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Abstract: In extant financial market models, including the Black-Scholes' contruct, the dramatic events of October 1987 and August 2007 were totally unexpected, because these models are based on the assumptions of 'independent price fluctuations' and the existence of some 'fixed-point equilibrium'. This paper argues that the convolution of a generalized fractional Brownian motion (into an array in frequency or time domain) and its corresponding amplitude spectra is a simpler way to describe the surface of the attractor driving the evolution of prices. This more realistic approach shows that the SP-500 Index is characterized by a high long-term Hurst exponent and hence by a 'black noise' with a power spectrum proportional to f-□ (□ > 2). In that set up, the above dramatic events are expected and their frequencies are computable. The paper also constructs an exhaustive frequency-variation relationship that can be used as a practical guide to assess the 'value at risk'.

Abstract: This study investigates the influence of CRM on customer retention at a South African long-term insurance organisation. Primary data was gathered using a questionnaire, with items referring to CRM and customer loyalty. Data was factor-analysed. The findings of the study stipulate that CRM positively influences customer loyalty. If the long-term insurance organisation successfully maintained relationships with its customers, intentional customer loyalty at the long-term insurance organisation will increase. CRM in the multiple regression analysis explained 80.2% of the variance (R2) in customer loyalty. Therefore, one unit increase in CRM will increase customer loyalty with 89.5% when considering Beta.

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Abstract: Small retail firms frequently face significant challenges in selecting and implementing information technologies, due to a lack of adequate expertise, and financial and human resources. As a result, they often perceive investments in information technologies as not only costly and resource intensive, but risky undertakings. Consequently, they typically lag their larger counterparts in terms of technology adoption.

Given that small firms represent the vast majority of businesses worldwide, it is necessary to understand the best practices of smaller retailers/retail chains when adopting and using new technologies, as this will enable other firms to enhance their competitiveness. This paper reviews the current adoption of Internet technologies among small family owned retailers, based on the findings from a quantitative study in the U.S., and profiles two firms that have achieved distinction: Ebony Retail Holdings, Ltd. in India and McCaulou's in the U.S.

Abstract: Notwithstanding the huge contribution of the mining sector to the fiscal wellbeing of the host country, mining remains a perilous affair. Mining Houses make substantial investments and take drastic actions to the point of temporarily closing shafts or mines in an attempt to improve safety and reduce fatal accidents. Despite these initiatives the poor safety record of precious metal mines appears to persist. This suggests that the frameworks traditionally employed to interpret and make sense of mining accidents are probably inadequate. The study set out to explore the causes of a 'fall of ground' accident in a platinum mine in which a team leader was injured, and did so from a sense-making perspective. Content analysis of the narrative obtained from 10 key informants and a focus group (nine members) revealed that the multiple interconnected human and systemic causes appeared to have escaped detection, preventing a conclusive perspective on the causes of the accident. It is argued that mining investigations, as collective sense-making vehicles are subject to similar biases. The findings and implications are considered from the perspective of sense-making, and mindfulness.

Abstract: A biological metaphor of an open system has been widely used to understand how organizations respond to the environment. This paper offers an alternative understanding. The theory of autopoiesis argues that all living systems are organisationally closed, autonomous systems of interaction whose only concern is self-reproduction. The purpose of this paper is to present an argument for the applicability of autopoiesis to social systems, such as organisations, and to draw out the implications for information systems, in particular, accounting systems. From the perspective of autopoiesis, accounting systems are not determined by the environment, but act to determine the boundary and environment for an organisation.

Nejdet Delener, Editor-in-Chief

EDITORIAL

If Wall Street pundits are assessing risks in the capital market on normal curves, then their Value-at-risk measures might be seriously flawed. The convolution of a generalized fractional Brownian motion (displayed as an array in frequency or time domain) and its corresponding amplitude spectra is a simple and straightforward description of the surface of the attractor of the capital market.

The study by Rene Dominique, Luis Eduardo Rivera-Solis, and Francois Des Rosiers focuses on the SP-500 Index from 1928 to 2009. With the help of the Benoit and SPSS softwares, the authors demonstrate that the index is powered by a fractal attractor or a power law whose power spectrum is proportional to $f^{-2.6}$ or $f^{-2.7}$, depending on the transform used. For these values of β, the color metaphor of the index is 'black', meaning that the dramatic events occurring during the sampling period were expected. In an attempt to preserve both high and low frequencies, the authors used the Fast Fourier Transform and Wavelet analysis in a reasonably long series. The two analyses are in good agreement for the two segments: 1928-2009 and 1946-2009.

The approach adopted for the analysis allows the identification of the properties of the fractal attractor driving the index quite easily. The Hurst exponent reveals an almost smooth surface with an H exponent lying between 0.82and 0.89 and corresponding Hausdorff dimension between 2.18 and 2.11 and affine trace between 1.18 and 1.11. The surface of the attractor is between dimensions 2 and 3, in agreement with empirical tests. The high value found for H indicates that economic agents remember the past, contrary to the prevailing assumptions underlying analyses in the financial sector. To double check the result of the power spectrum analysis, the authors run the regression supposing that variation intensity are proportional to frequency raised to some exponent β^{g} for grouped intervals. The results of the regressions indicate a reasonable fit, and a $\beta^{g} = -2.296$, a value close to 2.6. Thus, the authors believe that decision makers would not be too concerned as to whether β be 0.7 or 0.8. The important input in their judgment would most likely be the probabilistic predictability inherent in the capital market.

The study also demonstrates that for a fractional Brownian motion, a fixed-point equilibrium does not exist. Orbits only cross the mean but do not stay there. This finding calls to question the practice in both economics and finance of supposing that orbits will always return to the mean to stay, and also goes against the notion that information arrives in the market at random. Information is viewed only as an intermediate input into the demand-supply interplay. It appears random because the dynamic process whose attractor Dominique, Rivera-Solis, and Des Rosiers have tried to describe is hidden from view. Of great significance is that risk obviously should not be assessed on a normal distribution as the second part of their results shows.

Over the past twenty years, the importance of the services industries to the world economy has grown. In the South African economy the services sector contributed 73.7% of South Africa's total GDP in 2010. The world economy is struggling in the aftermath of the global financial crisis. An organisation that wants to succeed in today's global competitive market where customers are empowered and brand loyalty erosion is increasing, will have to move to customer relationship management (CRM). Customer relationship management enables organisations to provide excellent real-time customer service through the effective use of individual account information. This requires a more complex approach, organisations need to investigate customer needs, they have to build relationships with both existing and potential customers, and they will have to satisfy their customers' needs. Organisations realise the importance of satisfying and retaining customers. Acquiring new customers can cost five times more that the cost involved in satisfying and retaining current customers. Organisations on average can lose up to 10% of their customers. When customer defections are decreased by 5%, this can lead to an increase in profits of between 25% - 85%, depending on the industry. In these difficult economic times customers are cancelling their policies as they struggle to survive the down turn in investment and credit markets. Long-term Insurance companies' experiences persistency problems as customers cancel their policies. Long-term insurance companies are required to focus on their relationship with customers to increase customer retention.

Very little research with specific reference to the long-term insurance industry in South Africa exists, that focuses on Customer Relationship Management and Customer Loyalty. The second paper by Mornay Roberts-Lombard and Leon Du Plessis examines Customer Relationship Management and its influence on customer retention at a South African long-term insurance organisation.

This study was conducted in two phases, the first phase focused on qualitative research, and the second phase focused on a quantitative research approach. A focus group interview was held with a manager of the Customer Walk-in-Centre in Johannesburg, and two other senior managers responsible for customer relationships at a long-term insurance organisation. The focus group interview assisted the researcher in developing the questionnaire and provided the desired information on CRM and customer loyalty from a long-term insurer's viewpoint. The questionnaire was used during the quantitative phase of the research. A structured questionnaire survey was used to collect data for this research, and this process was administered by conducting personal interviews. The questionnaire included self-developed items, as well as items from questionnaires used in previous research. The population of the research consists of the long-term insurer's entire individual, natural person, customers who visited Customer Walk-in-Centres in the Gauteng (Johannesburg and Pretoria), Kwazulu-Natal (Durban) and Western Cape (Cape Town) provinces of South Africa. For the purpose of this study a probability sampling method was used. Stratified sampling, followed by simple random sampling was used in this study. The sample size selection of this study was twofold. Firstly, the sample was based on the percentage of customers visiting Customer Walk-in-Centres presented as a portion of the total number of customers visiting these centres. Secondly, the percentage was applied to 254 customers of the long-term insurer entering the Customer Walk-in-Centres in Johannesburg, Pretoria, Cape Town and Durban in South Africa.

The relationship with the customer can be improved by the organisation through cross-selling, extension selling, or by some other transaction offering additional income to the organisation. The findings of Roberts-Lombard and Du Plessis' study reveal that the majority of customers (45.01%) strongly agree that there is a relationship between CRM and intentional customer loyalty at a long-term insurance organisation in South Africa. All the dimensions of the study have high structural correlation. The empirical results indicate a positive relationship between CRM and intentional customer loyalty at a long-term insurance organisation in South Africa.

The empirical results imply that a long-term insurance organisation can improve and maintain its relationships between the organisation and customers if the long-term insurance organisation exhibits trustworthy behaviour and shows genuine commitment to service. A long-term insurance organisation should retain and develop loyal customers by being trustworthy and committed to service delivery. In order to maintain relationships with customers and to retain loyal customers, a long-term insurance organisation can give special benefits to loyal customers, for example lowering policy charges when new policy agreements are entered into, and charging less administrative fees for managing investments. It is clear from the empirical studies that only one unit increase in CRM at the long-term insurance organisation can increase customer loyalty with 89.5%. A long-term insurance organisation should ensure that CRM, and therefore customer loyalty, increases by delivering high quality and high value products and services. The policies and other services should deliver on promises.

A long-term insurance organisation should train employees to understand that every single contact with a customer must count. Customers' first impressions are the ones they remember, therefore frontline employees should be equipped to ensure a positive first experience. This is the best way to acquire loyal customers. A long-term insurance organisation must know its customers. Loyalty schemes equivalent to Discovery's Vitality Programme can be introduced by a long-term insurance organisation. This loyalty programme will not only contribute to obtaining a bigger share of the wallet of the customer, but can also be used to obtain more information about customers. A long-term insurance organisation must build a system linked to its policy master that will inform management when customers defect. These customers should be contacted immediately and asked why they intend leaving the long-term insurance organisation, and determine if anything can be done to rectify the reason why the customer is not happy.

Small retail firms frequently face significant challenges in selecting and implementing information technologies, due to a lack of adequate expertise, and financial and human resources. As a result, they often perceive investments in information technologies (IT) as not only costly and resource intensive, but risky undertakings. Consequently, they typically lag their larger counterparts in terms of technology adoption.

Given that small firms represent the vast majority of businesses worldwide, it is necessary to understand the best practices of smaller retailers/retail chains when adopting and using new technologies, as this will enable similar firms to enhance their competitiveness. Therefore, the paper by Nancy M. Levenburg, Vipin Gupta, and Simba R. Magal investigates the current adoption of Internet technologies among small family owned retailers, based on the findings from a quantitative study in the U.S., and profiles two firms that have achieved distinction: McCaulou's in the U.S. and Ebony Retail Holdings, Ltd. in India. These particular retailers were chosen because Internet penetration in the U.S. is established and strong. In India, its potential is immense.

In the quantitative study, the adoption of 112 electronic commerce (EC) and IT applications among U.S. retail firms was examined. Two factors dictated the choice of the U.S. for the quantitative study. First, the U.S. has been a world leader in terms of Internet development, usage, and household penetration. Second, within the U.S., family-owned firms account for between 80 and 95 percent of all incorporated businesses, making these firms the most common form of U.S. business organization. A written questionnaire containing five sections was mailed to 9,365 subscribers to Family Business magazine. This sampling frame was selected because no national list of family-owned businesses exists.

Among U.S. retail survey respondents, the adoption rate of IT/EC applications was highest in the Procurement category (e.g., researching new suppliers, accessing supplier pricing, order confirmation, payment processing). This was not surprising, given that previous work has identified that one of the earliest and most frequent uses of the Internet among small firms is for finding new sources of supply. With respect to Marketing-related applications, U.S. retailers make the greatest use of applications that enable them to offer product descriptions and pricing information to customers (45 percent and 42 percent, respectively), and facilitate customers' inquiries (45 percent). From the firms' perspective, this finding makes sense since they would likely lead to sales, thus supporting a perceived usefulness proposition.

Nevertheless, overall adoption rates for IT/EC applications are quite limited. Perhaps some small retailers perceive that EC is of potentially minimal value, because it is contrary to their mission; they may place a greater reliance on personal relationships and in-store service for their competitive advantage. Consequently, they may not perceive it as being useful in terms of their organization mission. This suggests that a primary benefit of EC may be using it to expand relationships on both the supplier and customer sides, and to facilitate the transactional aspects of those relationships.

The purpose of the case studies was to gain deeper insight into how retailers are using the Internet, and how valuable it may be to their businesses. McCaulou's (U.S.) and Ebony (India) were selected because both are apparel retailers, family owned, similarly aged, and both operate nine apparel stores within a specific geographic region. Using the same list of applications as in the quantitative study, both retailers' web sites were examined to determine IT/EC adoptions. While neither retailer appears to utilize the vast majority of available applications, the two firms are remarkably similar with respect to the applications that they do – and don't – use. Further, both firms tend to use applications that accomplish marketing-related purposes, particularly in terms of furnishing information about store locations. Thus, neither firm's use of EC appears to extend beyond the bare minimum.

The two case studies, as complements to the quantitative study, suggest that opportunities still exist that can help small, family business retailers better serve customers and improve their proficiency throughout their operations, supply chain, services, and so on. It is not essential that the information technology result in a complete reengineering of the business. On the contrary, information technology helps facilitate various aspects of business, increasing its responsiveness and cost-effectiveness, and thus opening new business opportunities and bringing in additional suppliers and customers. The challenge for growth-minded small retailers is to pursue both supply- and customer- focused information technology investments. To achieve this, firms need to complement an externally-oriented information technology focus with an internally-oriented upgrading of their business infrastructure. Such an approach can help a small firm create multiple channels for enhancing product services and for lowering costs and prices. The pull-effects of information technology release valuable managerial resources for capitalizing on new business development opportunities, which (up until recently) the Internet has afforded only larger retailers. These findings are relevant for small retailers in a wide range of industries.

The mining sector is a substantive contributor to the fiscal wellbeing of the any country, but also the industry with the highest recorded number of fatal occupational injuries. This occurs despite Mining Houses making substantial investments in safety and often engaging in drastic actions to improve safety and reduce accidents. While fatalities in the South African precious metals mining sector have declined over the past decade, the 168 and 128 fatalities recorded for 2009 and 2010 respectively remain a cause for concern, in particular as the exhaustive safety investigations that follow mining incidents and/or accidents do little to meaningfully alter this dynamic. At the same time this dynamic suggests that traditional paradigms, frameworks and approaches for investigating and dealing with safety incidents are probably inadequate. From a research perspective workplace safety has received extensive coverage notably in areas such as safety climate, workplace psychosocial safety climate, safety outcomes, safety management systems and the influence of safety values on safety outcomes. Unfortunately, most of these studies have been undertaken in sectors other than mining.

The reality is that a disturbing number of fatalities are still recorded annually, while research over the past decade has done little to alter this dynamic and/or related mining policies and practices. This seemingly static situation informed the focus of the study by Christian L. van Tonder and Johann P. Groenewald, which aimed to explore the causes of a specific mining accident more systematically in an attempt to unravel some of the factors that sustain the high incidence of accidents and fatalities. A ‘fall of ground’ accident in a platinum mine during which a team leader was injured, was selected for this purpose. A cognitive-behavioural analysis frame premised on, for example, Weick's (1995; 2001; 2004) work on sense-making, but also general systems theory, offered an alternative interpretation perspective that has not been utilised in the mining sector before. The idiosyncratic nature and limitations of individual sense-making suggest that collective sense-making around mining accidents are bound to be inadequate, as accident investigation processes and the use of investigative panels for the greatest part rely on post-accident ‘evidence’ led by employees ‘closest’ to the accident. For this reason the findings of such investigations are likely to be inappropriate.

In-depth, semi-structured interviews were conducted with 10 key informants, which included the injured employee (an underground team leader), his immediate supervisor and successive line managers, and safety representatives directly involved in the accident. In addition, a focus group discussion was conducted with the nine members of the injured employee’s team. All interviews and the focus group discussion were recorded, transcribed, accuracy verified and subjected to basic content analysis.

Key themes extracted from the data did not surface a single, conclusive root cause. Instead twelve (12) major causes were identified. These ranged from geological fault lines and damage to the mining area, poor workmanship, poor training, non-compliance with procedures and negligent or unsafe behaviour, to managerial pressure for production, quality of supervision, fear of supervisors, ambiguous communication and a range of human factors including fatigue, lack of work pride, fear, stress and inattentiveness. While most of the respondents identified at least three possible causal factors, none were individually capable of envisaging the extensive and complex web of interrelated causal factors that emerged. Secondly, role-specific vantage points (and hence biases) appear to have characterised the nomination of accident causes. In this regard underground mining staff confined causes to geological or ground conditions while supervisory management indicated managerial policies and conduct as central in the origin of the accident. Senior management however located the causes in poor worker performance and negligence, while safety officials indicated both managerial conduct and human factors as primary causes. The results, thirdly, surfaced significant evidence of compromised individual cognition (e.g. inattentiveness or lack of mindfulness, incomplete or inaccurate perception, errors in information processing), automated or scripted employee behaviour, and institutional practices that stifled the free flow of information (e.g. curtailment of communication, or a culture of hiding issues).

Although the qualitative design of van Tonder and Groenewald's study precludes generalization, the application of a sense-making perspective highlights implications that may be relevant to other mining operations where similar (strong) power-production cultures are prevalent. The first is that several risk areas are not pertinently addressed in workplace safety practices and that retrospective accident investigation panels, in effect sense-making processes, do not adequately account for the limitations that typically characterize individual perceptions, interpretations and subsequent meaning creation or sense-making. It is these deficient understandings that tacitly but forcefully inform workplace behavior. The risk, however, is not limited to the constraints of individual sense-making, but extends to the collective construction of a representation of accident circumstances. When the latter is premised on flawed individual sense-making, the conclusions of investigative panels are bound to be compromised. The challenge for Mining Houses consequently resides in the cultivation of an appropriate, habitual state of awareness among all those involved in dangerous work situations, but also the cultivation of authentic and accurate information-sharing cultures in otherwise century-old power-and-production cultures. This requires a significant change in managerial mindsets and attitudes accompanied by a substantive commitment to a safe, fatality-free work environment and commensurate systems and policies. The findings further indicate that conventional training and management education are not entirely effective and in need of comprehensive review – if the accidents and fatalities are to be eliminated.

Skepticism about business organisations and their motives for social and environmental reporting practices permeates the accounting literature. The continued pursuit of economic growth may mean that organisations are destroying the social and ecological environments on which we all depend. One theory that explains such myopic behaviour of organisations is that of autopoiesis. With origins in biological sciences, according to this theory organisations may be viewed as autopoietic, self-serving, 'closed' systems. The theory of autopoiesis argues that all living systems are organisationally closed, autonomous systems of interaction whose only concern is self-reproduction. The paper by Stewart Lawrence and Vida Botes presents an argument for the applicability of autopoiesis to social systems, such as organisations, and to draw out the implications for information systems, in particular, accounting systems. From the perspective of autopoiesis, accounting systems are not determined by the environment, but act to determine the boundary and environment for an organisation. Autopoietic organizations' relations with the environment are self refrerential and self interested.

The authors present a brief introduction to the theory of autopoiesis, and then provide a comparison of 'open' and 'closed' systems thinking to emphasize the differences from conventional understanding. They then raise questions about the traditional understanding of the role of accounting/information in organizations, before illustrating the application to empirical phenomena. The theory of autopoiesis evolved from Maturana and Varela's (1980) exploration of what distinguishes living systems from non-living; and how living systems persist despite changes in structure and components. In summary, an autopoietic systems approach focuses on:

. autonomy realized through the process of self-referential re-production;
. production of feasible responses to perturbations;
. structural coupling between systems; and
. how systems persist and maintain an identity despite changes in components
and structure

In brief this implies that changes in the living being are triggered by environmental factors but not determined by them. A disturbing consequence of the theory of autopoiesis for information scientists, and for accountants in particular, is the rejection of the notion that information received from the outside can directly affect the system's behaviour. There is a rejection of the idea that the system builds an internal representation of the world outside. The authors' theoretical models of rational cognitive planning are rejected. To explain the features of the alternative paradigm, a brief comparison of open systems and closed systems approaches is presented next.

Open systems theory is based on the traditional approaches to organization theory. A biological metaphor has been widely used to understand how organizations changes as a response to the environment. Changes in the environment are presented as challenges to which organizations, including accounting systems, must respond. At the individual organization level, the main difference relates to the fact that in open systems the organisational boundary is permeable. Accounting systems provide the feedback information for the organization to be in equilibrium with its environment. In autopietic systems, the boundary is an important barrier. Accounting information is used to differentiate, and in a sense define the organization as separate from its environment.

The tendency for autopoietic systems to look after their own interests and self-preservation comes with certain warnings. Corporations that span the globe seem unconscious of the local context in which they operate except those to their advantage. Globalization would represent opportunities but also threats to the self-reproduction of autopoietic systems. Opportunities to operate in new markets and to take advantage of low cost production possibilities may be accepted; but there may be scant regard for national regulatory regimes. The lack of attention to regulatory schemes has been manifest in various industries, most notably and recently, the finance industry. The biological view is an a-moral view of life and organizational change.

Organizations if viewed as a closed, or autopoietic system, is an embedded, but differentiated, form of social life. The organization is embedded in society in its use of information about its 'medium' or environment but, at the same time, the organization is differentiated from society by managing its boundaries to maintain its own internal identity. The problem with autopoietic systems is their tendency to place their own survival above that of social and environmental considerations. There is a danger they will deplete the environment and damage society in the pursuit of their own self-reproduction. A pessimistic view is that sustainability of human and other forms of life has already been placed in jeopardy. There are no mechanisms to prevent organizations being 'pathologically autopoietic'.

It is somewhat disconcerting to have one's ideas challenged. A disturbing aspect of the theory of autopoiesis is the view that accounting systems (and other information systems) are not tools used to collect information about the environment, process this information and make a rational response. It may seem that way from the outside, but on the inside that is not what happens. After thirty and more years of research into the functioning of accounting in organizations, the researchers are still lacking knowledge about the role of accounting in dynamic systems or organizational change. New research approaches may be necessary and autopoiesis is one that offers the possibility of new understandings.

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