantitative ETD and FTD to track weak and potential failing departments and/or malfunctioning working functions, processes and procedures.
- **Acting** by making reliable decisions and taking proper course(s) of actions to remedy the structure (if required) and or improve, enhance or adjust the functions, processes and procedures of the Organisation.

Detailed Numerical Solution Using the DAPSE Model for Predicting and Diagnosing Organisational Failure

Due to the instability in the economy of the country where the Organisation operates in which is caused by recession in the construction and production industry, high competition among similar organisations emerged since supply became more than demand. The problem accumulates when more pressure is exerted due to the existence of some similar foreign products that competes with cheaper or at least similar costs but with better quality than those produced

by local organisations. Accordingly, severe recession hits the market and this is taken, in this research context, as the initiating event that the organisation has to develop further to predict its consequences on the overall performance of the organisation. By adopting the proposed DAPSE steps, managers can apply qualitative and quantitative steps for solving the effect of this market recession problem by applying the following steps:

A) Qualitatively [DAPSE]:

1- Diagnosing [D] the problem: Here comes the role of the qualitative ETA with its Qual_ETD. The ETA, as cause to effect approach, starts from a specific failure (cause e.g. severe recession hits the market) and follows through some stages on the tree to trace all possible consequences (effect e.g. sever inner problems or liquidation of the Organisation). As illustrated in Figure 3, the response to this initiated event is developed into two stages. The first one is to check the performance status of the organisational management systems under this new circumstance where two outcomes are considered either **Success [S1]** presented on one branch or **Failure [F1]** represented by **[Top Event TE1]** on another branch. The second stage on the tree is to study the effect of whether the organisation can manage to escape this recession or not while the

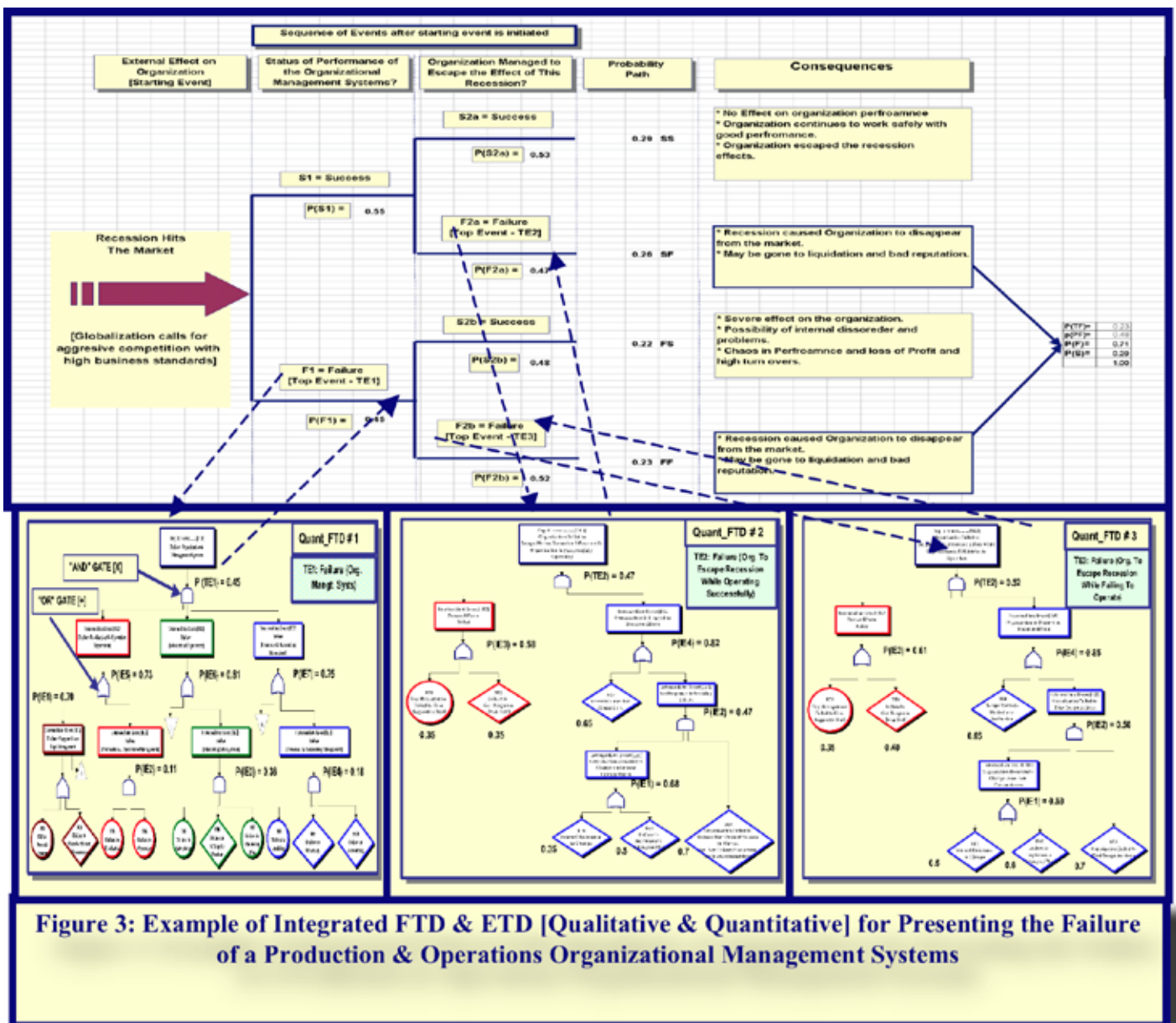


Figure 3: Example of Integrated FTD & ETD [Qualitative & Quantitative] for Presenting the Failure of a Production & Operations Organizational Management Systems

Improving Performance by Predicting and Diagnosing Chances of Failure in Organisational Management Systems Cont...

outcome from the previous stage could be either that the Organisation is operating *Successfully* or *Failing* in its operation. The first status (i.e. the success status), has two outcomes presented on two subsequent branches one is either **Success [S2a]** while the second branch is **Failure [F2a]** represented by **[Top Event TE2]**. The second status (i.e. the failure status) has also two outcomes either **Success [S2b]** on one branch or **Failure [F2b]** represented by **[Top Event TE3]** on another branch as also illustrated in the final ETD as in Figure 4(d).

2- Analysing [A] the effect of the failure status: Here comes the role of the qualitative FTA with its Qual_FTD. The FTA, as *effect to cause* approach, starts with the top undesired event (*effect*). For example: **TE1: Organisation management systems failed to perform successfully** as shown in Figure 4 (a) of FTD #1, or **TE2: Organisation failed to escape the recession effects while operating successfully**, shown in Figure 4 (b) FTD #2 or **TE3: Organisation failed to escape the recession effects while operating successfully**, shown in Figure 4 (c) FTD #3. In each FTD, the tree is further decomposed into its possible intermediate events and goes deeper to identify the basic events which (*caused*) these undesirable events. For Example: in FTD #1 of Figure 4 (a), the basic events can be: failure by top management to provide finances (BE1) or failure to allocate resources to all departments (BE2). On another branch shown the failure in production (BE3) and failure in operations departments (BE4) could be the primary cause to failure in the Production and Operations [POM] management system. Failure in advertising (BE5) and failure in sales department (BE6) and failure in marketing plan (BE7) could be the reason for subsequent failure in the marketing management system. Failure in auditing (BE7) and failure in financing (BE9) and failure in accounting (BE10) could also be the reason for upgraded failure in finance and accounting management systems. Similarly, FTD #2 and #3 are decomposed as shown in Figures 4 (b) and 4 (c).

3- Presenting [P] both the Qual_FTD and Qual_FTD: This step ends the qualitative presentation of the process, as no numerical values are computed to show how severe is the recession effects on the organisation. Hence, solving and evaluating the problem is essential through quantifying the whole processes as done next.

B] Quantitatively [DAPSE]:

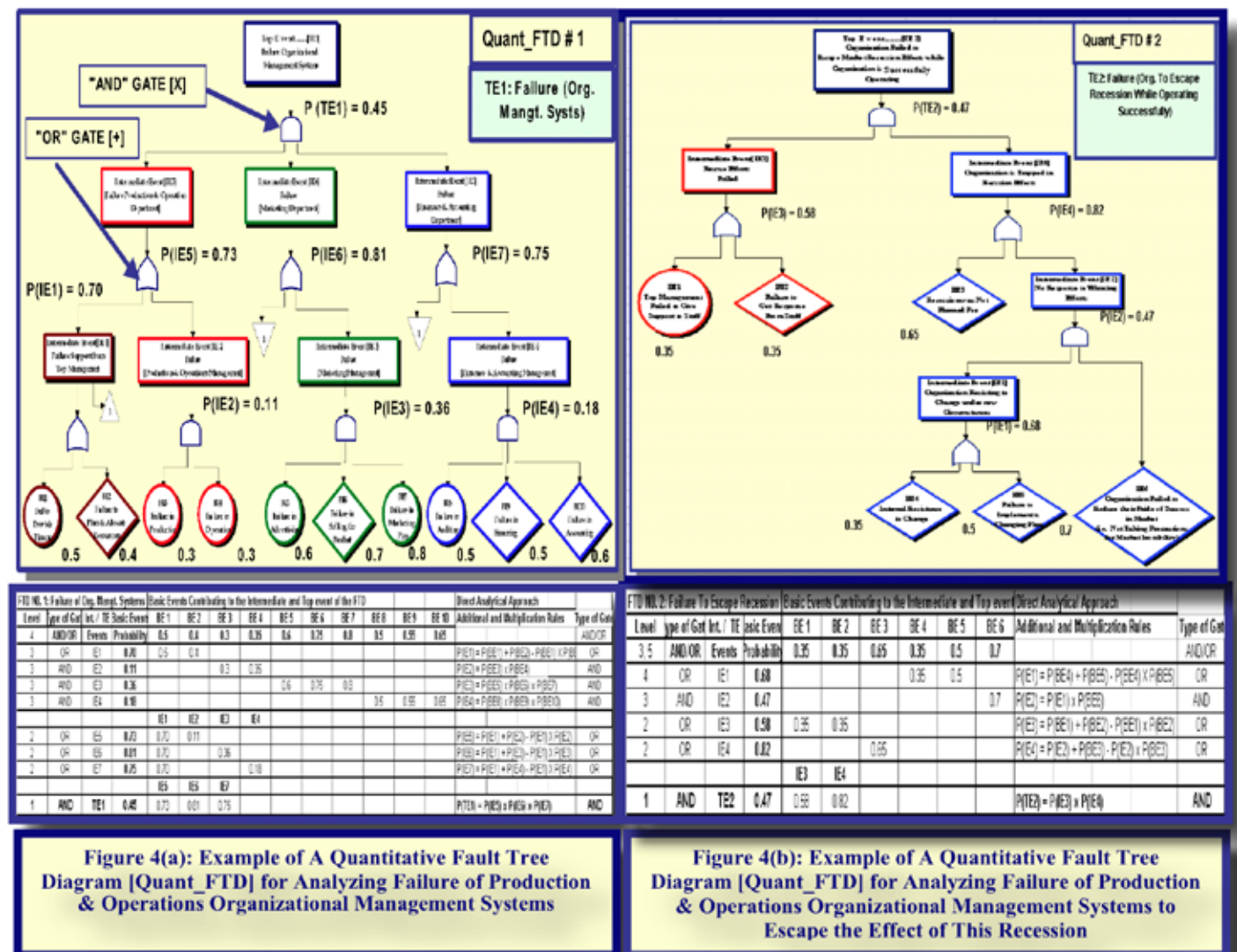
4- Solving [S] the problem: by transforming the Qual_FTD into the quantitative one; Quant_FTD. In this approach the basic event at the bottom of the tree is fed with probabilities obtained either from experience or by best guess and prediction to the basic events occurring. Then by assuming for simplicity that the basic events are statically independent, the **Direct Analytical Approach** applying addition (**OR Gates**) and multiplication rules (**AND Gates**) is used to calculate the probabilities of the intermediate events on the levels higher than the basic events. In the same manner the top undesired event is calculated as can be seen in Figures 4 (a, b and c). After finishing the calculation of the FTD a similar process is used to quantify the Qual_ETD by transforming it into a Quant_ETD one by adding all probabilities values on the events of F1, F2a and F2b. Then the success branches are computed by applying the rule $[P(S) = 1 - P(F)]$. The probability path is then computed where the consequences on the right hand side of the event tree are obtained as shown on the Quant_ETD of Figure 4(d). Finally, by quantifying the qualitative consequences obtained in step 1, managers can define easily how severe is the problem with numerical values.

5- Evaluating [E] the whole process: by tracking back the Quant_FTD(s) and finding the highest intermediate events that contribute more to the occurrence of the undesired events of all FTD(s). Going down these intermediate events, managers can inspect and define the

basic primary and secondary events whose probability values of failure are high. They can then decide what to take in action to reduce such basic probabilities, say by increasing resources or by supporting failing or weak departments. By doing this evaluation to all branches of the fault tree all undesired events can be reduced in values of failure and hence their complementary values (i.e. success values) on the Quant_FTD can accordingly be increased, thus reducing all bad consequences of the initiating event.

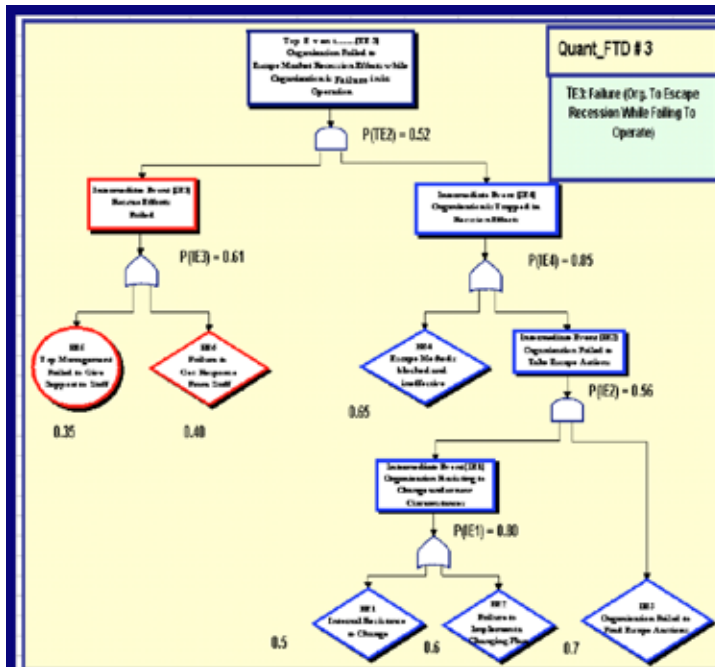
C] Findings of the Evaluation Analysis

By inspecting the values derived in this research, the Quant_FTD shows that the probability of failure of these Organisational management systems to withstand the effect of the market recession is very low. From Figure 4(d) this failure is calculated to be equal to **P (Failure) = 0.71**. In other words this Organisation is only successful with **P (Success) = 0.29**. This is considered unacceptable and very bad performance. Hence, remedy actions should be taken to improve its structure or its functions, processes and procedures. By tracking back the FTDs we can inspect the basic events contributing to the occurrence of this high failure value and hence managers have to give priority remedy actions to the ones contributing highly to the successive intermediate events. For example inspecting the first FTD of Figure 4(a), we can find that the undesired event gives a failure value of $P(\text{Fail}) = 0.45$. By tracking back the tree, we can find that Intermediate event [IE1] failure value is $0.70 = (0.5 + 0.4 - 0.5 \times 0.4)$ which is caused by applying the additional rule (OR gate) of basic events $P(\text{BE1}) = 0.50$ and $P(\text{BE2}) = 0.40$. Checking both events we can find



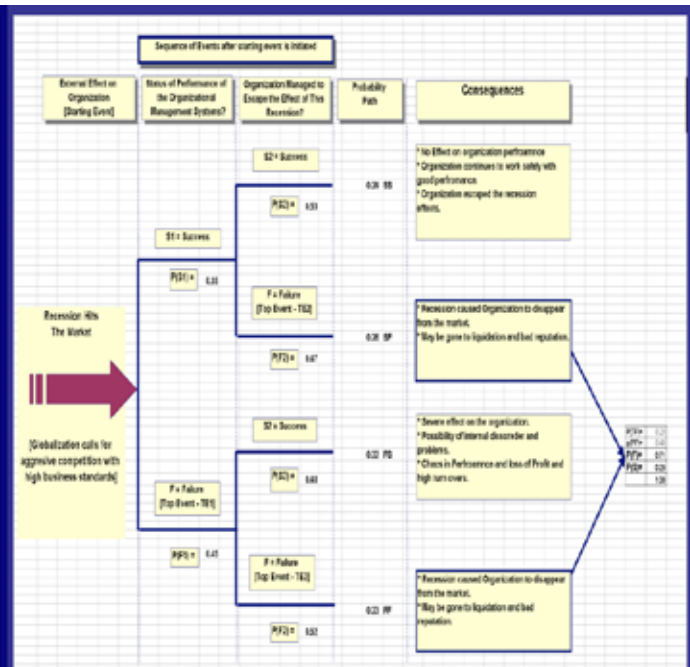
Improving Performance by Predicting and Diagnosing Chances of Failure in Organisational Management Systems Cont...

that BE1 is the one to be reduced to improve the undesired event value. Providing more financial support to the Organisation either by borrowing money or getting extra funds from other sources can help achieving better results. Accordingly P(BE1) will be reduced improving the value of the undesired event. Following this procedure on all branches the undesired events of all FTDs can dramatically be reduced and improvements can be achieved in the whole problem.



FTD NO. 3: Failure To Escape Recession	Basic Events Contributing to the Intermediate and Top event	Direct Analytical Approach	Type of Gate
Level	Type of Gate / TE / Basic Event	BE 1 BE 2 BE 3 BE 4 BE 5 BE 6 Additional and Multiplication Rules	AND/OR
3.5	AND/OR	Events Probability	
4	OR	IE1 0.80	
3	AND	IE2 0.56	
2	OR	IE3 0.61 0.35 0.4	
2	OR	IE4 0.85 0.65	
1	AND	TE3 0.52 0.61 0.85	

Figure 4(c): Example of A Quantitative Fault Tree Diagram [Quant_FTD] for Analyzing Failure of Production & Operations Organizational Management Systems to Escape the Effect of This Recession While Failing in Operation



Final Quant	Stage #1/Stage #2	Probability Paths	Value	Consequences	Comments
SS	S1 - S2	0.55 0.53 0.29	P(Succ)	0.29	P(Success) Low Value of Success
SF	S1 - F2	0.55 0.47 0.26	P(Part F)		
FS	F1 - S2	0.45 0.48 0.22	P(Part F)	0.48	
FF	F1 - F2	0.45 0.52 0.23	P(Tot Fail)	0.23	P(Failure) High Value of Failure
			1.00	1.00	System Needs Quick Improvement

Figure 4(d): Example of A Quantitative Event Tree Diagram [Quant_ETD] for Solving Failure of Production & Operations Organizational Management Systems to Escape the Effect of This Recession

Conclusion

The main conclusion that can be derived from the work described in this paper is that integrating the Event Tree Analysis [ETA] and Fault Tree Analysis [FTA] in a quantitative approach improves the qualitative solving process of complex problems. The ETD as an inductive method is useful in defining "What if..." questions to the problem. However, it cannot in itself help in predicting how failure can happen. It only diagnoses the problem but needs another method to predict "How" these failures happened. Here comes the beautiful approach of the FTD, as a deductive technique that goes deeper into the possible causes of the problem and presents the events that can contribute to the occurrence of those failures on the ETD. Hence, the combined efforts of both techniques, as described in this paper, can have dual application by top managers and systems' designers. Firstly they can identify and diagnose the possible chances of organisations' failures, then they can calculate all values of failures and take reasonable courses of action to reduce the bad consequences of such failures. The aim is to increase the chances of organisations' long term (continuous) success i.e. reliability. Going back and forth in the analysis of both trees improves

the outcome with more reliability in the courses of actions and highlights to managers all over the organisation the areas that need more attention to remedy as early as possible. The model that is proposed in this paper helps manager to achieve this target. It is named **DAPSE** standing for **D**iagnosing, **A**nalyzing and **P**resenting the problem qualitatively, then **S**olving and **E**valuating it quantitatively then proposing possible tracking sensitivity analysis for making reliable decisions and taking appropriate actions for achieving better results in organisational management systems performances.

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