

Four Forces That Prevent Change in Organizations: How to Become an Innovative Organization

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Large, top-down organizations tend to be bureaucratic, less innovative, and more resistant to change. The following 4 forces prevent such an organization from changing: (a) behavioral momentum, which is the tendency for behaviors to continue unchanged rather than evolve with the dynamic world; (b) regression to the mean, which refers to the phenomenon that ensures that even if an organization overcomes behavioral momentum and adopts change, the windfall gains of the change are always at risk of being lost; (c) inadequate behavioral developmental stage of addressing issues; and (d) interaction among the first 3 variables. These forces may happen by mass adoption from large competing organizations. Furthermore, in such organizations, the chain of command extends from top to bottom, which implies a greater superiority and domination of higher levels over multiple lower ones. However, in a rapidly changing business world, these characteristics are a death knell to business success and sustenance. Adopting a highly autonomous 2- to 3-layer flat management structure, on the other hand, fosters creativity and innovation. Companies then can rely on a broad base of leaders and employees who feel ownership for the overall success of the organization and innovation can occur in small units that have autonomy and power over their own culture.

Keywords: behavioral momentum, regression to mean, organization, stage, innovation

This article proposes four behaviorally oriented principles that explain why companies fail and, by understanding them, how companies can continue to innovate and stay in business. A prototypical example of such failure can be seen in a company that became known as Facit (see “Facit,” n.d., for more details). Facit, a Swedish company founded in 1922 as *AB Åtvidabergs Industrier*, began as a manufacturer of office products in general. In 1932, it began to manufacture mechanical calculators, after purchasing a smaller manufacturer. The calculator was named Facit, and eventually, this became both the principal product of the larger

office products company and (in 1965) the company’s name. The 1960s were both the era during which this company had its greatest successes and the time during which the seeds of its eventual death sprouted. Facit started the 1960s with 8,000 employees and had subsidiaries in more than 100 countries. During this era, it was doing well enough to purchase one of its competitors and also focused more and more on mechanical calculators. It concentrated its efforts on expansion, such that by 1970, the company had reached its peak with more than 14,000 employees worldwide. This growth was accompanied by high profitability.

At the same time, by about 1965, electronic (digital) calculators began to appear. It is reported (“Facit,” n.d.) that although only about 4,000 digital calculators were sold globally in 1965, by the following year, more than 25,000 were sold, and by 1967, they accounted for 15% of the overall calculator market.

According to the Wikipedia account, Facit tried to adapt to this threat by collaborating with a Japanese firm that made digital calculators (Hayakawa, or as we know it, Sharp). In the end, this collaboration broke down, as Hay-

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akawa worked more on building its own global sales organization. By 1971, so after a period of only 6 years, the mechanical calculator was essentially replaced by digital calculators. Because Facit did not adjust to this new reality, it went out of business virtually overnight (“Facit,” n.d.).

There have been a number of attempts to explain this business failure. Many of these explanations point to the unwillingness or perhaps the inability to adapt and change even in the face of the superiority of more modern calculators. Other reasons have been mentioned (“Facit,” n.d.), including

the inability to consolidate the R&D functions of acquired companies as well as limited R&D resources due to the relatively small size of Facit compared to its American counterparts. In Swedish business theory, this is called “the Facit trap” (Swedish: *Facitfällan*), inability to follow a technology shift, even if skill and money is available. (para. 5)

These and other accounts of business failures are not focused on well-understood behavioral and statistical explanations. This article will show that tendencies in organizations, such as the tendencies in Facit, can best be explained by (a) behavioral momentum, (b) regression to the mean, (c) inadequate behavioral developmental stage of addressing issues, and (d) interaction among the first three variables. These forces are a death knell to innovation. Each of these will be discussed in turn.

The author makes one set of assumptions about what organizations need to do to become successful. The less that organizations adapt when conditions are changing, the shorter their lives. What tends to make change less likely is that when an organization becomes successful, there is a high rate of payoff for doing the same thing—both immediately and in the short term. There is also a payoff for improving what is being done by increasing efficiency and lowering costs. However, there are no immediate positive outcomes for going off in a new direction, for disruptive innovation. Instead, the payoff is more long term. However, in a competitive market, change and innovation are essential for business success and sustenance.

Behavioral Momentum

For decades, virtually all traditional businesses have followed nondynamic business

models. A nondynamic business model has several characteristics. One is that management is very top-down. Orders come from the top, cascading their way down through layers of management. Managers are in charge of their workers and hold them responsible for their work responsibilities. Bureaucracy of this kind exists, ostensibly, to protect against errors. Bureaucracy may be defined as fixed rules that must be followed without flexibility. Every new regulation is to address an errant action or judgment. As a result of these nondynamic characteristics, many business models are more oriented toward the business surviving for a short term in a highly competitive landscape.

These control-based models have at least two consequences. Too often, little positive recognition is given when things are done well; however, punitive action is swiftly taken when errors are made. The effect of this is that the workers do not develop many positive feelings about the company. They do not develop an orientation that it is important for them to contribute to its success. At the same time, managers do not often seek feedback from workers and there may be little institutionalized infrastructure for such feedback. It is important to encourage such feedback because innovation may often come from the workers who are involved in the company’s activities on a daily basis.

These kinds of structural characteristics are hard to change owing to the first force, which is behavioral momentum. This is the tendency for behavior to continue unchanged. Change is constant in the world. However, behavioral momentum stops an organization from changing with it. Behavioral momentum can be described as follows: When a response has been reinforced in a distinctive stimulus situation, its rate of occurrence or response rate depends on the response-reinforcer contingencies. At the same time, the response becomes connected to the situation and will tend to recur despite challenging disruptions. The greater the value of the situation, as determined by the conditions of reinforcement and as measured by preference, the greater the strength of connection as measured by resistance to change (Nevin & Grace, 2000; Nevin, Mandell, & Atak, 1983; Nevin, Mandell, & Yarensky, 1981). As can be seen, behavioral momentum is a form of momentum with a structure and function similar to

momentum in the physical world and is analogous to the velocity of a moving object.

Behavioral momentum affects larger organizations more because they have a higher number of stored memes. The term *meme* was originally coined by Richard Dawkins (1976) in reference to cultural information such as ideas, behaviors, or styles. Memes are passed “by infection,” that is, being exposed to the new memes. In fact, marketing and advertising are carried out to infect people with memes. Memes may be transmitted intergenerationally or from person to person. The memes in an organization refer to all idea and behavior patterns that are prevalent in day-to-day operations and long-term functioning of the company.

Having a larger quantity of stored memes means not only more competition between those memes but also competition of within-company memes with outside-company memes. This lowers the chances of individual memes of succeeding and making an impact. The reinforcer that fuels continued behavioral momentum and, therefore, continued use of current company memes is the estimation of the current profits of the company. In this estimation, current profits are given much more importance owing to the overdiscounting of the future and underdiscounting of the past. The status quo engenders the environment of resistance to change in leaders and workers. In the operations of the business, the old methods are varied and tweaked; however, disruptive change is shunned in large organizations.

When new memes are introduced into a society, younger generations are more likely to take up the new memes if they see them as beneficial. Older generations tend to be entrenched in the old memes and attempt to maintain them. Companies use memes similarly. Newer companies might be more likely to adopt new memes and business practices, as they are simply trying new ways to survive. Older companies might get stuck in the “it worked before, and so it will work now” mentality.

Regression to the Mean

Regression to the mean refers to a phenomenon where even if a variable is extreme on first measurement, it will eventually move closer to the mean after multiple measurements. This concept is best illustrated via an example from human evolution. Everyone carries variants of

genes for specific traits. Despite these differences, the more times people combine different genes through reproduction, the more likely the descendants are to get the average background genetic makeup.

This phenomenon extends to the total memes in an organization. Similar memes give rise to regression to the mean of the information of the new organizational culture. This ensures that even if an organization overcomes behavioral momentum and adopts a new meme, the meme is always at risk of being lost by influence from the larger culture. For example, new and innovative management approaches introduced by consulting firms do not have a lasting impact. Leaders who introduce drastic ideas might get fired or retire because management individuals in these companies are resistant to change owing to behavioral momentum. Even if not fired, their ideas are shot down or simply not carried out. The company regresses to the mean of the memes. Further, innovative companies often stop their research and development (R&D) or are unable to integrate their R&D into production and marketing owing to these “regression to the mean” forces. As a result, the company loses its competitive edge. It becomes an average company.

Larger organizations are also more susceptible to regression to the mean. The more people there are in an organization, the more the present memes get mixed with the older, outdated ones. This leads to the organization’s culture reflecting more of the old culture of the organization as a whole. Therefore, a larger organizational structure is a regressive structure.

Ways to Counter Behavioral Momentum and Regressive Tendencies

There are several ways to counter the forces of behavioral momentum and regressive tendencies. These will be discussed briefly next.

Have a Smaller Organization

Within the field of evolutionary biology, it is well established that small, isolated populations lead to faster evolution (Gross, 2006). The same concept can be applied to organizations. Even in large organizations, innovation can be fostered by smaller units that operate in relative isolation, so that they may innovate.

Flat Management Structure

Adopting a highly autonomous two- to three-layer flat management structure is another change that fosters creativity and innovation. Organizations can then rely on a broad base of leaders and employees who feel ownership for the overall success of the organization. They are less likely to be subject to behavioral momentum and regression to the mean when they operate within small units that have autonomy and decision-making power over their own culture.

One example of an organization that has both of these characteristics to some extent is the university. In universities, there is a limited organizational hierarchy. In research universities, in particular, tenured professors hold much of the power. In these organizations, professors head small units. They are also isolated from the general population and the rest of the university. This will lead to an innovative organization that is also more adaptive.

Disruptive Events

Regression to the mean can be countered by disruptive events in large organizations. An example of a disruptive event is a talk by a controversial speaker. Such an event will introduce new memes to the organization. Another example of a disruptive event for organizations such as the government is elections. In organizations, elections function like marriages by introducing a new mixture of memes. A good example is in high-functioning democracies, where new parties tend to be elected every 8 years.

Investment in R&D

Another way to counteract regression to the mean is to heavily invest in R&D. Big companies can accomplish this by acquiring newer, more disruptive companies. This should work best when the newer companies are given their autonomy and allowed to have a role in replacing old memes with the memes of the new company. Companies should be encouraged to hire risk-taking leaders like Steve Jobs. Research universities can not only hire new assistant professors but also hire established leaders, give them autonomy, aid with grants, and let them take risks with projects that have never been done before.

Stage

Another very important factor for predicting whether an organization and the individuals within it are able to bring about change within an organization is the stage of the individuals in certain key positions. Here, stage is defined in terms of the hierarchical complexity of tasks that an individual successfully addresses.

Order of hierarchical complexity (OHC) of tasks is defined by the model of hierarchical complexity (Commons, Gane-McCalla, Barker, & Li, 2014; Commons & Miller, 1998; Commons & Pekker, 2008; Commons & Richards, 1984). The model specifies 18 orders of hierarchical complexity and their corresponding stages of performance on those tasks. The orders are used to characterize tasks (Commons & Jiang, 2014; Commons, Miller, & Giri, 2014). If an individual completes a task successfully, his or her performance is said to be at the stage of development that has the same name and number as the OHC of that task. The model posits, first of all, that higher stage people make decisions that are more beneficial for the organization, even if such decisions go against the norm and culture of the organization. At the same time, the norms and the structure of the organization dictate OHC of the tasks individuals within it are to engage in and, therefore, the stage of performance of the individuals who work in the organization. This is true especially in an organization with a relatively rigid hierarchical structure where subordinates blindly follow their managers and supervisors.

Applying the model allows a number of predictions. One is that if a high-stage-performing person enters an organization in a lower level position in which he or she does not have the authority to make changes, it is likely that he or she will either be fired from the job or will leave the organization. If a high-stage-functioning person enters an organization in a managerial or executive level, then it is more likely that he or she will overcome the resistance to change inside the organization. This, however, can be met with resistance if the rest of the managers and executives operate at a lower stage.

The most important takeaway message about stage is that recruiting higher stage leadership is essential for innovation. This is because higher stage leadership can introduce new disrupters and purchase disruptive organizations. Exam-

ples are seen at 3M and Google, among others. The higher stages of development are introduced next, so as to spell out in more detail what kinds of behaviors would be effective in producing innovative organizations.

Stage 12: Systematic Stage

In the present research with populations who respond to online surveys and university students, and a mean stage of formal Stage 11, the percentages were estimated. Using empirical data, the author found that approximately 20% of individuals successfully solve problems at the systematic Stage 12 (Commons, Gane-McCalla, et al. (2014); Commons, Li, et al., 2014). At the systematic Stage 12, an individual successfully engages in tasks in which they coordinate the construction of multivariate systems and matrices. Most organizations operate at systemic Stage 12. Leaders who solve tasks at the systematic Stage 12 are likely to make slight changes in existing operations and business practices but not discriminate the contingencies that would pay off importing newer or different business plans and ways of operating.

For example, at the systematic Stage 12, General Motors (GM) did not understand that customers wanted reliability. They also did not pay attention to the increased market share from Toyota and Honda because GM was profitable for a very long time. Even after its bankruptcy, regression to the mean at the company means that it is still not producing reliable vehicles. Whether it ever paid attention to reliability is not clear, but it is clear that it has now regressed back to its old business model in which the company relies on model price cutting to increase sales, even though this was not what the customers really wanted. A very similar phenomenon happened with Chrysler. It no longer makes many Chrysler cars and in fact is owned by Fiat, which is itself a producer of very unreliable cars. Aside from Chrysler 300s and Pacificas, Dodges, and Ram trucks, the company mainly sells Jeeps, Fiats, and rebranded Alfa Romeos.

Stage 13: Metasystematic Stage

A person functioning at the metasystematic Stage 13 coordinates integration of systems to construct multisystems out of disparate systems. Metasystematic actions analyze, compare, con-

trast, transform, and synthesize systems in terms of their properties. The author posits that a person must function in the area of innovation at least at the metasystematic Stage 13 to produce truly creative innovations. To come up with creative innovations, one has to consider properties of multiple systems. It was found that approximately 1.5% of the samples solve problems at the metasystematic Stage 13 (Commons, Gane-McCalla, et al, 2014; Commons, Li, et al., 2014).

Stage 14: Paradigmatic Stage

At the paradigmatic Stage 14, actions create new fields out of multiple metasystems. When there are metasystems that are incomplete, adding to them would create inconsistencies. This is when creating a new paradigm makes sense. Usually, the paradigm develops out of recognition of a poorly understood phenomenon. Paradigmatic Stage 14 actions often affect fields of knowledge that appear unrelated to the original field of the thinkers. To coordinate the metasystems, people reasoning at the paradigmatic Stage 14 must see the relationship between very large and often disparate bodies of knowledge.

Most examples at this stage involve start-ups. The most successful start-up founders include Harvard University students Bill Gates, Edwin Land, and Mark Zuckerberg; Stanford University students Larry Page and Sergey Brim; Princeton University student Jeff Bezos; and Reed College student Steve Jobs. It is estimated they performed at the paradigmatic Stage 14 or above, in line with the OHC of current innovations. Following this probabilistic trend, one can expect India to witness some of the next innovative solutions, as the middle class is growing bigger than the United States and Europe together. The larger the pool of the middle-class people, the more paradigmatic Stage 14 performers there will be.

Inducing Stage Change

The following five steps are pretty much necessary for producing stage change: (1) first, importantly, determining the OHC of the material to which the person is to perform correctly; (2) presenting the material so that its OHC matches or is one stage higher than that stage of performance of that person; (3) reinforcing correct performances with consequences that are

valuable to the people, not just the people giving the reinforcers; (4) giving enough practice that the actions have very low error rate and are quickly performed; Adhikari (2016) and (5) presenting them with additional related tasks with the same OHC but different content. More people will successfully solve tasks at higher stages, not that everyone will make it to the higher stages.

Stage, Behavioral Momentum, and Regression to the Mean Interact

Stage, behavioral momentum, and regression to the mean interact in several ways. Two-way interactions that this article will address are Behavioral Momentum \times Stage and Behavioral Momentum \times Regression to the Mean. The article will also address the interaction of all the three factors. Examples will be provided for each.

Behavioral Momentum and Stage

The author posits that behavioral momentum is inversely proportional to stage: the lower the stage, the higher the strength of behavioral momentum. This is because changes in the reinforcement contingencies are not as well discriminated at lower stages. For example, at the abstract stage, only being exposed to changes in social or organizational norms of a rather great magnitude will change behavior. The change in the causal relationship between the situation and reinforcing outcomes, however, does not affect behavior. Only at the formal Stage 11 is there a relatively rapid detection of the change between one variable in a situation and the outcome. Even at the systematic Stage 12, leaders in organizations are insensitive to the changes in multivariate market situations. They cannot understand how to compare alternative business plans or the nonadaptive properties of their current business plan and do not attend to possible shifts in what people want. This causes traditional businesses to go out of business regularly. A number of very well-known examples exist, as follows:

- (1) GM was insensitive to the reliability issue and the delayed cost of employee benefits. Their inability to discriminate those contingencies would have required the metasystematic Stage 13 perfor-

mance. Their automobiles for the most part still do not get great reliability reports. Their cars look derivative and have no flair, except for the Corvette. This contributed to their behavioral momentum. The only reason they are not out of business is that the U.S. government bailed them out. From the outside, they seem to have gone back to business as usual.

- (2) All the five-and-dime stores are gone, as they did not change their business model when cheaper Japanese and Chinese goods began to compete and when larger stores began to sell similar products for less money but were located in suburbs rather than on Main Street. To remain successful, they would have had to coordinate the following different systems: (a) simplified and consistent lower pricing, (b) buying things that were overstocked or closeout, and (c) not depending on downtown walk-in traffic. If they had discriminated those higher stage contingencies, then they would have changed.
- (3) Smartphones have essentially driven out nonsmartphones, as Nokia has learned. It did not foresee that people not only wanted to communicate with others but also wanted a mobile device that essentially allowed a number of the same functions as their computer. Again, a lack of discrimination of higher OHC contingencies led to a continuation of their behavioral momentum.
- (4) In Facit's case, it was profitable to keep doing what it was doing. This was the systematic Stage 12, so it could not compare technological properties of mechanical and electronic means to construct calculators. At the metasystematic Stage 13, it could compare the properties of the two technological systems. Also, Facit behaved only at the systematic stage because it could not integrate its own cultures with those of Sharp. At the metasystematic Stage 13, one can compare the properties of two different cultures, making it possible to take into account the differences. At the systematic Stage 12, it could not understand what the customer

would want if that technology and price were available.

Changing Technologies and Expectations

What happens is that the very ground upon which business success depends shifts, and there is a failure to recognize these shifts because of stage and its interaction with behavioral momentum. The largest shifts in the ground are produced by changes in technologies that produce shifts in customers' wants and expectations.

As technologies change, so do customers' expectations. Netflix drove Blockbuster out of business, Apple and other smartphones drove out Blackberry, and Uber and Lift are driving out taxi cabs. Traditional business models tend to stifle creativity because of the interaction between stage, behavioral momentum, and regression to the mean, all of which keep them stuck in the rut of hierarchy. Not only does technology make the products created by certain companies more convenient, but customers also begin to expect this convenience. Netflix provided live streaming for content so that customers no longer had to drive to pick up a Blockbuster DVD. Companies that expand their departments and their technologies focus on the customers and on convenience and can grow and survive.

Even at the metasytematic Stage 13, companies go out of business because they do not detect or produce paradigm shifts. Digital Equipment Corporation and Data General went out of business or were bought out when minicomputers replaced microcomputers. Wang Computer went out of business when programmable microcomputers came out. This allowed for programs to run on multiple types of computers and be easily updated. Also, a more general microcomputer was a lot less expensive. For example, the word processor was one of the first. Electric Pencil only used 8K of memory and an Intel 8080 or Zilog 80 processor. As customers requested the program for their specific computers and operating systems, the word processor was ported to each, resulting in 78 versions, including the NorthStar Horizon and TRS-80. Microcomputer drove out minicomputer rather rapidly. Two types of programs made this possible. In 1975, Electric Pencil was the first program for microcomputers to imple-

ment a basic feature of word processors, that is, word wrap, in which lines are adjusted as words are inserted and deleted (Freiberger, 1982).

The reverse situation is when higher levels of behavioral momentum perpetuate lower stage performance. Behavioral momentum keeps the organization from moving up in stage. Because they are already profitable, they do not pay attention to the problems that they are facing from their competitors, start-ups, and changes in the marketplace. Facit and GM were profitable.

When companies buy start-ups, they often try to absorb the company to realize cost savings. This often means that there is regression to the mean in memes. The absorbed start-up begins to look and function like the company that took it over. The point of many of the takeovers is to get their innovations. However, regression to mean destroys future innovations. The current cultural memes are preserved by behavioral momentum. There is a lack of understanding and recognition that the culture of the company being taken over has had different properties than the culture of the company taking it over.

Conclusion

The world is changing at an accelerated rate. What works now may not work even in the near future. The four factors described in the article may help venture capitalists, leaders of companies, stock market analysts, and others to understand some possible aspects of what is ineffective in terms of the behavior of companies over the long term.

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