



Volume 3 / Issue 2 / September 2021

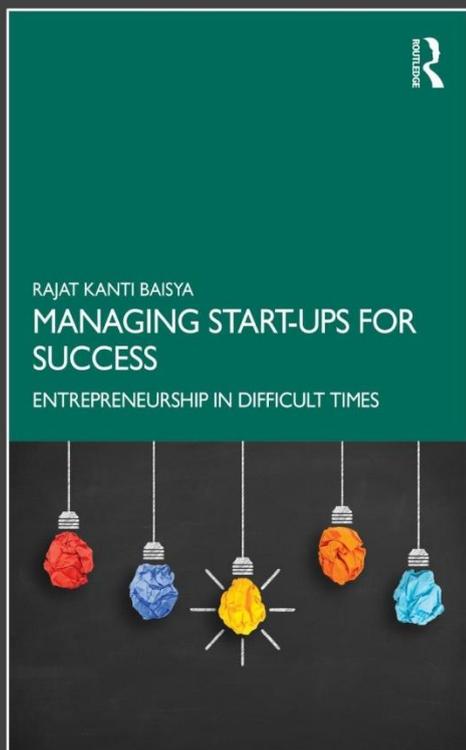
ISSN: 2581- 799X (Print)

2581-9887 (Online)

International Journal of

Project And Technology Management

A Journal of Project and Technology Management Foundation



July 2021: 6.14 x 9.21: 354pp
4 illustrations

Hb: 978-0-367-43344-4 | £120.00
Pb: 978-0-367-43346-8 | £36.99
eBook: 978-1-003-00257-4

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Managing Start-ups for Success

Entrepreneurship in Difficult Times

Rajat Kanti Baisya, Chairman and Managing Director - Strategic Consulting Group Pvt Ltd

World economics and the industrial environment recently has created a fertile ground for the creation of new enterprises and start-ups. This book skilfully identifies the challenges of building a new business venture from an idea to a marketable product. The volume is rich with examples and case studies of many small and large businesses, it further reflects on the business and entrepreneurship ecosystem, the challenges and opportunities in India, entrepreneurship and women, e-commerce, the new generation of entrepreneurs, and exit strategies for entrepreneurs.

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Besides covering works from leading academicians across the globe, the journal also includes conference reports and book reviews.

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Journal Website

www.ptmfonline.com

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International Journal of Project and Technology Management is a quarterly research journal and would be published from the following address. Subscriptions, address changes and or any other information relating to this publication should be sent to:

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Printed and Published by Dr Rajat K. Baisya on behalf of Project and Technology Management Foundation.

Printed At:

Viba Press Pvt Ltd, C-66/3, Okhla Industrial Area, Phase-II, New Delhi- 110020

Price **250.00** **INR**

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EDITORIAL

It gives me great pleasure to inform our members and readers that our journal has successfully entered third year of publication. Pandemic has made immense adverse impact on business and economy and also society at large. Businesses have to adjust to loss of revenue; many smaller units closed the shutter and could not continue. Educational institutions were kept shut for extended period and system got disrupted. Some of the sectors like hospitality, transport, aviation as well as travel and tourism were seriously impacted. New models of online trading and business as well as education were introduced which cannot obviously be as effective. The world has learnt the different way to continue with their economic activities and people have learnt to lead a different lifestyle after losing over four and half million lives which are still growing by day. The catastrophe of this magnitude has never been seen or witnessed since last world war. Policy makers and corporations are now struggling to regain the lost grounds. Pandemic thus changed many things including lifestyle, concern for safety, security and hygiene, new models of doing commercial transactions and business, new products in healthcare and pharmaceuticals, forced changes in product formulations. Wearing masks, keeping social distance and washing and sanitizing hands frequently are now new norms and everyone got used to it. Every plan of organizations got delayed during pandemic. So is your journal. Because of pandemic for over a year everything got disrupted and became nonfunctional. Your editor himself had contracted Covid infection and struggled between life and death for two months and for your good wishes ultimately recovered. We also could not get the journal printed and that delayed our release of the journal's current issue. I am hopeful that our readers and also contributors to the articles in this issue will understand and excuse us for the delay in publication. The good news is that it is ultimately got released and we are working on the next issue.

This issue carries three major research articles. Aurthur Murray has written an article on Transforming Project Management through Human-Machine Collaboration. The traditional project management practices deal with volume of information processed to take decisions which often gets delayed resulting in project delays and even failures. This paper of Dr Murray discusses how human can collaborate with machine in the current environment to produce better project performance and better control. His article has dealt with the complex project management challenges through transformation of machine and people collaboration.

The second article was contributed by your editor Rajat Baisya to discuss in Indian context the issue related to how business performance and more particularly export performance of agricultural and food products suffered and what is the way out. Taking the case of MSME in this sector author presented the data of industries to conclude the reasons of serious under performance during pandemic and the key strategic directions for the future. Because of disruption of communication and logistics services as well as significant decline of consumer demands the volume of business was seriously impacted in international trade as well as in domestic market. This has happened in spite of Agricultural sector showing growth of around 4% when all sectors showed a steady decline. In spite of this growth of agricultural sector global trade of agro commodities and processed food declined which manufacturers are now trying to regain the lost ground. This task will take considerable time to get to the stage of earlier volume. The organizations in MSME sector are worst sufferers because of the resource crunch both in terms of financial and human resources. The paper discusses and traces the major impact in this factor to find the reasons there of and also trace the future ahead.

In this issue we have included a special feature article titled Business Chameleon in real life, everything is a project with two case studies authored by Laszlo Karolyi. The issues

arising now are more and more complex, teams are becoming heavily virtual which has its own limitations. This new business environment forces companies to rethink on how they have to operate and collaborate. Market share is one key performance criterion and indicators of how company is doing. It is crucial to gain and keep market share in order to stay on top of competition. Nowadays, the key lies with business development, cost reduction, and the customer retention and acquisition. To deliver performance they don't necessarily have to work harder to reach their goals and get ahead of competition – but they absolutely need to work smarter. The three challenges the management face today, are the 3C meaning: complexity competition, and the customer. In a VUCA world these become more relevant. The author discussed this with two case studies. One case study relates how a program can be delivered differently and more efficiently and he discussed the English language education. The author introduced a new terminology called Crenchmarking which means creative benchmarking and discussed how this new approach can deliver the desired result. The other case study that author took up is on to discuss if small business can survive in the new global competition. In this connection he took up a case of small privately owned food business that survived the new business environment in the global and digital world. It is a case of one small bakery called Lipoti Bakery and how this small business is getting up to face the challenges of the future in post Covid world.

All three research papers have discussed the important issues the business is facing in Industry 4.0 environment and also uncertainty as well as new order and methods that businesses are now grappling with new lessons learnt during pandemic. I am sure that our valued readers are going to find the articles interesting and informative.

I would like to take this opportunity to appeal to the research communities to contribute and share their research findings in this peer reviewed journal.

I wish all of you good health and safety in this difficult and trying time.

Rajat K Baisya
Chief Editor

Transforming Project Management through Human-Machine Collaboration

Arthur Murray

CEO, Applied Knowledge Sciences Inc.

ABSTRACT

Traditional project management tends to be rear-view mirror-oriented. Large volumes of data are often filtered, summarized, and delayed, with little insight into the many micro-events at the activity level which collectively impact overall performance. As such, critical alerts are often generated far downstream from root causes and conditions. Problems which could be quickly and easily addressed are allowed to grow, sometimes until it's too late. This is significant, as correcting errors and re-work can reach up to 60% or more of the total life cycle cost of a project.¹

This paper describes a next-generation project management system which combines human and machine intelligence in ways that result in more efficient and effective problem identification, prevention, and resolution. Initial test results based on historical data for several high-visibility projects, including the Boeing 737-MAX aircraft, are presented. A key aspect of the system is the use of text analytics to: 1) detect weak signals present in project discourse which point to potentially serious problems downstream; 2) link those weak signals to historical data, lessons-learned, and other knowledge in order to generate recommended courses of action.

Background

For large, complex projects, no one person or team can possibly assimilate the volume of data, the myriad relationships, connections, and interdependencies, and the knowledge needed to predict errors, assess and determine proper courses of action, all in a timely manner. For this reason, organizations are turning to AI and machine learning (AI/ML). However, these technologies alone rarely provide sufficient insight into the underlying causes and conditions which give rise to the data, along with the proper corrective actions to be taken.

This problem is made worse by the fact that systems engineering, HR, supply chain logistics, and other key support functions are often disconnected from project management activities. Agile methods have provided some improvement, as they require close communication and continuous knowledge-sharing. Unfortunately, new knowledge rarely gets transferred from one agile development team to another, resulting in knowledge repeatedly being re-discovered.

Amplifying weak signals and connecting the dots across them creates an early warning system, greatly reducing risk. It also contributes to revealing redundant or unnecessary workflows and decision paths, resulting in fewer errors and reduced risk. In addition, it captures critical knowledge associated with each project activity, along with the rationale

¹Md.Shahadat Hossain: Rework and Reuse Effects in Software Economy, Global Journal of Computer Science and Technology, Software and Data Engineering Vol. 18, Issue 4 (2018)

for any actions taken. This results in less ambiguity, fewer misunderstandings, and reduced misapplication of information.

This paper is organized as follows...

First, we will review the problems typically inherent in traditional project management approaches, especially in large, complex projects/organizations. Next we will identify and briefly describe some of the tools, including AI and machine-learning, that are available for building next-generation project management systems, and which can be used to streamline, simplify, and improve quality and throughput of the myriad processes involved. We will present a use case and proof-of-concept study as an example of how these tools can be applied. Finally, we will review the results of the study and provide insights on how best to apply them.

Problems with managing large, complex projects

Figure 1 illustrates how problems in managing large, complex projects can arise. Much of the data and information critical to the project are generated “in the trenches,” at the working level, which is then reported up the chain-of-command. In large organizations in particular, much of that information is filtered and summarized along the way. By the time it gets to the executive level it is typically presented as a high-level abstraction such as a red, yellow, or green status indicator applied to a very small number of variables such as cost, schedule, scope, and resources. As a result, alerts are often generated far downstream from their root causes and initial occurrence. This type of reporting is rearview mirror-oriented, not very forward-looking, and can lead to highly reactive, snap-judgement-based responses.

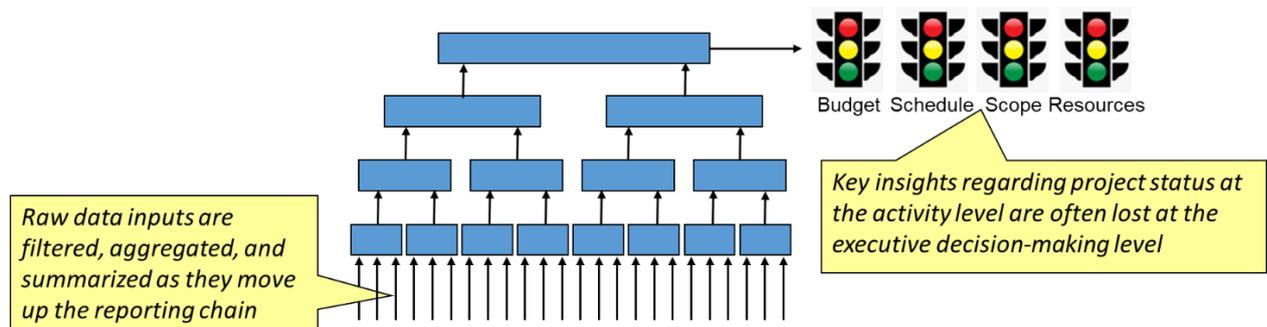


Figure 1. Information critical to decision-making is often filtered and delayed

As a result, executive-level data is often disconnected from critical systems engineering activity, with in little or no insight into failure modes.² Complexity of the organization, tasks, and reporting system further contribute to confusion, miscommunication, and error.

Building the next-generation project management system

When it comes to the application of AI, it is important to realize that we cannot depend entirely on AI alone any more than we can depend on humans alone. Rather, we should be aiming to achieve a harmonious balance between humans and machines, as illustrated in Figure 2. Humans and machines each have unique attributes. With technologies such as

²John Steven Newman and Stephen M. Wander: Harnessing the Power of Failure: Using Storytelling and Systems Engineering to Enhance Organizational Learning(2018)

machine learning and natural language processing, we can create a virtuous cycle in which humans teach machines and machines teach humans. This will result in better overall performance than neither humans nor machines alone could achieve. However, if this is to be the face of next-generation project management, then the creation and exchange of knowledge between humans and machines must be carefully and purposefully managed. This can be best achieved through a formal system of knowledge governance.

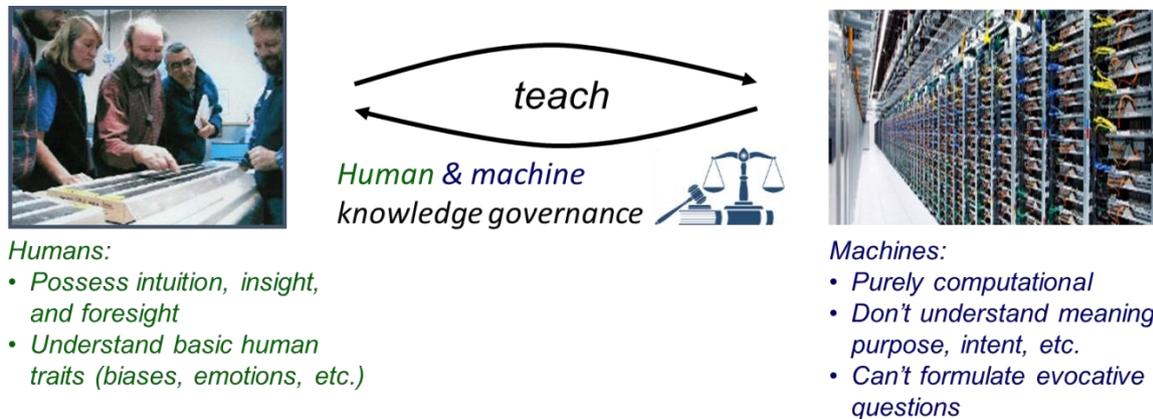


Figure 2. Next-generation project management is based on integrating human and machine intelligence

Figure 3 explains why such governance is necessary. With data science continuing to grow in popularity, many organizations are aggressively hiring data scientists who then develop systems and algorithms for analyzing large volumes of data. As those data scientists come and go, the structure and organization of the data and the algorithms becomes more obscure. This exposes the organization to serious risk and liabilities, as well as missed opportunities.

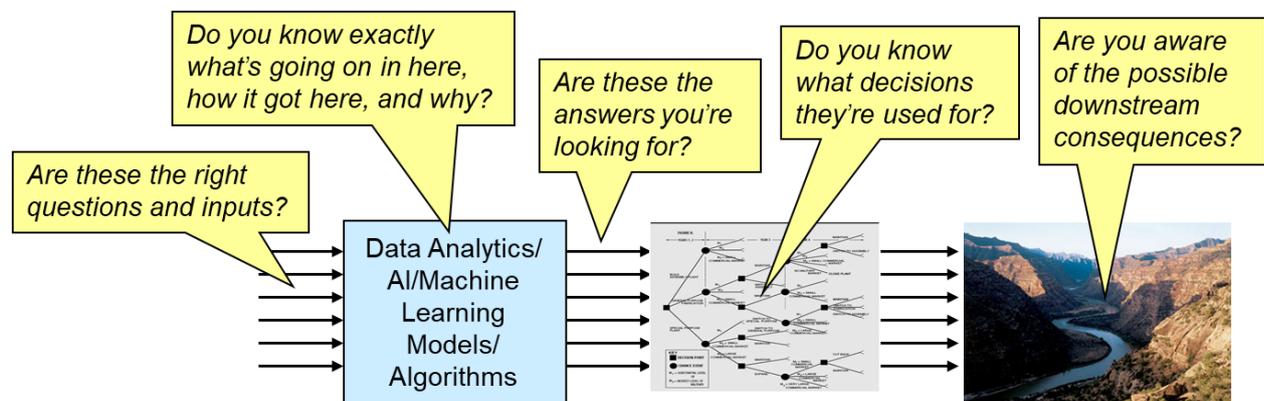


Figure 3. Human and machine knowledge needs a formal system of governance

Our approach to correcting this condition is shown in Figure 4. As mentioned earlier, we aim to strike a balance between human and machine intelligence and create a system whereby the two interact in a synergistic way. We start with the goals and objectives of the enterprise and each project within that enterprise. We take as inputs performance data, including the discourse occurring at all levels of a project, especially the working level. We also include whatever past history and other relevant documentation is available. All of this taken together is then used by both the human subject matter experts (SMEs) and the machines to make observations about what is happening on a project vis-à-vis the organizational goals and objectives, and most importantly, what courses of action need to be taken.

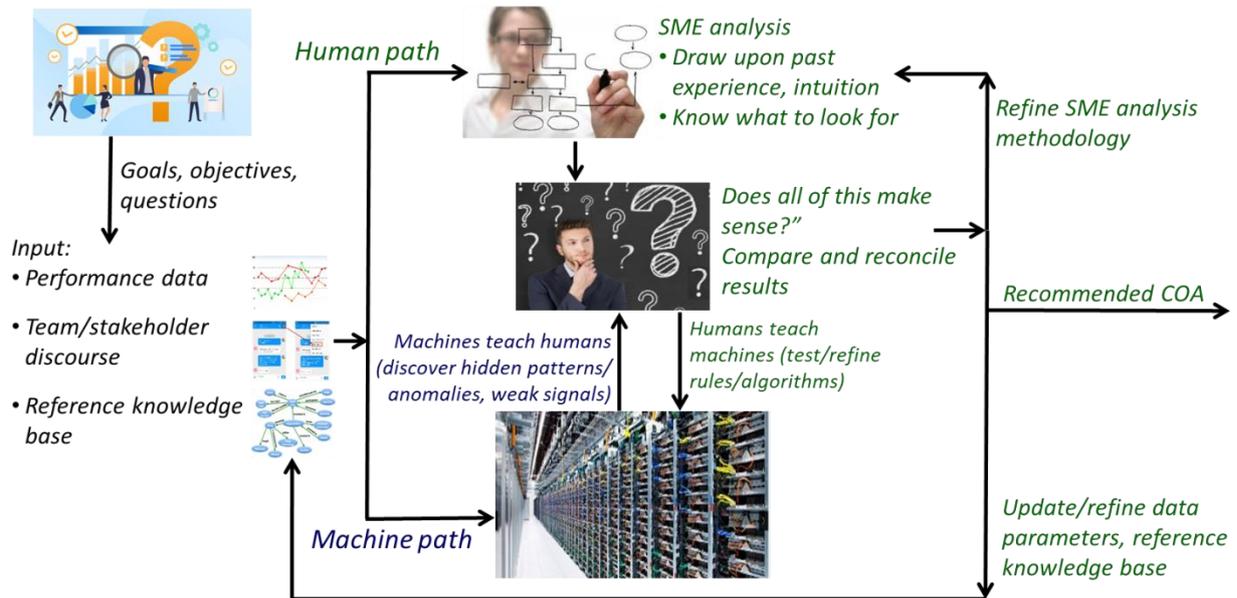


Figure 4. Improved decision-making through combined human and machine analysis of project data

The humans do what they do well while the machines discover hidden patterns and match those patterns and signals to previous occurrences which have been recorded in the knowledge base. Those findings are then presented to the human decision-maker, along with recommendations and alternative courses of action. The important thing to keep in mind is that the machines will likely find things that the humans will miss, while the human experts will apply intuition and judgment both to their own observations of the project as well as the output of the machine analysis.

This important ingredient, known as sense-making—trying to make sense out of what is going on in the project and what the machines and experts have determined—is something only humans can do (see the middle of Figure 4). This ultimately leads to not only recommending a more credible and reliable course of action, but also providing valuable feedback to the human experts, reinforcing what they’re doing right and helping them to correct anything which caused them to overlook what the machines discovered.

This same feedback process is applied on the machine side in order to refine the algorithms, taking into account whatever subtleties the experts use and applying that process more efficiently and effectively across a growing volume of data. Finally, a sound governance model assists in clearly defining and managing this process, along with the roles and responsibilities of the various agents (human and machine), ensuring more uniform and consistent application.

Proof-of-concept use case: Project Intelligence

The use case developed for the study is presented in Figure 5. It shows the many layers involved in a typical project. More importantly, it illustrates the myriad opportunities for misalignment, mismatches, disconnects, and errors as a project grows in size and complexity.

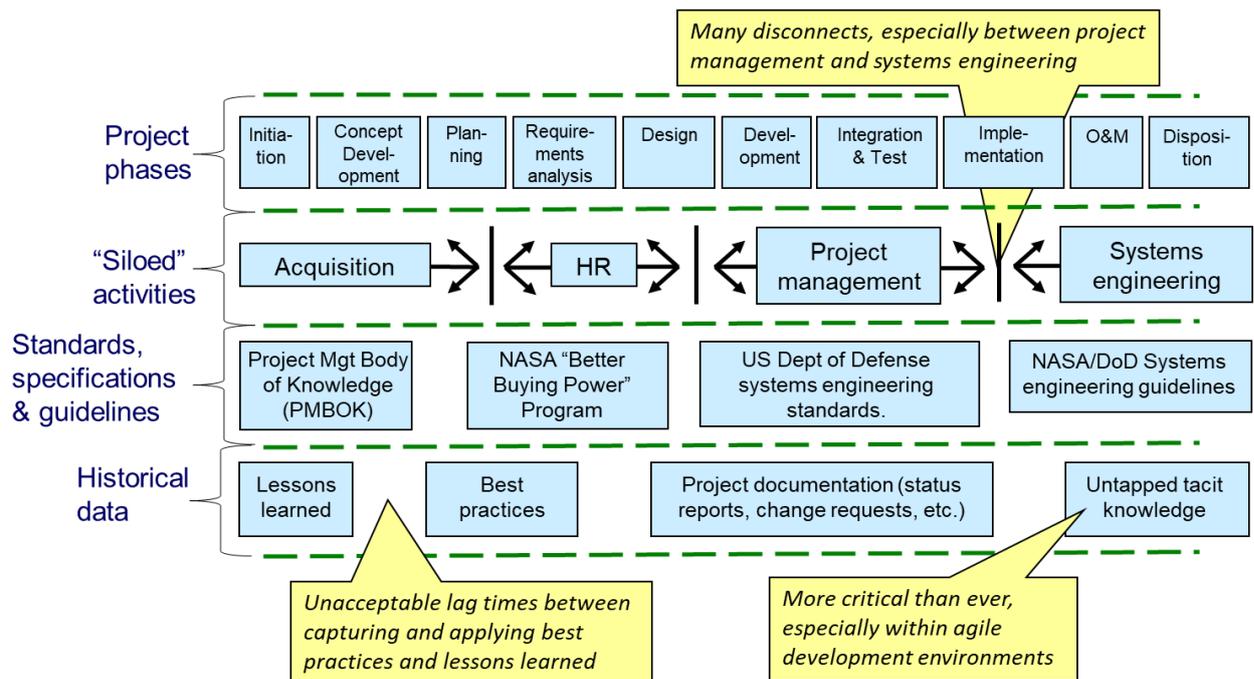


Figure 5. The many aspects of a project which need to be managed and coordinated

The top row illustrates a project’s phases, each with its own set of attributes. Of critical importance is the smooth transfer of data, information, and knowledge as the project moves from one phase to the next. Unfortunately, this is not often accomplished smoothly or correctly. The second row shows only a few of the many organizational silos involved, such as acquisition, HR, project management, and systems engineering. Serious disconnects can and do occur, as each organizational unit uses different mental models and paradigms, and speaks different languages. In large, complex projects, one of the widest gaps often occurs between project management and systems engineering.

The third row illustrates the many reference documents, such as standards, policies, guidelines, etc. which define and govern the various aspects of the project. The fourth row represents the vast body of past knowledge and experience that can be brought to bear both in anticipation of and in response to problems that might arise. Unfortunately, this knowledge is rarely applied effectively. Even if critical knowledge on a current project is captured and codified, the delay from the time that knowledge is captured and made available for reuse on another project is often long, and many mistakes end up being repeated unnecessarily. The good news is that, with the exception of the tacit knowledge residing in the heads of key subject matter experts, the vast majority of relevant knowledge has already been captured in one form or another. However, it is far too voluminous and disorganized to be easily accessed, assimilated, and effectively applied. This is where human-machine collaborative intelligence comes into play.

For the study, we assembled a test corpus from documents from the Project Management Institute (PMI), the US Department of Defense (DOD), NASA, and the Boeing Corporation. We chose these particular documents because they, along with subject matter experts from defense, aerospace, and related industries, were readily available. The documents included: the Project Management Institute’s Body of Knowledge,³ historical data on 17 failed

³Project Management Institute: A Guide to the Project Management Body of Knowledge, sixth edition (2017)

projects within DOD and NASA;⁴ captured knowledge and lessons-learned reports from previous NASA programs including Ares I-X⁵ and Constellation.⁶ Also included were the internal emails from the Boeing 737-MAX project which were made available to the public and which served as a proxy for project discourse at the working level.⁷

The machine analysis consisted primarily of entity/association extraction, knowledge graph generation, salience measurements, and the generation of a variety of sentiment indicators including polarity, mood, aspect, and intensity. It also included the generation of alerts regarding possible problems and recommended courses of action based on knowledge captured from previous projects. Our main purpose was to test the feasibility of using these capabilities to detect and respond to weak signals contained deep within the day-to-day discourse.

This analysis was performed using text/data analytics platforms provided by Rosoka Software, Inc., and Megaputer Intelligence, Inc. The *Rosoka Studio* platform came with a rich out-of-the-box ontology with the capacity to generate knowledge graphs with a wide assortment of associations, along with multiple sentiment indicators for each entity. Megaputer’s *PolyAnalyst Workstation* platform was used to perform data and text analytics, sentiment analysis (including confidence levels), automated taxonomy generation, and case-based reasoning.

The entity/association extraction process identified 1,646 entities within 33 major categories, and over 500 relationship types, examples of which are provided in Table 1. This type of analysis is especially significant because knowing how people, places, and things are connected is extremely important, not only for resolving problems quickly, but anticipating and preventing problems as well.

adjacent to	failed	mentioned in	removed from
affected by	funded	moves from	resides at
assists	governs	moves to	talked about
belongs to	has	owns	uses
caused	maintains	partnered with	other (user-defined)
competes with	manages	profited from	

Table 1. Examples of relationship types used in the study

Key parts of the sentiment analysis included rating each extracted entity by salience, i.e., the level of importance as indicated by which things are talked about most and with what degree of importance. High salience points to topics receiving the greatest amount of attention. Low salience is often an indicator of issues that people are afraid to discuss in the open. These are what we refer to as “weak signals.” Sentiment levels of weak signals, especially when negative, can serve as early-warning indicators of underlying problems. Semantic distance can also serve as an early warning mechanism, especially when semantically similar topics are discussed in opposing ways, or, as what was found in the study, important concepts that should have been present were found to be missing.

⁴J. Steven Newman and David Lengyel, Program Cancellation Failure Modes & Lessons Learned, PM Challenge (2012)

⁵NASA Exploration Systems Mission Directorate, Ares I-X Knowledge Capture Report Vol 1 (2010)

⁶NASA, Constellation Program Lessons Learned Vols. I and II (2011)

⁷<https://context-cdn.washingtonpost.com/notes/prod/default/documents/4a7b7481-6aa0-4821-bb23-39944c5df948/note/af453341-bce7-40e0-8da3-1a6afcbdd61f.pdf>

In parallel, three human SMEs analyzed the same sample project discourse and reference documents, while drawing upon their own experience, intuition, and judgment. They were not permitted to see any machine-generated outputs until after completion of the study. SME #1, Dr. Steven Newman, is a retired NASA aerospace executive and program manager, with an extensive background in quality, safety, mission assurance, failure mode analysis, and the study of project complexity. SME #2, Mr. Brian Newman, is an expert and developer of models for organizational knowledge flows among agents, artifacts, and activities, and a leader in the study of organizational alignment and collaborative competencies. SME #3, Prof. Cynthia Gayton, JD, is an expert in the legal, technical, engineering, and managerial aspects of matters regarding privacy, compliance, and knowledge trail discovery.

Boeing transcript: sentiment analysis results

The following two tables provide sample outputs of the sentiment analysis performed on the Boeing 737-MAX transcripts. Saliency was measured on a scale of 10 to 100. Polarity (whether an item was being discussed in a positive or negative sense) was measured on a scale from -3 to +3. Mood (pessimism vs. optimism) was measured using the same scale, as was aspect (the degree of control people felt they had over the topic they were discussing). Color codes were assigned as follows: extreme overall negative sentiment (< -2), red; somewhat negative (> -2, <0), pink; possibly problematic (mixed positive and negative sentiment), yellow; neutral, gray; highly positive (+2 or greater), green. The intensity indicated by the discourse about a topic was measured on a scale of 0 to +3, and high levels of intensity (>2) were shaded in dark gray.

Table 2 indicates the “strongest” signals with saliency of 70 or greater. For the most part, the terms having the highest saliency also had high levels of positivity and optimism. The MAX simulator (MAX SIM), which was where much of the controversy occurred, was spoken about somewhat negatively. More negative sentiment began to appear further down the saliency rankings, as indicated by discourse regarding the FAA (Federal Aviation Administration, a US government regulatory agency) and the topic of *risk*.

	Most talked about	Boeing	MAX sim	RCAS	airplane	MAX ATB	CAAS	FAA	Risk
Highly positive	Saliency	100	100	96	92	91	84	83	70
Neutral	Polarity	2	-1.27	2	2.5	.17	-0.72	-3	1
Possible problems	Aspect	3	2.42	3	3	.5	2.79	3	3
Somewhat negative	Intensity	3	2.89	3	3	.83	2.9	3	2
Extremely negative	Mood	3	2.98	3	3	-0.08	2.17	3	-3
High levels of intensity									

Table 2. Boeing transcript strong signals

Table 3 lists some of the weak signals that were identified. Notice the preponderance of negative sentiment when compared to the strong signals in Table 2. In a typical analysis, one might “drill down” through each of the items being discussed. For example, the entities *flight director*, *OSD meeting*, *lie*, etc., indicated extreme negative sentiment and would indicate the need for more in-depth review to determine the underlying causes. To further illustrate, we will use the topic *countless managers* as an example. In doing so, we will also illustrate the nature and use of a *knowledge graph*.

Hmmm...let's see what this is all about...

	Weak signals	FMC	flight director	OSD mtg	transport aircraft	DJIA	lie	countless managers	Model ARS	major model/update	SEL
Highly positive	Saliency	12	11	10	10	10	10	10	10	10	10
Neutral	Polarity	-3	-1.5	-2.5	-2	-2	-2	-2	-2	-1	0
Possible problems	Aspect	2	3	2	1	-2	2	3	2	-2	-3
Somewhat negative	Intensity	3	2	2	3	3	2	2	2	3	3
Extremely negative	Mood	3	-3	2	-1	-1	-3	2	2	-3	-3
High levels of intensity											

Table 3. Boeing transcript weak signals

Figure 6 shows what a project manager would see when selecting an extracted entity for the purpose of analysis. By selecting the node labeled *countless managers* on the knowledge graph, the text upon which the “possible problems” sentiment was based appears in a pop-up window. Upon reading the narrative, the manager may choose to drill down to the next level and see what associations are found “one hop” away (see Figure 7). By further reading of the associated discourse, a project manager will begin to see additional indicators of possible trouble brewing, as indicated by expressions such as “*house of cards starting to topple*,” and “*I don’t think anyone will be safe*.” Unfortunately, as was revealed in the subsequent investigation into the two fatal Boeing 737 MAX crashes, those early warning indicators were essentially ignored.

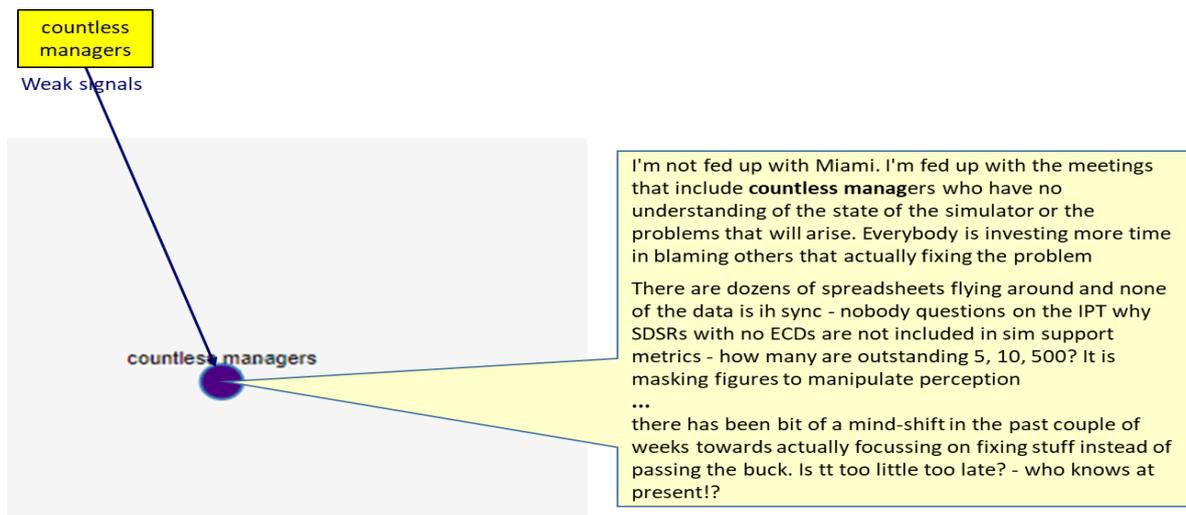


Figure 6. Boeing transcript weak signal example

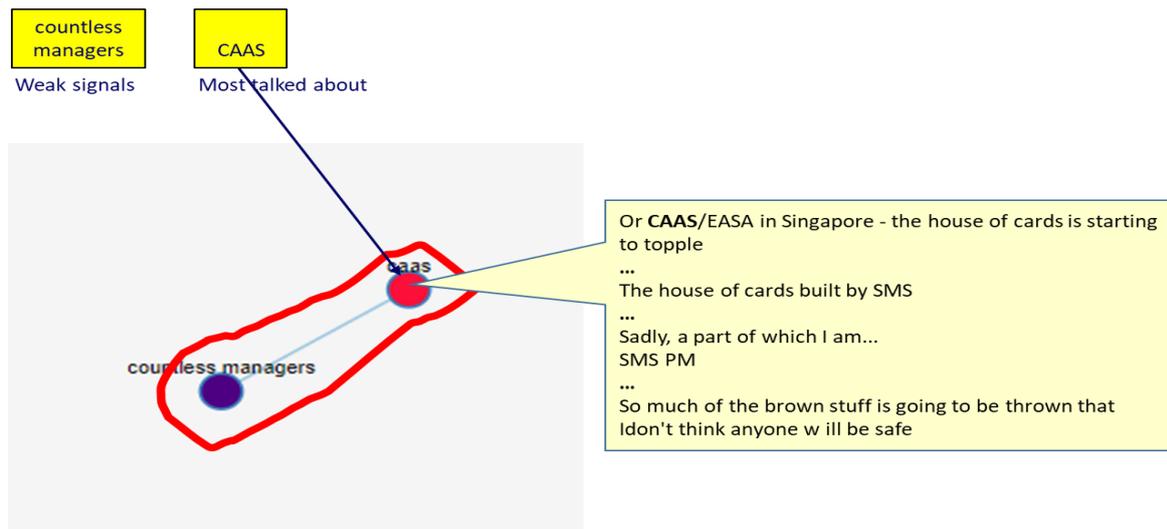


Figure 7. Boeing transcript weak signal example (1 hop)

Now that we’ve shown how problems were identified, we will next look at how a project manager might use technology to recommend an appropriate response by turning to similar projects in the past, perhaps from elsewhere in the aerospace industry, such as NASA (see Figure 8). As we extend our search through the knowledge graph to 3 “hops,” the system found a match indicating that the use of IPTs (integrated product teams) might have prevented the problems and disconnects brought about by the involvement of *countless managers*. The lesson-learned narrative refers to something called “risk-informed question set.”

At this point a project manager might continue to explore the knowledge graph for related discussions about this and other aspects related to risk (see Figure 9). This brings Constellation, another related NASA program, into the mix, by presenting a snippet on how “risk-informed design” represented a “breakthrough” in resolving similar issues at NASA. Note that as the search was expanded deeper into the document corpus to include more programs, the density of the knowledge graph greatly increased. This is why it pays to limit the number of “hops” to around three, but if satisfactory results are not found, then one or two additional hops can be added.

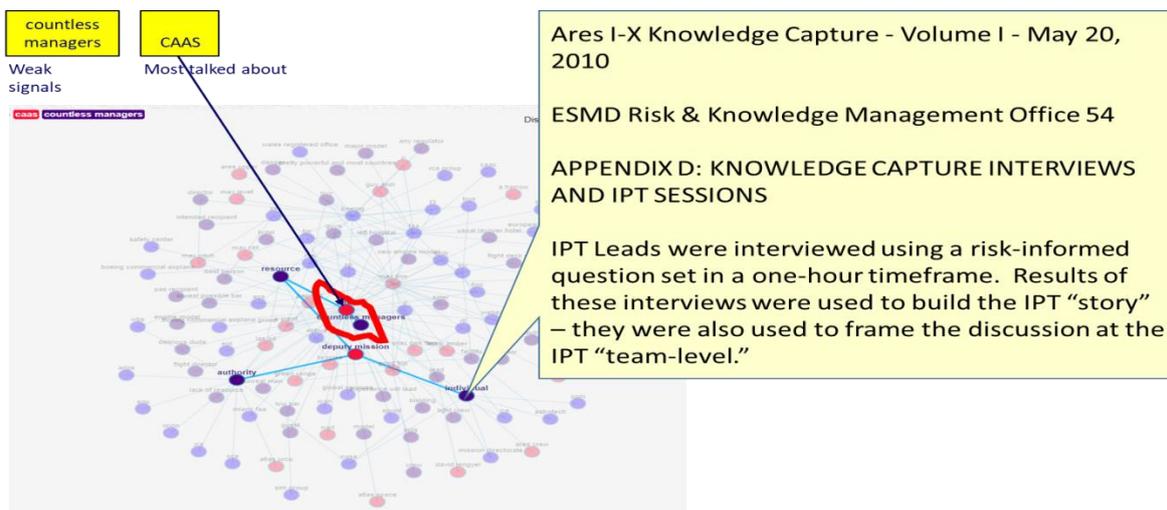


Figure 8. Combined Boeing transcript and NASA lessons-learned (3 hops)

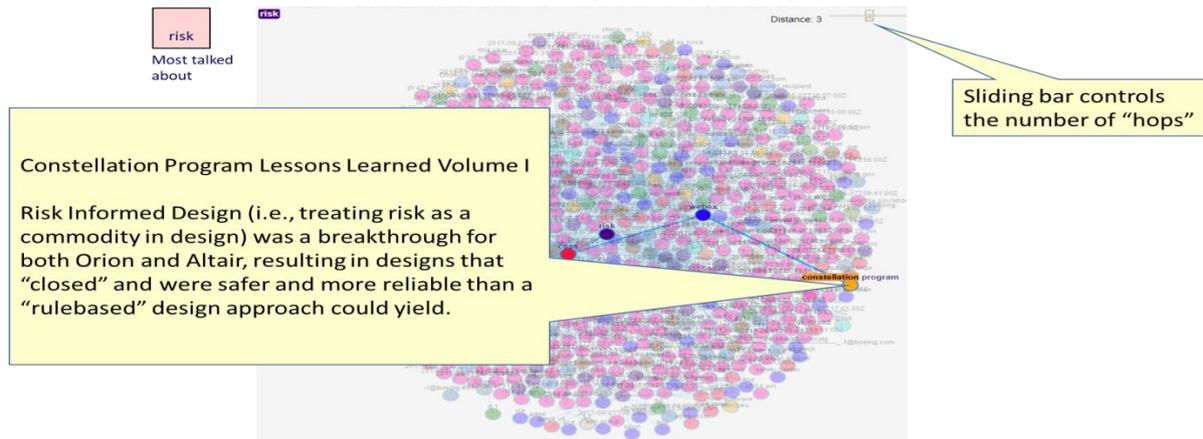


Figure 9. Using semantic distance to reveal potential insights (3 hops)

Another useful aspect of this type of analysis is the ability to discover what’s missing. For example, knowledge graphs have the capacity to measure “semantic distance” across terms. Here we compared the language used in the Boeing discourse with the language used in the collection of lessons-learned documents from NASA.

Figure 10 shows the results of this analysis. In the NASA documents, a strong association was found between the words *risk* and *safety*. In addition, those two terms were among those with the highest levels of salience and positive sentiment, along with the organization itself (NASA). When we look at the Boeing discourse in the same vein, we see similar degrees of sentiment and salience with regard to the organization. However, the salience value for risk is 30 points lower and is treated with negative sentiment.

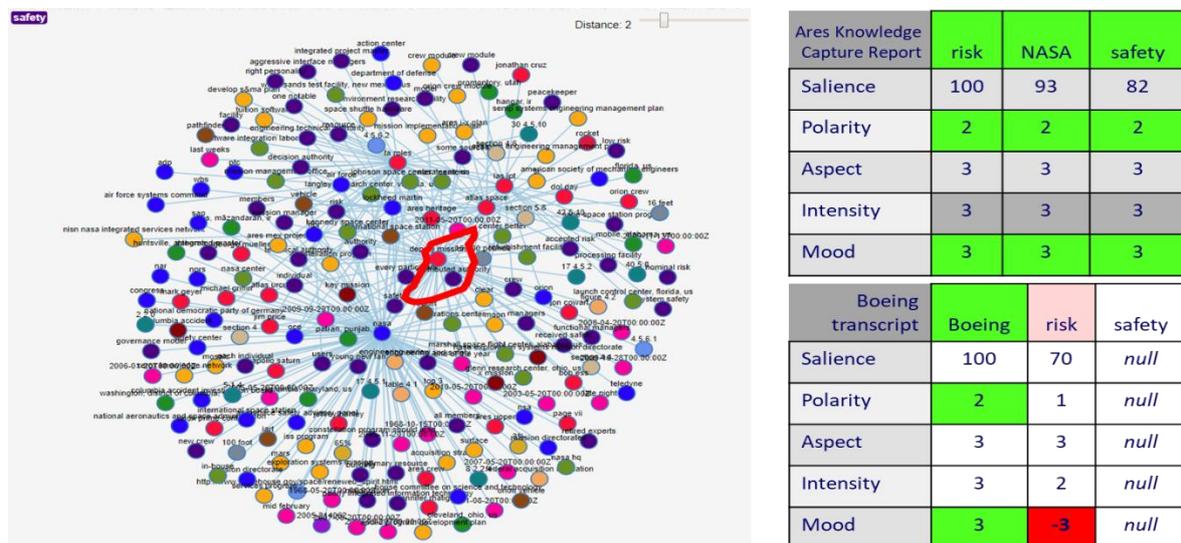


Figure 10. Using semantic distance to reveal potential gaps (2 hops)

What was even more interesting was that the word *safety*, which was semantically close to *risk* in NASA’s lexicon, was completely absent from the Boeing discourse. This is rather surprising, especially given that the product being built would be carrying passengers, and that safety is usually first and foremost in the aviation industry. This is an excellent example of a type of early warning indicator which could detect a serious omission during the course of a project, and in which early interventions might prevent a serious disaster downstream.

Boeing transcript: SME analysis results

As might be expected, the SME analysis was performed somewhat differently from the machine analysis, and produced a different set of results. Conditions such as conflicting priorities and values were identified, for example, between engineering, marketing, contracting, administration, HR, legal, and ethics, etc. Misalignment in perspectives were also noted. For example, the transition to the next-generation 737 aircraft was aggressively marketed to the customers and regulators as seamless, which went totally against the opinions of many of the Boeing design engineers. The SMEs also identified a strong cultural tendency to prove foregone conclusions rather than seeking truth.

Although the machines excelled at identifying the different types of mood present, they completely missed concepts such as culture and politics. The same occurred with regard to other human traits such as “passing the buck” to other, less qualified individuals (either wittingly or unwittingly), and pain avoidance, including unwillingness to take action despite having foreknowledge of a potentially flawed outcome. The central theme or “story” of driving home Level B (computer-based) training vice Level A (simulator-based) at all costs (driven primarily by marketing and contract terms) was totally missed by the machine analysis. In other words, the machines looked primarily at semantics, while the humans viewed the transcript with an eye toward identifying and following storylines and possible hidden agendas.

Insights and conclusions

In summary, dozens of weak signals were identified by the text analytics tools. Almost every weak signal had one or more flags (polarity, mood, intensity, confidence, etc.). The machines also identified useful hidden connections as well as gaps (e.g., risk vs. safety). Very few of the machine-generated observations were duplicated by the humans, and vice versa.

This particular study raises some insightful questions for all project managers. Do you know where your weak signals are hiding? If so, how quickly/easily can you access them, analyze them, and understand their meaning and intent? Most importantly, how quickly, effectively, and confidently can you determine, decide, and take appropriate action?

Given the increased negative media exposure that comes from project failure, organizations need more tightly integrated, intelligent project management systems, along with the ability to draw upon people having the requisite skills, knowledge, and experience. This need will grow as systems continue to expand in size and complexity, and timelines become more tightly compressed. Next-generation project management systems using human and machine intelligence provide cost savings through error reduction, improved resource allocation, and better human capital management, all of which result in less re-work. Best of all, they proactively help identify potential “blind spots,” preventing project stakeholders from saying, after it’s too late: *“How did we miss that?”*

Acknowledgements

The author expresses his appreciation to the Boeing Corporation, NASA, and the US Department of Defense for openly sharing not only successes, but also some very unpleasant and embarrassing data about mistakes and errors in judgment that led to catastrophic failure. For the use of their technology, the author expresses appreciation to RosokaSoftware, Inc. and Megaputer Intelligence, Inc.

Impact of Corona pandemic on operations and supply chain of Agriculture and Food Processing Sector with reference to MSME in India and the expected recovery prospect

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ABSTRACT

This article attempts to assess the impact of Corona pandemic on businesses with particular reference to Agriculture and Food processing industries in MSME sector in India and tracing the possible recovery in terms of recreating the lost demand in domestic as well as in international markets. The industries were caught unaware to face the challenges of disruption with sudden announcement of lockdown and the resulting consequences. Industries in MSME sector depends on the functioning of large processors as their support and contract manufacturers as well as on their limited market opportunities which they have developed. During pandemic both collapsed. With the drastic reduction in consumption expenditure and disruption in supply chain coupled with the severe cash crunch, MSME sector has suffered the most. While the impact of COVID-19 on food and agricultural sector was less when compared with other sectors but even in this sector for MSME it was devastating. This article attempts to trace the reasons and estimating the magnitude of the impact and the possible way forward.

KEY WORDS

Corona pandemic, supply chain, manufacturing operations, sales and distribution channels, MSME, Food and Agriculture, Impact on Business, survival and recovery strategies.

INTRODUCTION

Food industry is largely in unorganised sector processing the seasonal surpluses to produce value added products for domestic and international market. Indian food processing industry is dominated by large numbers of small scale and MSME processors who have limited resources and low level of technology adoption.

Agricultural & Food Processing and allied activities has been impacted by Corona pandemic and meat and poultry sector is hit severely which is the fastest growing sector of agricultural eco-system where we have already created a foothold in global market. India is the third largest producer of eggs and fifth largest producer of broilers and this sector is said to have incurred losses to the tune of INR 150-200 crores every day during pandemic which again is compounded by the social media spreading misinformation linking corona virus infection with the consumption of meat and poultry resulting in demand disappearing and price crashing to INR 10-15 per kg when production cost was around INR 70 per kg. The meat, poultry and marine processing industry has been affected due to logistics restrictions. Fishing vessels were not able to go for deep sea fishing which was banned to avoid large gatherings.

In addition, prices of other food grains including soybean, maize etc. also experienced a steady decline during peak pandemic period. (*Baisya, R.K. August-2020*).

The prices of fruits and vegetables have risen due to limited availability as well as for restricted movement of goods. The edible oils in India is largely (70%) dependent on imports which also got disrupted. The perishable raw material was not processed due to shortage of labours. During mango season, processors were having shortage of labours due to large scale migration of temporary work force working in MSME sectors and at the same time processors did not get any confirmed order of mango pulp which is almost fifty percent of the activity of the fruit and vegetable processing units.

The year 2020 was particularly good for mango production but processors could not take benefit out of it. In the mango season, processors were desperately trying to start processing of mangoes to meet their commitment. And they have been airing several types of issues that they were facing starting from non-availability of labour, high labour cost, transport cost and restriction on their movement, cost of raw materials, operational issues to comply with various kinds of government's stipulations and compliance related to corona pandemic.

During last mango season processors did not get supply of raw mangoes to be processed. Those who could get, quantity was not sufficient to run the plant even one shift in a day when in mango season plants normally run round the clock in three shifts for three to four months. In case of large processors, migrant workers stay within the factory premise or in close vicinity. But this year there were no workers available. (*Baisya, R.K. June-2020*).

The various categories of processed food like fruit juices and pulps, ready to eat food products' sales drastically dropped resulting in closure of small retail and grocery outlets in neighbourhood.

The Supply chain got disrupted during lockdown which has hampered the movement of stock during pandemic and large stocks of processed food got spoiled and became unfit for human

consumption due to expiry of the stock adding to already mounting losses. The non-availability of workers became a major cause of disruption at different stages of the value chain. Even large processors have faced decrease in demand both in domestic and international market.

When lockdown was abruptly declared without any plan, cash inflow suddenly stopped for all industries big, small, and tiny included. A large part of them will have to down their shutters now. Govt earlier gave two shocks to industries by introduction of GST and Demonetisation which was manmade and now COVID 19 which is said to be not manmade although controversy still persists. (*Baisya, R.K. January-2021*).

The production and distribution halted almost instantly without any possibility for industry to plan it out and that created a shock in the processors planned schedule and commitment. A pre-warning by couple of days possibly would have reduced the suffering of millions of migrant work force and consequently the impact on industries.

Acute shortage of trained temporary workforce and impact of other factors on cost of goods

The food industry engages temporary workforce in season through contract route constituted mostly by migrant work force. After years of working in the same industry these workers have got trained to deliver the expected productivity level of the industry. Now that trained migrant workers are gone and they will not come back in near future, industry has to manage with untrained workforce and their availability and numbers are also uncertain. The wages will go up and the cost of processed food will also go up. Industry will not get sufficient time to plan for processing and packaging of seasonal fruits which are largely exported in bulk either as fresh or as pulp and juice –both canned and in aseptic bags in concentrated form. Exporters have not been able to contact their buyers for their requirement in this uncertain situation when both buyers don't have a fix on their requirement as they themselves are also impacted by corona pandemic and processors also have no clue about the cost of the product under new situation when cost of product is likely to go up due to higher labour wages, input material cost, utility cost as well as increase in transport cost. And on top of all that there will be incremental costs for providing protection for safety and health of the employees and customers. The situations therefore, are totally fluid and it is difficult to conclude the deal in international trade where risk is much higher for non-performance of the contract. Our manufacturer exporters are therefore, going through the uncertain phases. The impact will be so severe that such things have never been experienced by industries ever before.

Most of the processors have been facing severe cash flow problem and they were waiting for the government's help to tide over this difficulty. But stimulus package of the Govt as announced have nothing much for the food processing industry to rejoice about. (*Baisya, R.K. July-2020*).

There are large industries which operate on a contract manufacturing system. Even some of the big volume brands like say Parle G are produced on contact manufacturing plants and there will be increased pressure on those companies to keep control of new norms of safety

and quality. Some of these will be regulator driven and the rest will be consumers driven. But one thing is sure that processors have to evaluate these criteria seriously and take measures so that they can make those claims to convince their consumers that they are making new standards and implementing those with all seriousness to make their product well differentiated from the rest which can help them to grow faster than the rest and regain lost market share. It has to be seen how smaller players will gear up to this new challenges to ensure their growth and survival. The food businesses will not be as usual any longer in post pandemic period.(Baisya, R.K. January-2020).

Impact on Food & beverage industry

During pandemic, food & beverage manufacturers have faced significantly reduced consumption as well as supply chain related issues. Consumers indulged in panic buying to overstock for fear of scarcity in addition to supply chain derailment.

The supply of raw materials, food ingredients and other input materials to the manufacturing sites has been also seriously affected, which in turn has hampered production forcing processors to discontinue manufacturing operations. Besides, availability of manpower in the time of social distancing has been yet another major constraint. As a consequence of all these, the food & beverage manufacturers have suffered a 22 percent loss in sales revenue globally according to a study by French trade group ANIA suggests. (*Batch Master ERP. 2020, December 30*).In India, being a tropical country, 45% of the beverage sales take place in peak summer months and the entire summer season was lost due to pandemic and the loss of revenue in this sector was much higher over 50%.

The domestic consumption of these products has reduced drastically for the reason that consumers became sceptical about the consumption of these discretionary food products. Besides, there is an unusual concern and awareness of health and hygiene which has impacted some of the product categories. In- home consumption was happening through e-commerce retail stores like Big basket, Grofers etc, which kept the supply line open although they have limited reach. But the out-of-home consumption, which traditionally generates the higher-margin, has come to a standstill.

Post Lockdown Scenario

The lockdown has now been relaxed and withdrawn in phases. The objective is to start the economic activities slowly and gradually. Railways and Airlines have resumed services but occupancy is still very low. Industries preparing for resuming production. Food industry has suffered loss of sales to an extent lesser when compared with other categories of industries. But that is valid for primary and basic foods. As such there were significant loss of revenue for processed food and food service industries largely for disruption in production and distribution of goods and services.

The year-end sales during the last month of the financial year 2020-21 normally represents about 20% of the annual sales that is budgeted to be sold in the month of March itself, the closing month of the year and that got lost because of the restricted movement of stocks and

non-functioning of the channel partners. During year end, businesses normally announce many discounts and promotional schemes to push stock in the trade. Same is the case during festival season. The festival season sales also plummeted due to poor consumer demand. In MSME sector, many small processors have already closed down permanently and many others are struggling for survival. Those who are supported by large processors will have a little higher level of sustainability. *(Baisya, R.K. November-2020)*.

Industry learnt New Lessons from Pandemic

The year of pandemic has given the food processing industry a lot of hard lessons which has changed the perception about the products and services which needs to be taken into consideration to decide the future direction of the business categories that they own. In many countries, food products have been considered as essential items and food stores were kept open every day following some guidelines during lockdown periods. In the days of disruption the old ball games do not work and new rules and practices take precedence over established understanding of the consumers.

Although pandemic is still not over even if vaccines are developed and new cases of infection and deaths are declining in numbers in India. But what is happening in UK and other countries in Europe and USA can happen elsewhere as well. Food processing industry has to focus on future strategies and draw up plans for managing the business for performance. As consumer perception has changed about processed food, their consumption and purchase behaviour will also change and that will dictate the product formulation, quality, standards of operating practices as well as the gross margin of the products that processors will sell.

For consumers, the pandemic seems to have strengthened their concerns about product safety as well as employees' health. According to a study carried out by Mckinsey, 20-25% consumers in developed markets are researching on food brands and products before they take decisions to purchase. And key considerations are if the product is safe and healthy, is the packaging hygienic and welfare of the employees which stood as top decision making considerations. And in emerging markets where these figures even exceeds to 40%, 35 % and 45% of consumers in India, South Korea and China respectively which would mean that concerns in emerging markets are much greater on the similar criteria. This is quite significant that in India 40% of the consumers' buying decisions are now based on new criteria and considerations where hygienic packaging and employees welfare and health stood as the top most important criteria. *(McKinsey & Company, Feb 2021)*.

New Food Safety Standards post pandemic and Compliance to new standards

The food safety standards will also undergo changes keeping in mind the new perception of the consumers with regard to quality and safety and employee welfare criteria. This itself will pose serious challenges to many processors and more so to MSME sector who have limited resources and low level of technology adoption hindering the need of adjustments to the changing scenario. The product quality and safety will also dictate the product composition and formulations. Many large companies are also reviewing their product compositions in the light of new expectation of the consumers and also based on new knowledge on the subject and latest scientific literatures. Many processors in India have to relook at their products and

formulations in terms of new realities. That itself is a challenge which is unique to food processing industry.

In US, specific social issues have emerged. The survey of US Centers for Disease Control and Prevention revealed that a certain ethnic group working in meat industry accounted for 87 % of confirmed Covid cases in meat processing plants between April and May during pandemic. (*Dyal, J. May-2020*)

In view of these findings and as a result of the pandemic induced scrutiny on social belief and practices of companies, it is now generally believed that food processing industry is unlikely to maintain the pre-pandemic operational status quo. The only way forward it seems that food processing companies will be seen to follow different price structure and also product standards and also even discontinuation of certain products altogether. Some of these changes are likely to be driven by Government agencies and regulators, seeking to limit the spread of contagious diseases. For example, The German Federal Government has already announced a ban on contract and temporary workers at meat processing plants from January 2021 which will force meat processors in Germany to directly employ all staff and workers at much higher cost reflecting a different pricing of the product and that also can impact business volume. This ban has come into force based on the suggestion by the European Federation of Food Agriculture and Tourism Trade Unions. In Netherland also similar move is on the cards where trade unions are demanding direct employment of workers engaged in food processing. (*Overton, A., November-2020*)

The imperative of this requirement for adhering to enhanced regulatory guidelines, businesses and brands pursuing growth will be required to differentiate on these social factors positively to gain market share. Large companies and MNCs are evaluating these new pandemic related parameters. Some companies are also seen taking proactive actions such as fitting hospital grade air filter in the ventilator and air handling unit and even some companies have voluntarily reduced the working hours in a shift and implementing social distancing convention for workers.

The impact of all these will be that the companies will inevitably face increased operating costs, squeezed margins and unused capacity for an indefinite period on the top of the prospect of workforce shortages as migrant workers remain at home due to travel restrictions. The technology adoption in processed food industry has long lagged behind, but other consumer goods sector has already adopted advanced technology such as robotic automation. However, these changes may stimulate transition for food processing industry also. But it is not going to happen soon because of huge investment and requirement of skilled workforce. Besides, it will also reduce employment.

Agriculture Sector delivered higher GVA

The quarter 1 performance in terms of GVA (Gross Value Added) by Agriculture, Forestry and Fishing sector for the financial year 2019-20 and 2020-21 have shown growth. This is the only sector which has shown growth during pandemic as can be seen from data in Table 1 below:

Table 1: Sectoral GVA for Quarter 1 (April-June) FY 2019-20 and 2020-21 at 2011-12 prices

	2019-20 (Rs crores)	2019-20	2020-21 (Rs crores)	2020-21	
GVA at Basic Prices	Quarter 1	Share of Total GVA (%)	Quarter 1	Share of Total GVA (%)	% Growth
	439842.6	13.3	454657.9	17.8	3.4 %

Source: Ministry of Statistics and Program Implementation, Govt of India,

The percentage share has increased in quarter 1 of 2020-21 from 13.3 % to 17.8% but that has to be seen for the reason that all other sectors registered a negative growth rate. The fact that Agriculture, Forestry and Fishing sector has registered a growth rate of 3.4% has really helped the Indian economy. Thanks to our farmers who really delivered. But in spite of that food processing industries have not performed in domestic market and also in export of processed foods? All categories of processed food have registered significant decline. (Taneja, G., & Zaidi, A. July-2020).

As per the figures available during FY 20 till February 2020 India exported Basmati Rice worth USD 3.88 billion, buffalo meat worth USD 3.01 billion and non-basmati rice worth USD 1.84 billion and during FY 21 till October 2020 basmati export was reported as USD 2.43 billion, non-basmati rice worth USD 2.33 billion and buffalo meat worth USD 2.71 billion and other processed foods worth USD 2.71 billion during the FY 20.

Indian agricultural, horticultural and processed foods are exported to more than 100 countries and regions including Middle East, South East Asia, SAARC countries, the EU and the US. During pandemic the export performance has in fact declined in spite of the fact that in terms of GVA the sector showed a real term growth of 3.4%. (Baisya, R.K. December-2020).

Ministry of Commerce and Industry, Govt of India introduced Agricultural Export Policy , 2018 with an objective to double the farmers' income by 2022 by doubling the agricultural exports from the country and integrating Indian farmers and agricultural products to the global value chain. The export of agricultural products was targeted by the Govt to formulate its policy to achieve export of USD 60 billion by 2022. Keeping that in view the Government had also introduced new set of farm bills which is currently being opposed by the farmers. The readers can easily see the gap between the actual performances in export of agricultural products which is hovering at USD 29 billion. In FY 20 till January 2020 exports of agricultural and processed food products reported to be worth USD 28.94 billion which is only the halfway mark of the projected figure of the Govt for FY 2022. This will be obviously not achievable.

Some of the agricultural commodities including pulses and also in terms of milk and buffalo meat production we are the largest producer in the world but we cannot compete. Pulses like chickpeas and kidney beans we still import as imported price even after paying high custom duty, can compete with local producers which means that domestic farmers still needs protection , otherwise imported products can easily come and compete in Indian markets. More so, by the countries like Vietnam etc. with whom we have Free Trade Agreement

(FTA). For the milk and meat export also we are not competitive against Australia and New Zealand. We need to improve the export competitiveness of all these products. Our farmers are putting in hard labour and even in pandemic they have shown increased performance when compared with other sectors that have shown a steady decline. But their income level is not growing in real terms. As farmers cannot get higher price in International market, the only way to increase income is by improving productivity. In domestic market also the prices cannot be increased as it will make processing industry un-competitive and that hinder the growth of the processing industries. We need improved farm management practices to grow.

Way to Recovery Needs New Strategic Direction

All major categories of processed food industry have suffered significant losses and decline in performance during Corona pandemic due to decline in demand and disruption in supply chain. However, all disruptions and challenges also bring new opportunities along with it. Once the dust settles, the processors will find it imperative to innovate and change with time to remain relevant. New strategies for survival and also to regain the lost opportunities will be:

- Review the existing product portfolio and rationalise the products and SKUs
- Revisit the current sourcing strategies and evaluate alternative suppliers in view of new criteria of sourcing requirement
- Evaluate alternative distribution routes, channels and strategies
- Explore and optimize e-commerce and distribution network
- Organise-wide cost management initiatives to reduce cost of operation
- Revisit pricing and promotional strategies
- Strategies for regaining the lost customers
- Assess the existing supply chain agility and how to make it more resilient
- Review the crisis management system and emergency response plans

Customers may have switched to alternative products or even to competition. Some of the competitors may have even changed the food habits. Some have even moved to natural and organic foods from processed foods. So challenges are significant.

In difficult times like this, businesses need both innovation and financial resources to regain the lost ground which most of our MSME players don't have. There are large numbers of MSME in food processing sector who have closed their shutter. Most of them will not be able to start again. Small vendors including road side restaurants and dhabas have also closed down. The food retailers and neighbourhood stores have permanently closed down and their owners returned to their home state not to come back again. They therefore, will take longer time to get back to their pre-pandemic positions. The worst sufferers from pandemic would be MSME sector across categories of food industries. Those who have survived will take long time to get to pre-pandemic level. Industries which are dependent on international market will take still longer.

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Special Feature Article:

Business Chameleon in real Life, Everything is a Project

László Károlyi
CEO LEGRAND HUNGARY

Abstract

The world is changing. Technology development has an enormous impact on business, especially impacting on our views of project management. The issues arising are more and more complex, teams are becoming heavily virtual. This new business environment forces companies to rethink how they operate. It is crucial to gain and keep market share in order to stay on top of competition. Nowadays, the key lies with business development, cost reduction, and the customer. A well-managed customer journey, along with customer service during pre- and after sales and most importantly, the quality of product and/or service, are all necessary to reach customer satisfaction. Furthermore, as companies feel the pressure to move quicker and become leaner, complex hierarchies and bureaucracy is being eliminated. Consequentially, employees find themselves dealing less with clear directions from the management, and more with a complex peer group. Team-based problem-solving becomes extremely complex and vastly different from traditional means under these terms, in the era of cross-functionality.

We need a simple steering compass to lead us in the turmoil. Project management needs to evolve to fit current managerial needs, especially as its tasks mold together with those of business development. An updated skillset is extremely beneficial, since tracking metrics isn't enough to stay successful; figuring out and managing the customer journey must come first. The Crenchmarking™ management system and philosophy is a simple approach offering you quick and simple solutions with the power of novelty, to tackle challenges in a quickly changing and complex business environment.

Humanity has always had great visions – the problem lies in the question of how to best to turn them into reality. Much like the construction of the great pyramids in the antiquity, the creation of a new manufacturing site both needed a complex infrastructure and an impeccable information processing technology for their implementation. We still strive for greatness - we don't simply want to create something; we want to create something unique. Nowadays, to achieve such excellence, classic knowledge won't be enough. A new approach is needed in project management, vastly different from already established processes. This statement becomes especially valid in competitive business environments or saturating markets, where out-of-the-box solutions are crucial for successful business development, turning the customer's vision into reality in a novel and different way. There are some common rules and skills relating both to project management and to business development. The golden rule of success is to understand the "why" behind decisions.

Accelerating change is the way to increase the number of unique activities, new businesses with disruptive solutions, however, this dynamic creates a highly complex situation,

potentially discouraging new entrants in competitive markets. The parameter of complexity is better explained in the VUCA world model of the American Military. The acronym stands for volatility, uncertainty, complexity, and ambiguity, describing the four key parameters of the world we live in. In the business world, the issue of complexity in decision-making is highly affected by two further parameters: the customer and competition. These three together form the 3C, the three main factors inducing change in the scope and focus on project management, including drift towards customer focus and blurring the lines between project management and business development.

Managers are responsible for making decisions regarding the organizational structure, definition of procedures and questions of employment. They don't necessarily have to work harder to reach their goals and get ahead of competition – but they absolutely need to work smarter. The three challenges they face today, are the 3C: complexity (as part of the VUCA world), competition, and the customer, final judge of whatever product or service is delivered.

How can we lead smarter? In the decision-making process, we use our accumulated competencies, accumulated know-how and experience, while constantly improving via continuous learning to ensure an improved decision-making. Would it be possible to speed up this learning curve? There are well-established ways to access further knowledge, such as sharing worst and best practice cases. In my opinion, in order to learn how to think outside of the box and quicken the pace of learning, you have to forget about the walls separating the professional and private life. We face many complex situations in our private lives requiring highly complex decision-making qualities. Just like in the business world, it is easier to reach a preferred outcome once we understand exactly what is happening and why, and we communicate accordingly. If we manage to change our mindset, it is possible to make use of our experience and knowledge accumulated in private situations in business context, utilizing all twenty-four hours of the day to accelerate the learning curve.

Even if you speed up the learning curve, there is no promise of certain success in the world of 3C. Sometimes we have great ideas – but innovation in the business world takes a long time and requires sizeable investments. Sometimes we simply cannot come up with any novel solutions. One way to overcome such hurdles is to try and “copy” best practices of our most successful competitors. However, implementing the industry benchmark without further alterations will not set us apart from our competitors.

Real mavericks merge tradition with innovation in a different, creative way. If we take a closer look at different business approaches and efficiency of various global and local enterprises, we can find examples which indeed show a hybrid way to renew and innovate products and services. Analysis of these examples coupled with the economic dilemmas caused by the 2008 crisis led me to come up with my own ideas, and thus, the theory of Crenchmarking™ management system and philosophy was formulated. A simple approach explaining how to manage a project or a business in 3C environment in five steps.

1. **Understand complexity**, as explained within the VUCA world, relating to change management. It is essentially the “why” behind decisions.
2. **Continuous assessment** of self, team-members, management, and processes. This is the foundation of well-informed decisions and an increased rate of success.

3. **Never lose sight of competition**, and chose your battleground carefully.
4. **Use the PDCA-cycle** as a tool to implement visions in real life, but use it with a twist. Having new ideas is a great starting point, but it is crucial to be able to turn them into reality in a meaningful and qualitative way. Take into consideration the customer point of view, and extend the cycle to PDCCA (Plan – Do – Check – Check your customer journey – Act).
5. **Don't forget about Lovemark²**. When interacting with a company, customers are dealing with employees, which automatically become the faces of the brand. As such, motivated employees can greatly improve customer journey efficiency, while unmotivated ones have the power to destroy it.

The perpetual repetition of these five building blocks of CrenchmarkingTM management system and philosophy can lead you to sustainable success in the 3C world, proposing a steering compass and helping you lead your team to success in the 3C world.

The origins of CrenchmarkingTM
*“The reasonable man adapts himself to the world;
the unreasonable one persists
in trying to adapt the world to himself.”*
George Bernard Shaw

Digital transformation is the latest “magic word” in business. As a consequence of the IT revolution, the world has gone through rapid virtual globalization. If something worth mentioning happens anywhere around the world, the news can spread literally into every corner of the world within a matter of seconds. In years past, libraries, books and periodicals were the media for information gathering, be it for scientific research or just for skimming over current events. Nowadays, the top media outlets are not even the radio or television anymore, but rather the internet, going hand-in-hand with portable devices such as smartphones and tablets. Today, all books of the world fit into our pockets, and we are provided with direct and continuous connection with various sources of up-to-date information and the latest news. Life is going at an accelerated speed, and handling such a substantially changed environment has also become part of doing business.

Despite the fact that we possess software which are able to perform highly nuanced analysis via artificial intelligence, the global crisis which started in 2008 was unforeseen by many, hitting hard and turning economies upside down. This crisis demonstrated the need for business development and project management solutions that enable enterprises to adapt quicker to sudden changes and unexpected events. Market research highlights examples of companies operating successfully and productively even while lacking resources in a narrowing market - there are even cases of development and expansion. But how did they manage to achieve this? Benchmarking won't work under complex and difficult economic circumstances, since copying best practices doesn't actually result in improving any processes. If we offer the same the same solution as others, why would (new) customers turn to us? Innovations, along with new, patented solutions can certainly attract customers with the power of novelty, boosting trade. However, in urgent cases, innovation remains a solely theoretical opportunity, as no ready-made solution is available at hand. Turning an innovative idea into a marketable product or service is a long, expensive, and time-consuming process.

Realbusiness mavericks marry tradition with innovation, offering new solutions which are almost readily available to implement. After analyzing the operations and efficiency of various global and local enterprises, I found that many were building upon the same type of idea to further develop their products and services. The economic dilemmas posed by the crisis of 2008 made me start experimenting with business development and project management in a vastly different style, inspired by my search results. After achieving extremely positive results, I formulated the Crenchmarking™ management system and philosophy.

Is it manageable to blend the old ways with new? Can we seek inspiration from different industries? Is it possible to incorporate experiences from completely different business areas into already established solutions models? Does this new information and know-how affect both project management and business development? These were the questions which intrigued me the most as I was formulating the business development plan of Legrand Hungary, which I set up according to the new management concept, the Crenchmarking™ management system and philosophy, developed by myself in 2012. There was an urgent need for new thoughts, impulses, and new momentum. In the difficult years following the crisis of 2008, we were looking to achieve any kind of increase in revenues. At the end of January 2012, we experienced a 30% drop in revenues, quite the opposite of what we had hoped for. The Crenchmarking™ management theory system was born from an analysis of the business solutions which were extremely successful in the international and global economic environment during the time of the crisis, by drawing conclusions from their actions and summarizing their experiences. Building upon this foundation, I set up the business plan of Legrand Hungary for the upcoming three years, which was officially adapted by the upper management for 2013-2015. The biggest challenge was to put the company on a path of profitable, sustainable growth, even though stagnating demand was forecast for a good few years in the market segment that constituted a major source of our income. The plan we introduced during fall 2012 targeted a revenue increase of at least double the national GDP, with gradually increasing profitability. We achieved a 12% annual increase in 2013, and in each and every year thereafter. The success of the Crenchmarking™ philosophy and system was also demonstrated by the fact that this momentum continued even after 2015, resulting in a continuous double-digit growth. When the economy made a favorable turn between 2017 and 2019, our yearly growth exceeded 20%.

The Crenchmarking™ philosophy and corporate management system enables businesses to respond to market changes quickly and with little investment, thus making explosive development possible even in a narrowing market. Crenchmarking™ management system and philosophy proposes solution for business development, team-building, quick and profitable ways to expand businesses, proposing a solution to manage teams and projects successfully in the 3C world, where business in the general sense doesn't exist, rather everything is perceived as a project. Sustainable success in business is like running a marathon: it requires long, persistent work, it isn't just a "sprint" by any means. The use of the Crenchmarking™ management philosophy and system hugely increase the chance of maximizing market results while using minimized resources, gaining a significant business advantage compared to competitors within a relatively short period of time. It is the perfect methodology for quick solutions in unexpected situations, as well as for standing out from competitors by introducing novel and surprising solutions in highly competitive markets. It is an equally useful business method for startups, as well as for established companies and experience market leaders.

Explaining Crenchmarking™

Crenchmarking™ is a mixed word, created by combining the words *creative* and *benchmarking*. It defines the essence of this management philosophy and system. It describes benchmarking being used in an unconventional way, not just narrowing it down to your own industry and observations about our competitors, but also following changes in the global economy and in the general body of knowledge. “New” solutions can come to light with inspiration from successful professional practices discovered in other areas of life, assisted by a dash of creativity, with consideration for opportunities in your own market environment, and through redefinition of your existing product or service. These solutions, products, or tactical business steps are created by blending an already existing, well-known element – tradition, even - with a new, creative idea. Thus, by producing the novel feeling that characterizes new developments, we can establish real, but new solutions in a way that requires far fewer resources than implementing an innovative idea from original research, requiring significant resources and a longer period of time. With the help of the creative ideas of Crenchmarking™, any successful product idea, or any well-operating service, process, or practice found in any business area, can be transposed into your own business sector, with due consideration of your clients’ expectations or building upon new, latent demand.

Success stories, such as Dell® and Red-Bull® are really good examples of Crenchmarking™, demonstrating how a steep market share increase can be achieved by rethinking an existing product or business practice. In the case of Red-Bull®, we talk about everyone’s favorite energy drink. However, most people don’t know the origin story of it. In the 1980s, Dietrich Mateschitz was working as the marketing manager of a multinational company. After a night out in Thailand, he was on his way to his hotel in a taxi, and the unusual drink the taxi driver was having caught his attention. He found out that most taxi drivers were drinking a traditional “energy drink”, prepared according to an over hundred-year-old secret recipe, previously known and consumed only in Thailand. He hit the jackpot with it: he came up with his version of the energy drink, he branded it and positioned it on the global market so remarkably well that nowadays, Red-Bull® is the world’s number one energy drink, successfully creating a new soft drink category globally, which previously had not existed. Incorporating Crenchmarking™ management philosophy and system became into the corporate culture can create the opportunity for dynamic expansion.

The first step is information and know-how gathering. Life is in continuous motion and change, our goals marking important milestones on our way. If we do not pay attention to the changes that take place in our environment, it will be difficult to reach them, or we might simply miss them. Our progress can turn into mindless wandering without direction. This step is about the importance of keeping an eye on the external environment, the complexity of the 3C within the VUCA world. VUCA is an acronym introduced in the 1990s by American soldiers who found themselves in an uncertain combat situation. It stands for volatility, uncertainty, complexity, and ambiguity. This environment shapes the business “playground”; the national, regional, and global economies are closely connected, and their influences on each other are determinative – change one parameter, and the others will quickly follow, as well. Intense and unexpected changes can occur in the market opportunities of a single region or country, which is exactly why it is important to constantly keep informed in the areas of technological development and international trends, as well as economic and legal regulations. This continuous scanning of the latest trends, ideas, and developments is necessary, even on a global level, and not only in our own professional area. Continuous information gathering provides a source of ideas and inspiration while minimizing the

possibility of unexpected business developments. This is extremely important, as changes themselves are troubling enough in the business world, and *unexpected* changes are even worse. But in the VUCA world, expanded by the 3C (complexity, competition, and customer), changes are difficult, if not impossible to avoid.

The second step is to know yourself, your team members, your manager, the organisation and the processes. You must be aware of your individual abilities and the capabilities of the organization, as well. Possibilities of optimizing internal resources and human-created value from the perspective of the individual, the team, the leader, and the process should be examined more closely. Anyone can throw money at a project, but the efficient team or the successful leader is usually not the result of a sudden decision, but of consistent and persistent work. This step also introduces the major elements that are required for an effective team, crucial to deliver good results. It is important to get to know the individuals within the team as precisely as possible, the way they work together, and their leader's abilities, strengths, and weaknesses. If these are not determined, it will be impossible to set realistic expectations and to define an effective development program. Furthermore, good leaders must pay attention to harmony within the group. A team's performance is not automatically the sum of the participants' performances. It can be much more than that - but also much less. The primal task of the leader is to choose the right people and tailor them into a properly fitting organization. The targets must be broken down into achievable segments, step-by-step and area-by-area, in accordance with the company's strategic directions. Achieving the goals should be possible, but challenging at the same time, so that there is a good chance for success for a motivated and well-oiled team. Fine-tuning tasks and goals is a fine art, with many pitfalls ahead - people tend to give up early if a target is considered impossible to reach. These are questions of belief and cooperation, which is exactly why we have to have an accurate knowledge about the abilities of each individual and the whole team, as well as the limits to which their targeted goals can be stretched so that success will be more likely than failure. The process is planned by people, and if this task is exercised without proper reflection and expertise, the chances of human error will be high, resulting in the loss of team efficiency. But even a well-designed process will not bring about the expected results if the rules and regulations are not complied with.

*“Get your facts and then you can distort them
as much as you please”
Mark Twain*

The favorite saying of Frederic Xerri, European Director of the Legrand Group, indicating the importance of the relationship between strategy and tactics in business development is “Choose your battle”, highlighting the importance making the right decision. We have an abundance of data, however, the question is whether we are able to make sense of it during the decision-making process.

Case Study – 1

TEACHING LANGUAGES DIFFERENTLY

Business Case: Teaching languages differently

When it comes to business development or launching a new business, the question of how they can be brought onto a path of sustainability and growth and how an already functioning activity can be made even more successful always arises. It is especially true for areas where a large number of companies have been active in a similar form for a relatively long time, since business environment challenges hardly change. An example of such an area is language teaching.

The challenge: Is it possible to create something new in language teaching? How is it possible to break through as a start-up in English language education? Can a higher-level teaching method be developed to reach the masses and to be more efficient when launching a new business?

The challenge of English language teaching is that pronunciation and the written text are different, which makes learning and the development of communication skills difficult. Furthermore, the idea of learning a language is not very popular due to the need of swotting; however, due to the high number of words and grammatical constructions, gaining lexical knowledge is not sufficient for acquiring oral communication skills. Language education can typically be classified into two methodological groups. One of them is the traditional small-group – sometimes individual – tutoring by an English teacher, who builds on numerous, but roughly identical books helping with thematic learning. The other is an educational system building a proprietary methodology, which is used in various institutions across several countries, spread in the form of a franchise. In both cases, the teacher has more or less a free hand in teaching; hence, effectiveness depends on them to a great extent.

Marian used to be a language teacher in a state school. The teaching methods she applied were not very successful, so she had been looking for new ways to increase efficiency, and decided to ask for feedback from students. She was interested in the following questions, relating to the aspects of pronunciation, oral comprehension and writing:

- What was easy to learn and, in their opinion, why?
- What was very difficult to memorize and, in their opinion, why?
- What was tiring about learning languages?
- What motivated them to spend time on learning languages?
- What helped them in developing their oral communication skills?

Having a degree in teacher, she was of course aware of various teaching methods. Organizing the responses of the students, she started to compare the results with said methods. She experimented; she wanted to create an educational methodology, for which participants would be keen to apply and to attend and their learning progress would be successful and quick. The expansion of her family, the arrival of three children interrupted the realization of her ideas. After her youngest child grew up, she decided not to continue teaching at her old job, rather she decided to set up her own language school instead. During this period, our paths crossed, and mentored her while she was working out a business model. She needed help to implement her vision of high-performing English teaching.

The Crenchmarking™ methodology helps in merging previous experiences, lifting already existing solutions from various business segments and mixing them with new, creative ideas to give birth to solutions that can be implemented quickly and with less resources, still giving the feeling of novelty for clients and surprising competition, navigating our enterprise towards a blue ocean business situation. We started to work together using the Crenchmarking™ methodology. She already plenty professional experience, so we were targeting a completely new approach to revolutionize language teaching, still including the well-working practices as part of the new model.

As a first step, we looked for inspiration by analysing the innovations related to teaching languages, but also by examining all types of new ideas from other business areas, especially from the IT sector. In the 3C world, where complexity, competition and the customers are the three leading streams, a sustainable and successful business can only be operated using an agile approach, proposing high performing redesigned solutions to the customers.

The second step was the assessment of internal resources - professional and financial -, determining how far we could go to the right solutions for Marian’s start-up. We needed to find a balance between the estimated customer needs and the capacity to fulfil this at requested quality and value.

The third step was designing the right timing of the product launch and creating a well-defined product portfolio. Using the Crenchmarking™ selection matrix, and selecting the highest market knowledge & highest market growth potential (segment 1) we determined which product portfolio is worth developing first based on the expected revenues, profitability and/or the segment market growth.

CRENCHMARKING™ SELECTION MATRIX		
High market knowledge	2	1
Low market knowledge	3	4
	Slow market growth	High market growth

Teaching generally isn’t a leading discipline in digitalization, however, with digitalization being a global trend, the possibilities should not be overlooked. From the feedback of students, it was also perfectly clear that the personal connection, the presence, personality and professional knowledge of the teacher was the determining factor for the end result. The challenge was to find the right balance between the personal presence and the digital solution, still keeping a special value, while at the same time being deployable everywhere.

Therefore, a “blended” solution was finally born as a business model, just like how fine wines are made from several wine grape varieties; the attractive flavour and character of all of them will be part of the end result. The newly developed language learning methodology is

based on multi-stage skills development, placing greater emphasis on those elements that present difficulties for language learners, combining internet learning with personal education, and so I named it “virtu-real”.

We found the answer for a very important problem. We dreamed of a teaching method, in which pleasure could be connected to business; a learning process to create harmony between lexical knowledge, the development of communication skills and pronunciation in a way that it would be an adventure, rather than a chore. Building upon the Crenchmarking™ method and logic, we came up with a novel solution, with a high success rate expected.

Levelling Language School developed its teaching material, constructing a “virtu-real” approach, based on the following three parts:

First package: internet accessible themes with the aim to develop a fundamental lexical knowledge, get to know the necessary grammar constructions and learn the basic oral communication skills. It is based on various selected vocabularies attached to current and interesting topics and a modular teaching method in grammar construction.

Second package: a week-long evening program, building upon personal experiences and interests, pre-supported by selected vocabulary and grammar constructions. It is attached to some kind of experience, such as a cooking workshop, where all communications take place in English. As support material to the program, the vocabulary learnt and pronunciation can be finetuned, with focus on typical pronunciation mistakes in a playful way, via an internet learning platform and skype sessions.

Third package: storytelling in English. This is the series of interesting stories with selected vocabulary expansion and grammar exercises, to which subscription is available.

The enterprise kicked off in 2015, and after just six months of activities, they already closed the year with a profit. The biggest success was the second package, blending experience with learning. They regularly deal with excess demand for the workshops, the business unable to expand its services at a rate which could keep up with the demand during the first two years of it operating.

In practice, all successful businesses have to build on the same basis: they have to build business opportunities, examine the risks and then create a business plan. This should contain the costs, the solutions, the deadlines and the to-dos necessary for the day-to-day operations of the organization, so that the predefined goals can be achieved.

This business case highlights that customer satisfaction has the power to boost sales extremely, even in the case of newly established companies. The key to success is understanding customers’ needs along with the customer journey, and find the right way to cater for them.

Cast Sstudy 2

CAN A SMALL, PRIVATELY OWNED FOOD BUSINESS SURVIVE IN THE GLOBAL AND DIGITAL WORLD?

Digital transformation has been a key theme in business in recent years, changing the global environment and raising new questions. Could small, privately owned food manufacturers such as bakeries survive under such conditions? In today's world of accelerated change, competition has never been more intense. It holds true now more than ever, that the key of success is to understand the ever-changing customer's preferences. To do so, it is important to capitalize on digital technology analytics and other tools to spark customer engagement and commitment.

The Challenge: Small, privately owned bakery versus international food chain

As a result of political change in most Central European countries in the 1990s, the market suddenly opened for private entrepreneurial activities, and became a supportive environment for small entrepreneurs and big multinational companies alike. However, the change was slow. Mr. PéterLipóti, who founded his bakery in 1992, was one of the first entrepreneurial individuals to take action. After the privatization, global investors entered the market within the course of a few years, such international grocery and fast food chains, and malls with food courts. At that time, Lipóti Bakery employed approximately 20 people, targeting small grocery stores in the region had to reinvent his brand to successfully continue catering for increasing customer needs both in quality and volume. Step-by-step, customer purchasing habits has changed as people started spending more and more time in malls. Small, privately owned and operated shops were losing market shares. Food businesses operating in malls, mainly owned by international food chains were using their increasing power to press down the prices. Lipóti Bakery started to lose market position, when finally; in 2004 they had to face the facts that the business is no longer sustainable. After a series of long and challenging discussions, the family management was left with the following situation: find solutions to the following six following questions, or shut the company down:

- What is the main reason for market loss?
- What are the current and upcoming trends in customer needs?
- How to differentiate from the competitors?
- How to reach the customers?
- What kinds of resources are necessary to settle in this new way of work?
- What is the yield of the investment?

Their answers to these questions were the following:

- The multinational chains possessing most of the market share used their powerful position to reduce purchasing price for bakery products and other goods
- The customers' preferred marketplace moved from individual retailers to malls, on the other hand, they became more sensible to quality, environmental impact and artisan products

- The key to differentiate lies in the usage of artisan image based on traditional style paired with good quality
- To reach customers, it is necessary to be present with point of sales which strengthen brand image, located in the core of mainstream shopping areas, in malls or in their immediate vicinity countrywide
- Estimated costs of opening a new store is 123 000 € (non-recurring). Further 23 000 € are needed monthly to maintain each shop. In order to update the logistics and operations, a new system will need to be developed as well, optionally either with an in-house or outsourced delivery system.
- The estimated payback period is two and a half years per bakery. The private financial capacity would have allowed the company to open up five stores yearly. Since governmental subvention was available, Lipóti Bakery was able to expand faster, and capitalize on the market opportunities.

By the end of 2007, Lipóti Bakery has already had 25 point of sales, striking a deal in Tatabánya to take over local, city-owned bakery. The increased manufacturing capacity made further increase in sales possible. Within the course of a few years, the company achieved to open up several new bakeries, achieving 60 point of sales. In 2009, the company opened its third manufacturing site in Hungary's capital, Budapest. In the following years, they even crossed the border and opened bakeries in Bratislava, capital of the Slovak Republic capital and opened 100th point of sales countywide. In 2010, Lipóti Bakery signed a contract to cooperation with Univer, taking over all Univer-owned bakeries in Hungarian malls. In 2012, it was time to redesign the brand and give it a more modern feel.

After twenty years of successful expansion, results proved that the family management had the answers to the six questions mentioned above. The succeeded in constructing a larger organization. In 2019, Lipóti Bakery celebrated the opening of their 200th store. While they successfully managed to rebrand and expand their business, they encountered another challenge, one they did not expect. To successfully operate such a large network, a high level of strategically management is required.

“The test of a manager’s suitability is not what performance he is capable of but what his colleagues are capable of without him.” W. Steven Brown

A gardener knows at all times, what each and every plant he/she needs to care for - yet he/she knows also, that they will also function and grow without him/her, and understands that there is no need to be there by their side continuously. He/she watches them as they grow and helps to ensure that they don't suffer the lack of anything, and their growth stays undisturbed. It's necessary to know how much water and sunlight each plant needs. He/she should neither overwater them, nor leave them dry out; he/she should neither burn them, nor let them wither in the shadows. This way, the garden will stay beautiful as the plants flourish in a healthy and natural environment. The gardener achieved his/her goal. A good manager is just like a gardener. The organization he supervises functions without him as well, to a certain extent - if the supervisor is on holiday for a few weeks, processes will continue in his/her absence. When the “weather is nice”, the manager can concentrate of core tasks regarding the supervision and operation of the company, defining the way to growth and prosperity by paying no more and no less attention than is necessary. There is a fine balance to consider; too much supervision acts just like excess watering, but give them too little, and the manager

will not be alerted in time about problems and times of crisis, when prompt intervention is necessary to maintain good performance of the organization.

The manager must constantly be on guard. It is crucial that he/she knows exactly what needs to be done if the garden is being threatened by a pest or a disease - in this case, if the competition is hunting down high-potential employees or efficient work is being hindered by damaging internal conflicts. A good manager, like a good gardener, welcomes change, for change is his real *raison d'être*.

The following true war story inspired thoughts like mine above, although gardening and warfare have little in common. A subordinate of Robert E. Lee, Confederate general in the US Civil War, disregarded a command, upsetting Lee's plans - and not for the first time. The general, who was usually a calm gentleman, lost his temper. Once he had calmed down, one of his aides asked him why he didn't relieve the disobedient commander of his post. He replied with indignation: "What a question! He wins his battles."

When I received my first managerial commission and became acquainted with my team, it never came to my mind to allocate time to gain understanding of the individual behavior of the team members. People were aware of their tasks and goals, so everything would be all right, or so did I think. As time went by, things turned out differently from what I expected, although I worked long hours trying to fix things. It felt like I was putting out fires; just when I was done helping one of my team members tackle some obstacles with the given task, another came to me and asked for further guidance. Reports and presentations were late – or if they were ready on time, they were full of errors. After a few months, I started to spend even my weekends working, for I insisted that nothing short of perfection should leave our hands. I came to the conclusion the hard way - a single person cannot and should not do the tasks for the whole team. The manager has to adjust the team to the task at hand. In my opinion, this was the biggest challenge of Lipóti Bakery. They grew from a small, one-unit business with 20 people to a countywide network with more 600 employees, multi-site manufacturing and over 200 self-owned sales locations with and own logistic system.

To use the horticultural example again, my first efforts managing a team was just like telling all plants in the orchard what yield I expected of them, then breaking it down the average yield by plant, not caring about whether it was a flower or a tree, or about any further conditions whatsoever. The instructions were not tailored to fit the best of the team members' abilities, so the yield was only a fraction of what it could have been under proper tending to.

Attuning the team to a task implies the following three activities by the manager:

1. Alignment of objectives and operational processes
2. Individual motivation
3. Putting the right team together

The manager should optimize the human and material resources available. Resources are handled as expenses in the final analysis, and as such it is important that they should be examined and optimized on a regular basis, as the objectives and tasks keep changing. Operational efficiency can only be developed if the manager comes to a clear understanding of the strengths and weaknesses of the team members and finds the factors that motivate them both as individuals and as a team, keeping operational performance under control.

Performance can be maximized by situational and capacity-oriented leadership. There are many motivational tools; their use can be mastered and they should be made use of. Any of them can bring about results, although an honest conversation at least once a year (if possible, outside of working hours) can highlight many important things. A good manager listens to the messages, even the hidden ones. A classification according to the situational leadership theory formulated by Dr. Paul Hersey and Ken Blanchard is based on whether the employee is willing to perform a task or not, and whether he is capable of doing it or not. This model proposes four kinds of task assignment for the four combinations, depending on a team member's willingness and capability. If members of the team are motivated, the situation is much simpler. A motivated team is the best guarantee of successful operations, because its members feel as if they are owners of the results, experiencing success together.

General Lee had a capable commander who was headstrong; however he kept winning his battles. Nonetheless, the South did not win the war. A single genius was not enough. Neither is a single motivated individual enough in the global economic jungle of the twenty-first century. If the team cannot be amalgamated to work towards a common goal, there will always be points of tension. This, in turn, very efficiently robs the manager of his/her time. Times are changing, with digital transformation knocking on the door, and after almost thirty years the family owned & managed business had to face some difficult decisions, like many other local, privately owned and operated, high-quality artisan product suppliers:

- How to compete with global players?
- How to keep the product quality and artisan image?
- How to manage digital transformation?

The good gardener knows the best way to make the garden flourish, and Lipóti Bakery overcame this challenge excellently. They found the right way to answer for the first two questions. The challenge for the future, the question of digitalization remains.



The advertisement is set against a green background. On the left, there is a red packet of 'TEA HOUSE PREMIUM CTC TEA' with a white cup of tea in front of it. In the center, there are several jars of 'Golden B' honey. On the right, the 'Frontier Agro' logo is displayed, which consists of a green stylized 'A' with 'TM' above it and 'Frontier Agro' below it. Below the logo, the text 'Frontier Agro Industries Pvt Ltd' is written in white. A white box contains the text 'For enquiries please write to us'. At the bottom left, the text 'Manufacturer and Marketer of Organic Honey, Tea and Spices' is written in white. At the bottom right, a black box contains the contact information for Frontier Agro Industries Pvt Ltd in white text.

TEA HOUSE
PREMIUM CTC TEA
Goodness of nature guaranteed
250g

Golden B
NATURAL HONEY

TM
Frontier Agro

Frontier Agro
Industries Pvt Ltd

For enquiries please write to us

**Manufacturer and
Marketer of Organic
Honey, Tea and
Spices**

Frontier Agro Industries Pvt Ltd
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A GLOBAL SURVEY

INDUSTRY 4.0 CHALLENGES FOR MANAGEMENT AND PROJECT CONSULTING SERVICES

RAJAT K. BAISYA

Project & Technology Management Foundation, India
www.ptmfonline.com, Email: info@ptmfonline.com

Industry 4.0 and Society 4.0 have changed the business environment which we are witnessing in trade and commerce globally. Businesses are increasingly using technology to become more competitive in the marketplace. Smart factories using AI, IOT and Machine learning are changing the industry and business models across countries. Products and services are also changing in terms of their physical and other attributes. Innovation therefore, is the key to succeed in today's environment coupled with flexible and agile practices. In addition, businesses and society are increasingly concerned for issues like sustainability and environmental protection for their own survival. These concerns have brought in new challenges for managing projects in new economy.

In this environment how current breed of consultants and project managers trained and certified in old economy will fit or if they will be required to acquire new skills and knowledge to be effective? These issues are being investigated through the research study and survey using a structured questionnaire. A questionnaire has been designed and pilot study has been made and based on the pilot run, the survey questionnaire has been revised. The final questionnaire has now been administered to get response from both consultants and clients so that we can get new perspective based on qualitative and quantitative inputs. This survey also aims to establish few hypotheses for their validity. It is expected that we will be able to get the survey findings by end July or Mid-August for analyses.

This survey is being conducted to understand if the existing certification process are good enough for certifying management consultants to work in industry 4.0 environment. Survey questionnaire is intended to be administered to both management and project consultants as well as the project managers and transformation and change management officers of the client organizations.

The survey questionnaire is appended below with a request to all our readers to fill it in. Your valuable input will be very helpful for our research

Survey Link : - <https://forms.gle/zM1AbfFkf1MASLk19>

About PTMF



Project and Technology Management Foundation (PTMF) was constituted as a non- Government, non-profit registered society in the year 2010 with a view to contribute to development and promotion of the latest concepts and practices in the profession of project management and technology management by contributing to the body of knowledge by conducting and supporting research, publishing books, journals and newsletters, organizing conference and seminars, survey's as well workshops and training programs etc. PTMF is a professional registered society and a member of Asia Pacific Federation of Project Management(APFPM), headquartered in Australia and also of Network of Large Infrastructure Projects(NETLIPSE), a EU funded initiative located at Netherlands as well as KM Fest, an European initiative for promotion of knowledge. www.ptmfonline.com

Vision

Our vision is to be an apex body and the centre of excellence of project, programme and technology management profession by carrying out research, exchanging knowledge and ideas to promote the best project and technology management practices.

Mission

The mission of PTMF is to create a dynamic network of professionals, practitioners, academics, researchers and students to exchange ideas, disseminate knowledge and provide training and accreditation in the area of project, programme and technology management by organising conferences, workshops, publications syndicating research, arranging training and teaching programmes and courses and collaborating with other global organisations for knowledge creation.

Publication

- Official Quarterly Journal- “International Journal of Project & Technology Management”
- Newsletter - “PTMF E-NEWSLETTER”

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Institutional Members	500	2500	5000	50	100	10,000
Organisations Large	1000	10,000	1,00,000	100	200	20,000
Organisations Medium	500	5000	50,000	250	150	15,000
Organisations Small	500	2500	25,000	200	100	10,000

International Journal of Project and Technology Management

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Objective:

The journal is intended for a comprehensive coverage of all aspects of **Project and Technology Management** from concepts to commissioning of all types of projects including large complex projects and technology intervention to improve the project performance and delivery. The journal covers all areas of the subject from systems to human aspects of project management, links theory with practice by publishing case studies and covering latest body of the knowledge on the subject for the benefit of the project management professionals, researchers, academicians, consultants and policy makers.

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The journal will be organised into various sections to include research papers, short notes/ correspondence, case studies, book reviews, information related to seminars and conferences, educational and academic information and any other relevant information related to the theme of the journal.

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