Relating Information Technology / Systems (IT/S) to Strategy: An Extended Framework

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Abstract

In this paper we give 91 hypotheses and 6 conjecturers that relate various aspects of Information Technology / Systems (IT/S) as related to the strategy of the firms (cost leadership, differentiation and innovators). These are virtual teams (VTs) in track 1, enterprise social media (ESM) in track 2, analytics, strategy of organization (cost leadership/differentiation) and types of innovators (continuous innovation, modular innovation, architectural innovation and radical innovation) in track 3 and machine learning, artificial intelligence, types of programming (OOP, extreme and scrum) and internet of things (IoT) in track 4. These are new hypotheses and have tremendous implications for top management of firms as they go about managing its IT/S infrastructure.

Keywords

Information Technology / Systems, cost leader and differentiation strategy, modular and architectural innovation, extreme and scrum programming.

1. Introduction

For extensive literature on IT/S readers are referred to four books by Sharma (2018) (publisher LAP LAMBERT). Scholars have identified three basic strategies of the firm (wiki on strategic management and strategy, Miles and Snow et al (1978)). Firms pursuing cost leader (CL) strategy focus on lowest cost and deploy mass production. Here Power distance is high and these firms have high standardization, specialization, centralization and formalization; and have high complexity of work flow (CWF). CL firms focus on stable (and narrow) product lines and have typically low environmental uncertainty. Whereas firms with differentiation (DIFF) strategy focus on providing more additional features to products for additional price. These firms have broad product lines (tending to mass customization and deploy FMS hence) and face higher demand uncertainty due to fickle tastes and preferences of its high end customers.

Firms with CL strategy and firms with DIFF strategy need different personalities to manage its affaires. We refer to MBTI/BiG-5 personality types (refer to Wiki). MBTI personalities are Extroversion/Introversion (E/I), data gathering styles such as sensing and intuition (S/N), data processing styles such as thinking and feeling (T/F) and perceptive and judgmental (P/J). This leads to 16 personality types. Similarly, in BiG-5 personality types, we have E/I, agreeableness, openness to experience, conscientiousness and neurotic. E/I is same as in MBTI, for agreeable personalities it is important to agree with others just for the sake of it, openness to experience personalities try out new things and wish to experience new situations, conscientiousness personalities are characterized by their systematic nature and neurotic personalities are pathogenic cases who are unable to handle their emotions and thoughts.

Firms with CL/DIFF strategies need to foster different cultures in their organizations. For different culture dimensions refer to Wiki. Few culture dimensions are Power Distance, Uncertainty Avoidance, Individuality and collectivism, Long Term/Shot Term Orientation, Masculine/Feminine and Indulgence (Hofstede), bureaucratic, professional, person support, market and adhocracy (Cameroon and Quinn). These dimensions are self-explanatory and reader is referred to Wiki on Culture. CL firms have high power distance (except in Japanese Firms where JIT is practiced) and have high uncertainty avoidance; whereas DIFF firms have low power distance and have low uncertainty avoidance.

We relate IT/S to a new form of organization called ‘virtual teams’ (VTs). Here individuals living in different continents and time zones collaborate by using advanced IT/S and get connected by video and/or audio. This form of organization is relatively less explored and we relate the VTs to strategy of the firms (CL/DIFF). For all the terms used here refer to Wiki on the link provided in references.

2. VT (Virtual Team): Track 1

Firms with cost leadership (CL) strategy have high power distance and high individuality; and it will be supported by cultures that are masculine, bureaucracy and person support culture. And power culture will not go well with collectivism, feminine and professional culture.

Power culture (or for cost leaders) goes well with values such as money and social; and personalities that are judgmental and agreeable; and it will not go well with many other types of personalities (as per MBTI/BiG Five).

In firms with differentiation (DIFF) strategy, uncertainty avoidance is low and collectivism is high; and hence it will not go well with high power distance, high bureaucracy, high person support cultures. It will (low uncertainty avoidance cultures) will do well with values such as money, theoretical, social and aesthetic. It will not go well with power value. Also (low uncertainty) will not go well with Sensing-Thinking and Judgmental and Neurotic.

Based on above analysis we are in a position to state the following.

In Virtual Teams (VT), ‘shouting’ happens and then it leads to degenerate discussions in VT. Semantic priming is recommended as a remedy for this. However, we give in this paper the personality dimensions that will lead to less shouting in VTs. This is given below.

We give combination of types of personality and culture (in CL and DIFF) that would/would not lead to compatibility.

H1: VTs are more successful in cost leaders as uncertainty is low; and not be that much successful in DIFF (where uncertainty is high). As it is more prone to ‘shouting’.

H2: In VTs of CL, avoid persons that are on high collectivism, high on feminism and low on professionalism.

H3: In VTs of CL, avoid all personalities that are agreeable and are high perceptive.

H4: In VTs of CL, avoid persons whose values are aesthetic.

H5: In VTs of DIFF, avoid persons that are on low collectivism, high on bureaucracy, high on person support.

H6: In VTs of DIFF, avoid all personalities that are not Sensing-Thinking, Sensing-Feeling and high on Judgmental and high on Neurotic.

H7: In VTs of DIFF, avoid persons whose values are high power.

H8. Moderator in VTs for CL/DIFF to be Sensing-Feeling who will be able to find a reconciliatory solution.

H9. In VTs of CL: leader is supposed to appeal to 'cognition' of participants and hence they should be of type Sensing-Thinking. And in DIFF one needs to closely watch the consumer behavior; and here one goes by the gut feeling (as in marketing (feel like your customers) and in R&D creativity is at stake). And hence in VTs for DIFFs one needs Leaders who are NT/NF/Openness to experience.

Here we relate VTs to strategy of organizations.

H10: Recording of VTs will be used against persons concerned in CL; and it will not be used against persons concerned in DIFF.

H11. Sizes of VTs will be smaller in DIFF and it will be much larger in CL.

H12. VTs in CL will be task oriented and in DIFF will be person oriented.

H13. Gap between intended and realized strategies will be higher in DIFF; and it will be lower in CL.

H14: In DIFF we need to take other remedial measures while using VTs such as 'semantic priming' and it will be so in CL.

H15: In process structure over VTs in CL will be dominated by functional heads; and in VTs and DIFF will be dominated by process managers.

Refer to Wiki on leadership, various types of leaders are: task oriented, people oriented, transactional (use lot of coercive power) and transformational (give tailor made leadership to all), leaders who appeal to cognition, emotion and leaders who lead by behavior), leaders who do institutional, integrative and identity work, servant leaders, leadership who practice 'equity'. These are self-explanatory and reader is referred to Wiki on Leadership.

H16. Leadership in CL (over VTs) will be power oriented and transactional leadership will be practiced; whereas in DIFF (over VTs) leadership will be transformational, people oriented, kinesthetic and reflective.

H17. Leadership (over VTs) in DIFF will be allowed to evolve; and in CL it will be announced a priory.

3. Enterprise Social Media: Track 2

In the context of information systems (IS), two kinds of approaches are being followed: (1): Information systems should have an impact on organization. But here there is a strong possibility that it will not be accepted (due to associated Power Shift to IT/S department that may not be liked by functional heads who stand to lose power) and organization may go back to legacy system. (2) It is also believed that IS should replicate the legacy system that represents the existing strategy and power structure; and it is believed that IS built this way will have greater acceptability in the organizations.

Enterprise Social Media (ESM) is replication of social media in organizations where members of organization interact with each other. This is saved and it helps in improved Knowledge Management and performance evaluation of employees based on 'equity'. Below we give several hypotheses related to ESM in organizations. In the use of ESM it is encouraged that employees create 'leisure content' so that it leads to its widespread use in organizations.

H18: If we have enterprise social media (ESM) for each of the functions (like marketing; finance; production; HR etc.) then it will lead to poor 'integration'.

H19: If we have ONE enterprise social media (ESM) for all functions (like marketing; finance; production; HR etc.) then it will lead to good 'integration'.

H20: In the process structure one must have ONE ESM for the entire processes that are reporting to a process manager. It will lead to good 'integration'.

H21: ESM (enterprise social media) is useful for inculcating cultural and values if it targeted at young citizens.

H22: This is so because individual genetic predisposition can temporally be altered by social expectations; but once that is removed, individual gets back to his/her individual dispositions; and hence that makes cultural change difficult in ESM.

H23: ESM (enterprise social media) is NOT useful for bringing about cultural change in adults.

4. Analytics: Track 3

Refer to Wiki on Analytics: these are descriptive (used when situation is complex and difficult to structure), diagnostic (here though situation is complex but we are able to identify few critical variables that need to be monitored), in predictive analytics if decision is given then we can predict what can happen by use of advanced OR techniques such as linear programming and simulation; and predictive, here we can predict what must a decision maker must do. Typically we use descriptive analytics when uncertainty is highest, we use diagnostic when uncertainty is high, predictive analytics when uncertainty is low and prescriptive analytics when uncertainty is lowest.

In cost leader strategy, the firm chooses to compete on least cost by resorting to mass production; and in differentiation strategy, the firm chooses to offer customization of varying degrees and charge premium to its customers (Miles and Snow et al. (1978)). Four types of innovators are given in Burgelman et al (2004) and these are: continuous innovation (associated with JIT), modular innovation (here it is has been observed that there is no first mover advantage) where innovation happens in a module and all modules are connected in the same architecture; whereas in architectural innovation (here it has been observed that there is first mover advantage) the modules are arranged in totally different architecture thereby changing the character of the product. In the paras below we relate these concepts with Analytics (that is an important form of IT/S).

Here we describe analytics used while acquiring a company.

H24: If the company that is being acquired is CL (cost leader), then analytics used for its assessment is predictive; and it will be production and finance oriented.

H25: If the company that is being acquired is DIFF (differentiation strategy), then analytics used for its assessment is diagnostic; and it will be marketing and R&D oriented.

H26: If the company that is being acquired is modular innovator, then analytics used for its assessment is diagnostic; and it will be vendor/supplier oriented.

H27: If the company that is being acquired is architectural innovator (AI), then analytics used for its assessment is descriptive; and it will be patent evaluation and people oriented. (because top management is not responsible for success/failure of AI.

H28: Whenever success of a company is because of culture specific factors, like the JIT with CL OR AI with superior cohesive work house, after acquisition one must ensure that forces of ETHNOCENTRICITY is not disturbing the acquired company.

Concept of desk analytics has gained currency, and here we relate it to strategy.

H29: Desktop Analytics (DA) is ideally suited for cost leadership strategy (as uncertainty is less) & as it is a top down model.

H30: DA tends to break down when there is high uncertainty and it is bottom up system that is operating; OR there is several rounds of 'interaction' between management and knowledge worker at the job & has better understanding of what is achievable and what is NOT.

H31: When the business has predictive/prescriptive analytics, then DA will work; and when business analytics is descriptive / diagnostic then DA will tend to break down.

Here we relate analytics to strategy formulation and strategy implementation.

H32: Strategy Implementation in cost leaders (CL) will have prescriptive analytics.

H33: Strategy Implementation in differentiators (DIFF) is bottom up; and it needs diagnostic and descriptive analytics.

H34: Strategy implementation when there is total change in strategy (such as cost leaders aspire to become differentiators; and vice-versa) requires changes in culture (structure/systems) and analytics required is descriptive.

H35: Strategy Formulation in cost leadership strategy needs predictive analytics.

H36: Strategy Formulation in differentiation strategy/modular innovation strategy needs diagnostic analytics.

H37: Strategy Formulation in architectural innovation strategy needs descriptive analytics.

Below we give a procedure that will help managers to implement predictive/prescriptive analytics (this is drawn from literature).

(a): All the available data (from data mining) is organized in condensed form; this is suitable for descriptive analytics. (b): Then if from above, we can extract variables that are important for the problem on hand; this is suitable for diagnostic analytics. (c): If from the above, we can extract useful cost and profit/revenue coefficients, then we are ready for predictive analytics (that is simulation etc is done to predict system behavior if some of the controllable variables are set at desired value). (d): Later if we are able to use it some optimization procedures/algorithms, then we are ready for prescriptive analytics.

H38: For the success of Predictive/Prescriptive analytics step (c) is most important.

H39: The step (c) is more difficult in supply chains with differentiation/innovation strategy; and it (the step (c)) is easy in supply chains with cost leader strategy).

H40: In supply chains with differentiation/innovation strategy, in step (c) following are most important: activity based costing, joint product costing and variable costing.

H41: In supply chains with differentiation/innovation strategy, in step (c) non financial/costing parameters are more important. (for example internalizing latest technology, develop a product that has least parts (for better after sales service etc).

Here we relate analytics and innovation.

H42: In Innovators (continuous improvement; modular innovators and architectural innovation) R&D analytics; HR analytics and Marketing analytics should be done first; as it has first mover advantages and it cannot replicated by competitors.

H43: In CL organizations Manufacturing Analytics and Financial Analytics lead to first mover advantages.

It is well known in literature that contingency theory of management is associated with higher levels of uncertainty; and it is used very often in differentiation and innovation strategy (in soft sciences). In innovation strategy we have following categories: continuous innovation, modular innovation, architectural and radical innovation.

It is already known that in continuous innovation one needs Predictive analytics as Taguchi Methods are used more often. The differentiation strategy and modular innovations and simpler business models compared to architectural and radical innovations. Hence we have the following.

H44: From the perspective of contingency theory of management, analytics used in differentiator and modular innovation is diagnostic.

H45: From the perspective of contingency theory of management, analytics used in architectural and radical innovation is descriptive.

Here we relate analytics to price and product mavens.

H46: Analytics for Price Maven is Predictive/Prescriptive.

H47: Analytics for Product Maven is Descriptive/Diagnostic.

Efficiency of viral marketing is how many click on a message in a given time. Now we are in a position to state the following.

H48: Analytics for viral marketing efficiency is PREDICTIVE.

It has been said that consumers may go by the VIRAL MARKETING message depending on culture of society and personality of CONSUMER. Hence we are in a position to state the following.

H49: Analytics for viral marketing effectiveness is diagnostic.

Here we relate leadership and analytics.

H50: Analytics for leadership in cost leadership strategy (transactive) is predictive.

H51: Analytics for leadership in differentiation strategy (transformational) is descriptive / diagnostic.

5. ML, AI, Programming, DSS and IoT: Track 4

Here we relate machine learning, Taguchi Methods and Innovation.

H52: In continuous improvement T (Taguchi) methods are already in use (as in CL)

H53: And we propose that machine learning can be fruitfully used here. Output of T methods can be fed to machine learning software; so that it can be trained quickly (as in CL).

H54: After successes each time, this information can be loaded in machine (T Methods and cognitive maps) for a faster response (as in CL).

This approach can be useful in both architectural innovations (here assemblies are arranged in different order) and in modular innovation (here innovation can be radical OR architectural innovation). Here T methods are useful (for architectural/modular innovation); and so is machine learning. And we feed the output of T methods to machine learning for a very rewarding experience (machine learning will be quickened).

Conjecture 1: Machine parameters can be recorded for every job operations and if machining parameters (as determined by Offline Design for Quality) change then automatically it will tell you how to correct it (which if automated will get it done without worker intervention). If some things get left out, then it will locate exactly whose error it was. It will make ISO 13000 (etc) much easier.

Conjecture 2: In CL (firms with cost leadership strategy) machine learning (ML) will be easier; and it will be much more difficult in DIFF (firms with differentiation strategy) where same job is never repeated as we may not be able to have so many sample points are not there for initial training. Therefore Taguchi Methods ™ are handy; and can be used for initial training.

Conjecture 3: In ISO 13000 plus: it required to determine capabilities of machines. This problem can also be assisted by Taguchi Methods and machine learning methods. Thus we know immediately that whether we can go for either 3-sigma, 6-sigma, 12-sigma (it is required for Aero-plane/Fighter Jets) production. Here also BiG-Data and Analytics come handy.

Conjecture 4: It appears that machine learning may not be comfortable with higher levels of uncertainty; hence it could be assisted by Taguchi methods. And hence we can get decision by TM and ML (that is assisted by TM).

Refer to Wiki on IoT (internet of things), here things interact on internet (instead of human beings). It offers greater consumer satisfaction. Insulin pump in the thigh of diabetic patient interacts with physician's computer for better sugar control OR instructions are issued over internet to additive printer located in customer's premises so that customers can see the ordered job is manufactured.

3-layered IoT has many more transactions (as it is deployed by cost leaders); and 5-, 7- layered IoTs are built for higher class customers (as they are used by differentiators) and has fewer transactions (as there is humanity of low income persons & number of transactions are less as you go up in terms of their wealth) and hence we say.

H55: Higher layered IoT's have poor carbon footprint record compared to 3-layered IoT.

H56: FDD Feature Driven Software Development will have lesser carbon footprint than EXTREME programming based software projects (where there is no clarity in the beginning); will consume less power than (and hence they will be more green).

Activity Based Costing is suitable for FDD software projects and as reported in literature for complex projects (where there is no clarity to begin with) customer is kept in loop to see the efforts that are being made; and there will be intense negotiations between software developer and customer and it will be a source of irritation.

H57: Modular Innovators will have less carbon load per number of successful products; than a corresponding architectural innovator (as failure rate is higher in AI (at least in high velocity environment)) and hence MI will be greener; Hence AI must introduce many products so cover for its higher investments (and corresponding green load).

And hence it may be concluded that:

H58: IT software/hardware will be having much higher CFP (carbon footprint) in differentiation strategy than in a firm with cost leadership strategy.

Here we relate production, IT/S to stress induced by emotional intelligence.

H59: In MRP system (Manufacturing Resources Planning Systems) will have higher stress due to restraint exercised in practice of high Emotional Intelligence. It will be more pronounced in 'nervousness'.

The term misaligned emotional intelligence is used to refer to poor person-strategy misfit and poor culture-strategy misfit.

H60: In JIT systems (in non-Japanese cultures), the stress due to misaligned emotional intelligence will be high despite high collectivism (as performance pressure is very high).

H61: In mass production systems without JIT systems, the stress due to misaligned emotional intelligence will be high due to lower collectiveness.

MRP (material requirements planning) is computerization of job shop in DIFF, whereas ERP (enterprise resources planning) automates the entire functions of management (HR, Marketing (via CRM (customer relationship management)), production, R&D and Finance). Refer to wiki on ERP. In DIFF as CWF is high, we need multi-process ERPs where as in CL we need single process ERPs. If business uncertainty is low we may implement ERP in a big-bang manner; where as in DIFF where business uncertainty is high, we may implement ERP in an incremental manner (to circumvent attendant resistance to change that flows from power shift (to IT/S department) with ERP implementation, Sharma and Patil et al. (2012)).

H62: In single process ERP for cost leaders and multi process ERP for differentiators/innovators stress due to misaligned emotional intelligence is much lower.

H63: Single process ERP for differentiators/innovators (requiring a well motivated staff) will have higher stress due to misaligned emotional intelligence.

H64: In modular innovation stress generated due to misaligned emotional intelligence is less compared to stress generated due to misaligned emotional intelligence in architectural innovation.

With the use of IoT, many sophisticated gadgets are put to use in health care services. And these help doctors to get information in real time of its patients.

H65: For high income class patients, we could have devices for many organs of the patient. And as more services are added (about other organs and its attendant interrelationships), there will be many changes in the system; and here they will need SoA (service oriented architecture). And we propose that we will require higher layered IoT (5-, 7-layered IoTs). Since this data can be misused by person with malicious intensions, we need high security, the data would be kept in dedicated cloud; and cost of data security will be high. And as more experience is generated (with the generation of content), it will help to improve the expert (or rule based) system (for medical care).

H66: For value for money patients, a 3-layered IoT is enough, security costs are low, public cloud can be used.

Hadoop is designed to have distributed open source software and other utilities (virtual processors) and process massive data. We then propose the following.

H67: Hadoop is ideally suited for firms with differentiation strategy.

H68: Hadoop is not suitable for cost leaders that are more centralized & and do not have variety in its operations/transactions.

Hybrid Hadoop is scaling up of virtual processors when needed and scale out when not needed. Hence we propose the following.

H69: Hybrid Hadoop is suitable for companies/sectors that have seasonal demand.

H70: Financial charges for hybrid hadoop is more complicated.

Here we relate edge computing and block chain to company strategy.

Edge computing is required to capture data and process it at the customer sight (if it is far away from the head office). Block chain is a technology where transactions are created as they occur and access to them is protected by principles of cryptography (see Wiki on Edge computing and block chain). Advantage of block chain is that we can have complete record of customer's choices and thus can have complete information about them and this helps in customized offerings to them. In block chain security is important (Tiwari and Sahoo, 2013). Below we give interesting hypotheses.

H71: Edge computing is required in firms with Differentiation Strategy.

H72: Edge computing is not required in firms with Cost Leader Strategy.

H73: Block chain will be located centrally in firms with cost leadership strategy; (as customer pulls the product).

H74: Block chain will be located at the customer site in firms with differentiation strategy.

Issue: pointers (used in network data bases) are like go to statements (ref: Nicholas Wirth, 1970) and it needs very high amount of care for maintaining fidelity of the data (one small error (programs generally have no known bugs) and the program proving is very difficult). With the distributed ledgers; it has a very poor score on global accessibility and can result in block chain being prone to large number of errors. There is issue of query optimization & this is well developed in relational data bases; it will take quite an effort to have that kind of state in block chain structure (network data bases) will require a very high level of engineering effort. Insertion/deletion is easily possible in RDBMS, not in block chain.

Block chain structure probably originated with BITCOIN (e-currency) that is banned in many countries of the world (and is very highly volatile (in relation to dollar)); and has less volumes. In this context the crypto currency, using BLOCK Chain is OK. But regular accounts of corporations are very large in number of transactions, and network model of database may tend to crumble (in terms of above issues especially in terms of query optimization & lead to high 'latency' once a request is filed. If any transaction is to be reversed/cancelled, the block chain data model will have problems.

There are many cases where fraud detection is possible with the use of relational data base model. It appears that whatever network data model (Block Chain) can do, relational data base model can also do it.

Block chain has caught the imagination of industry as a potential technology that will change the face of accounting and finance. Block chain originated from its use in crypto currencies. Here the number of transactions is very low. There are contradictory opinions in literature about the utility of Block chain.

We take a middle path. Since block chain has performed satisfactorily with crypto currency (here volume of transactions are low). We give following propositions (that are to be application to a IT/S company).

H75: Number of transactions are relatively low in Innovators/Differentiators. This follows as number of affluent class of persons in any society is low. We propose that block chain be implemented in an 'incremental manner'.

H76: As number of transactions is large in CL (cost leaders) plus JIT (this is briefly described as empowerment of workers and elimination of waste), let us implement here in an incremental manner (cost of mistake is much higher in terms of data re transfer in the network).

H77: Block chain to be first tried in radical innovators, modular innovators. And it should be tried in architectural innovators (which has very large number of transactions) much later (after it stabilizes in radical/modular innovators).

Here we address some issues in cloud ERP.

H78: Cloud based ERP can help differentiators implement an 'incremental' approach (for ERP). This is facilitated by pay-as-you-use feature.

H79: As CL stabilizes the familiarity with cloud ERP for all functions, then it must plan for having an ERP on dedicated cloud (a suitable (or favorable one) contract can be signed with the vendor).

H80: Cloud ERP for companies with cost leadership strategies do not need too much of interoperability.

H81: DIFF (firms with differentiation strategy) requires a customized ERP. Here the requirements change frequently and 'extreme programming' is required and here SoA (service oriented architecture) is necessary. They should get the code for themselves, to keep interoperability at high levels.

In software companies (that are differentiators), software support and proficiency is higher, hence they can go for big-bang approach to ERP implementation. Hence we have the following.

Conjecture 5: Change path in cost leaders companies for ERP implementation is 'incremental' to 'single' process.

Conjecture 6: Change path in differentiation strategy companies for ERP implementation is 'incremental' in 'single' process to 'multi' process.

In literature it is reported that in CL (cost leadership strategy) single process ERP is used. In DIFF (firms with differentiation strategy) it is recommended that one must use multi process ERP. If that is too expensive, then it is recommended that one must use single process ERP and give command and control to staff that is well motivated so that it can handle the resulting INFLEXIBILITY with ease.

Below we give a different argument.

If in multiple product structure company, the explosion number is too high or on the higher side OR it appears under many product structures, then it is ideal basis for using PWP (plant within a plant concept) and for each unit we have a single process ERP that has much less complexity; and hence a very low cost ERP can be used. This arrangement requires more machine costs (to make PWP or cellular mfg successful). As machine costs are much less compared to the costs of complex ERP, it works out as a cost effective solution. Hence we have the following.

H82: Use PWP and cellular manufacturing concepts so that total cost of smaller ERPs (with more machines) would be much less than cost of a large sized ERP.

This argument is emboldened by a similar approach to use PWP in MRP so that in each unit can use low cost KANBANS; and that is more effective than having a large MRP/ERP information system.

Below we give the following.

H83: In modular innovation smaller ERPs could be designed for each of the modules; and reap enormous cost advantages.

As the product is on decline and phased out, the smaller ERP can be dissolved and released resources be redeployed else were (to new products).

DSS (decision support system) has had (traditionally) four components: they are (a) Dialogue design (b) Determination of cost/profit co-efficient for use in modeling (either max profits or min costs); (c) Data base and (d) optimizer.

In cost leader (CL) strategy (a); (b); (c) and (d) will be easy, hence we have the following:

H84: In CL, DSS implementation is easy.

In firms with differentiation/modular innovation strategy (DIFF/MI) all (a) – (d) will be neither too difficult nor too easy; hence we have the following:

H85: In DIFF/MI, DSS implementation is neither too difficult nor too easy (in relation to CL).

In architectural innovation, only descriptive analytics work, and hence all four components (a) – (d) will be significantly different.

H86: In architectural innovation, DSS implementation will be more difficult.

We identify cultures that breed mavens / e-mavens.

H87: Low Bureaucracy, High Professional, High Market will lead to emergence of mavens (and e-mavens).

We relate IT flexibility to strategy of the firm and its volatility.

H88: Analyzers/Differentiators with large resource base (operating in every segment, especially the lucrative premium segment) should go for aggressive IT flexibility strategy, even if environmental uncertainty is high.

H89: Differentiators with small resource base (not operating in every segment, especially not in the lucrative premium segment) should NOT go for aggressive IT flexibility strategy, as environmental uncertainty is high.

H90: In the same vein, architectural innovators should go for aggressive IT flexibility strategy (as its resource base is much higher), even if environmental uncertainty is high.

H91: In the same vein, modular innovators should NOT go for aggressive IT flexibility strategy (as its resource base is much lower), if environmental uncertainty is high.

6. Conclusions

In this paper we relate different dimensions of IT/S to strategy and type of the firm. This will enable top management of companies to choose right IT/S mix (appropriate relation or organizational variables to strategy of the firm) for their companies for max effectiveness. Also the role of IT professionals to align IT strategy to corporate strategy will be enhanced by this article. The hypotheses given in this paper are picked up from un-referred books (book of working papers, Sharma (2019, 2020 and 2021).

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