
Strategic IT Demand Management for Business and Innovation Organization

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Abstract

Strategic IT demand plays a crucial role in the success of any business. This process requires an in-depth understanding of the organizational strategy level by senior management and management at various levels. This abstract describes the importance of IT Demand Management to the strategic planning of organizations' information technology innovations where management at all levels are involved in thinking, analyzing, and deciding every important IT investment that it can contribute to business success. This abstract presents a conceptual model, the relationship between EO and TO strategies, and ITDM processes to meet the needs of Optimization of OP that aims to become Innovation Organizations. This result is obtained through a survey study of 50 companies. Samples were management at different levels as the survey can confirm that the ITDM process is an important part of what management needs to know, understand and it can be used as a decision-making tool in organizations' strategic planning as well as it can create a process to become good governance. It can be able to drive and support the IT needs of customers and organizations for the success of the business in the future,

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truly. Moreover, this concept can be applied in several business areas or industries such as Banking, Energy, Mobile technology, or Telecommunication business.

Keywords: Strategic orientation, entrepreneurial orientation, technology orientation, IT demand, innovation organization, organizational performance.

1 Introduction

Innovation technology products and services are now a strategic important tool affecting the success and survival of the business sector whether the government or the private sector [1]. To drive corporate strategy with Innovation Technology, investment in various projects, most of them have a rather high value from such issues from the past to the present, there have been differences and conflicts within the organization from various departments, whether it is the finance department, the marketing department, the audit department or other related parties with the question of whether the investment is worth or not. Is it profitable or not? Can it actually answer to customers? What is the measure? Or that investment is it from an efficient thinking and analysis process? All of these questions stem from past experiences that all companies have faced, whether through massive financial losses or from the failure of investing in the innovation technology mistakenly [2–5].

Referring from the Boston Consulting Group (BCG), the world leader in Business Consulting Firm, the 2020 annual report is on the world's most innovative companies. This information is obtained by interviewing more than 2,500 executives around the world regarding innovation trends [6] (This report preceded the COVID-2019), it found that all companies were vigilant and adapt to changes in the business disruptive era even modifying manufacturing processes, especially in the software & service business or any organization that mainly relied on Information Technology (BCG, 2020), Figure 1 showed the growth rate of innovation in various industries.

For the statistical figures of Thailand that are entering the era of Business Transformation, based on the results of the October 2019 survey of 91 executives in various industries by the Deloitte Company, one of the world's leading consulting business solutions companies, businesses in Thailand have been driven to complete the digital transformation. Therefore, the direct impact is directed at senior management who is able to face new roles and need to be able to plan strategies, how to deal with problems or obstacles that might arise effectively [7]. The Deloitte Company has made a key remark from

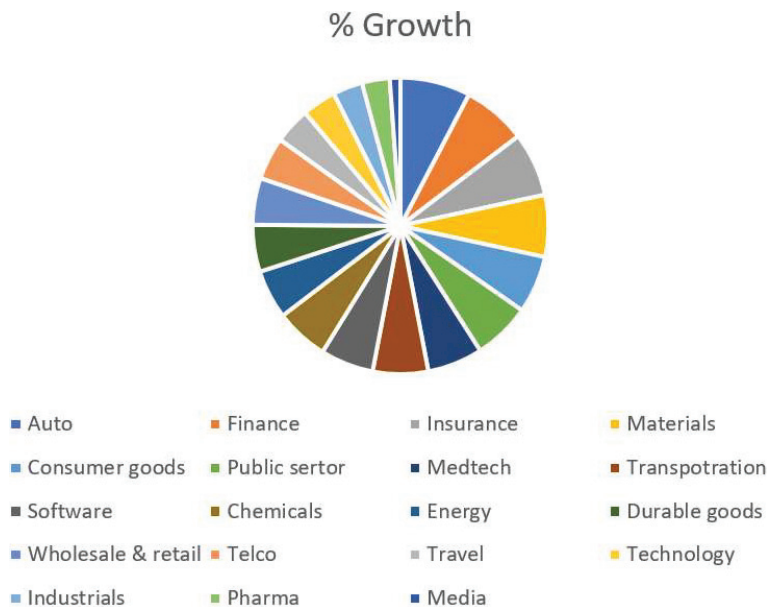


Figure 1 The growth rate of innovation in various industries [6].

the results of its survey. The main barriers to digital transformation are lack of and human resource management including adjusting the organizational culture to be proper as well. The report also pointed out that companies in Thailand should speed up the process of adopting technology in their work in order to prepare for the impacts of technology changes that were likely to become more severe in the next five years in which the coronavirus crisis (COVID-19) continues to drive digital transformation [8]. That is even more prompt.

Digital transformation era, business operations are forced to change with global trends [4]. From the above issues, companies or organizations, therefore having turned to develop themselves for survival by significantly increasing investment in innovative products and services but the main problem with innovation investing is the conflict of the initiative's management and finance executives who question how the benefits or value to get and it must be measured by money or profits from investing in that project [9]. As the above point, it is asked what can be used as a tool for senior management to use in making decisions, thinking, and analyzing in all dimensions and also has to be transparent as well as to be able to examine. In order that it can reduce the risk of project failure and the conflict (Conflict of Interest) from the

people involved. In addition, it can increase the efficiency of corporate work to be successful until being able to become an innovative organization [6].

As for Systematic Literature Review (SLR) from 1992 to the present. The evolution of corporate strategic planning has the fundamental theory of Information Technology Demand Management (ITDM) and Corporate Strategy, there are divided into 3 groups, most of which are presented as conceptual frameworks, starting from the first group. Focus on building the conceptual framework of the IT Demand within the organization to support the management of demand, including capacity and resources to meet business needs and create the most competitive advantage [8, 10]. The concept of the first group is also strategic planning, which is important in business operations. Subsequently, the second group of studies on strategic planning in marketing and innovation is presented as a conceptual model that pointed to the relationship of the organization to the environment in which has changed so fast that it is almost impossible to predict. So that, it is for the competitiveness of the organization, focusing on marketing strategies, information management processes, and knowledge expansion to serve the real needs of the market [11] and into the next generation of the third group that is the presentation of the Conceptual Model as well by highlighting the importance of differing strategic alignments in a variety of areas that deliver OP and innovative products but the concept of this group still lacks the process of managing customer needs [12].

As a result of the literature review, the researcher then has taken use of the three conceptual frameworks mentioned above to create a New Conceptual Model according to the Innovation with the IT Demand Management (ITDM) process of Alonso [12], having focused on strategic planning (Strategic Orientation; SO) and measurement of innovative organizations. This is a key mechanism for organizations to survive in a dynamic corporate environment that creates a competitive advantage through the efficient creation of innovative products and services for customers [10, 13]. The main goal of this study looks at the relationship between variables in creating strategies that can promote and lead to innovative organizations most effectively. This research uses the theory of Miles et al. [14] Strategy typology to analyze the core roles of their own organizations to enable senior management to support strategic planning in terms of Technology Orientation (TO) and Entrepreneurial Orientation (EO) through the ITDM process in thinking and analyzing real customer needs in order to truly affect the overall performance of the innovation organization. However, no research has been reported and presented before.

From the results of the aforementioned research, it can be posted questions as follows:

- How does corporate strategy affect ITDM Planning?
- How does corporate strategy affect ITDM Operation?
- How does ITDM Planning forward ITDM Operation?
- How does ITDM Planning forward Operation Performance?
- How does ITDM Operation forward Operation Performance?

It is expected that this research will give rise to the concept of understanding self-organizational characteristics. The key in organizational strategy planning through two perspectives: EO and TO combined with ITDM, is to empower innovation to become a competitive, stable, and sustainable innovation [15].

This study is started with a Discussion Factor, defining organizational strategy planning from the preparation of Literature Review for setting Hypotheses as well as having been tested randomly of 50 companies, consisting of all executives from senior, middle and primary levels. Afterward, the Hypotheses will then be compared with the discovered data and summarized for this study.

2 Theoretical and Literature Review

“Strategy” is one of the mainstays that directly affects the organization, investments, relationships, and the success or failure of the organization [16]. The strategic advantage can help organizations find ways to create new solutions, support processing for problem-solving as well as the allocation of limited human resources or technology that the organization has to make the most of the benefits [17]. When referring to the limited resource allocation, all organizations need to know themselves first and establish a standpoint in their respective industries [18]. The organizations will achieve their goals until they can create a sustainable business advantage [19]. It is imperative to focus on strategic planning. This will guide businesses to operate more efficiently [20].

When it comes to SO Education, it can be reflected in many perspectives. This study focuses on two areas: EO and TO, where the said views have been widely studied from the past to the present and having seen as being able to lead organizations to success in order to plan strategies appropriate to the characteristics of the organizations. Miles and Snow’s Theory [14], Organizational Strategies are applied. The principles of this

theory are focused on understanding and analyzing the marked characteristics of one's own organization. The results of the aforementioned analysis can enable the organization to operate properly with its own strengths. It is also beneficial to the competition through environmental adaptation [2]. For the Innovation Organization, this concept is considered to consider the strategic planning used in deciding to apply information technology systems to the organization in order to adapt to the environment outside of business. Another factor that is studied is the Innovation Product and Service creation process, a systematic process of thinking and analyzing customer needs that can lead achievement to the organization. The organizing process of ITDM according to the concept of [12, 22] then, is put into the core of this study. This is in order to be able to reflect the relationship of various factors to be a creative Innovation Organization.

Building competitiveness through complex strategic planning needs to take into account the relationship between competitive strategy factors, organizational structure, and business activity processes, which the Miles & Snow Strategy Model calls this external environment adaptation model as the "Adaptive Cycle".

Which is a strategic approach that looks at solving problems from 3 aspects:

- a. Entrepreneurial problem is the consideration of organizational factors and the products in which they compete in the marketplace [14].
- b. Engineering problem is the consideration of the coherence of the technology and the process [14].
- c. Administrative problem is the consideration of the organizational conformity factor, that is the consideration of the organizational coordination factor between the organization structure, policies and business activities and processes that refers to the most organizations will respond to Strategic Typologies in adapting to the environment [14] outside of the business to survive in the midst of intense competition. There are 4 approaches as follows:

Guideline 1. Defenders Strategy: The organization with the type of having a reaction to the environment outside the business to survive is often a strong organization in a specific marketplace which the organization has high expertise in that industry with a focus on improvement of process efficiency, organization structure, and technology systems rather than looking for new market that they do not have

expertise in a new market, it is important not to focus on the adjustment of the process, organization structure, and technology systems [14].

Guideline 2. Prospectors Strategy: This type of organization that responds to the environment outside the business to survive is often an organization that focuses on proactive marketing and likes to search for business opportunities and create new markets or new innovations (Market Innovation) tends to adapt quickly to the external environment. However, it will be found that it is not the market leader in every organization's market where it is competitive in that industry [14].

Guideline 3. Analyzers Strategy: This type of organization, having a reaction to the environment outside the business for survival, often proceed in two ways: In the normal external business environment, the organization will focus on improving process efficiency, organization structure, and the existing technology systems to have a very good performance than any new changes but when the organization is faced with intense competition and difficult to predict, the organization will continue to watch for the adaptation of its competitors first and then change itself to survive [14].

Guideline 4. Reactors Strategy: It is an organization characterized by a slow reaction pattern in adapting to the external environment. It is modified only when the organization is unable to withstand the stress of the external environment [14].

2.1 Entrepreneurial Orientation (EO)

EO will involve entrepreneurs in the strategic aspects of the company [4], Defining EO as defining the company's commitment to stay ahead of its competitors by taking advantage of new opportunities in the uncertain environment of Innovation Technology [23, 24] and having considered that EO is an organization's desire to discover and embrace new opportunities [25] and bring changes to create results as well as [26] it is seen in another view that EO has relationship to practice methods and decision-making patterns from the senior management in the organization. Applying of EO to be used by considering their own as the owner of the organization [27], but here it needs to be supported by the senior management of the organization in order to be

able to demonstrate their potential to the fullest [28]. However, implementing a strategy for innovation based on the EO's point of view, with the C-level, it must be able to accept the risks posed by the strategic plan [16], according to the entrepreneurs should realize that the participation in the marketing of innovation as the first one is considered an investment risk [18, 22]. Therefore, creating innovation from the EO perspective is referred to as the intention that the organization uses to create and product research or new services or even though R&D Processing. This can be considered as a proactive strategy which is presented with the EO's view that it may mention to the pursuit of new opportunities in the market by forecasting market needs and opportunities ahead of competitors in the future [1]. The organization must be able to bear the risk of investing in large amounts of resources in the project as a result, it may be possible to fail and be followed by lost investment [15].

2.2 Technology Orientation (TO)

Technology is an important means of connecting customers and organizations [1, 23], they use technology to enhance their customers' data collection capabilities. Technological leadership organizations will have the opportunity to accumulate a wealth of technological knowledge from past experience and processes that may be useful [9]. Technology-focused companies seek to provide new technology and advanced technology to develop new processes, products and services, although the rate of technological change within an industry may affect technology adoption or development [11, 24, 30]. If the TO is completely defined in terms of organizations or companies, the organizations or companies will be more likely to use something new, technology, products, or innovations that they show customer value and the long-term success of the organizations are depended on new innovations, technology solutions, products, services, or processes [11] but Jeong, I., Pae, J. H., and Zhou, D. (2006) state that the technical skills of the organizations, research and development resources, and a technology base can be central to bringing better design innovation, as well as products to market, and the outcome is TO will be the organization characteristic with focusing on the use of proactive technology by acquiring new technologies and using the latest technology to develop new products/services or applications that support them as above mentioned, this is an intention that TO should lead to the development of more and more innovations by creating products that offer superior technology compared to those offered by competitors [1], they therefore contribute

greatly to improving products, and business efficiency [23]. In conclusion, TO is the process of organizational success, which is the same as looking at the value given to customers mainly, but as the perspective arising from within the organizations themselves. The development of new technology, products or services, it is seen as the main factor in creating value for customers and having built the competitiveness of the organizations. Finally, EO the factors of achievement are presented in the form of behaviors or processes through the perspective of Competitive aggressiveness, Innovations, Proactiveness, and Risk-taking [1].

Another indispensable part of being an Innovation Organization is the ITDM Processing according to Thomason, D. (2004) said that the demand management is the way to achieve profitability to meet customer needs. It also has a direct impact on business benefits that can help improve the relationship between IT and business to be consistent to each other [32]. For the ITDM processing, based on the concept of Alonso (2017), this process is divided into six steps as follows:

- Step 1: Business Plans including IT Needs: The process of needs finding and understanding the business before developing a project to ensure that the company has a good understanding and is able to formulate a common vision based on customer goals and corporate management policies [12].
- Step 2: Analysis of Portfolio Investments in Business Projects: The process of analyzing and assessing the risks of investing in a various project that the business agency is initiated [12].
- Step 3: Prioritization of Business Programs and Projects: The process of prioritizing business programs and projects on the basis of needs and expected benefits [12].
- Step 4: IT Department Operational Capacity: The process of managing various resources to be able to work efficiently without additional costs and unnecessary. This ensures that the quality of the service will not be decreased and meet the needs of today's customers [12].
- Step 5: ITDM Operational Plan: Top executives' operational planning processes (C-level and other management levels) to support short and long term regarding IT applications [12].
- Step 6: IT Infrastructure and Business Process Deployment: Infrastructure planning process in the IT sector and Business Process that can be used to plan for launching the various IT Project efficiently [12].

3 Research Model and Hypothesis

3.1 Research Methodology

Review and gather literature, theory, and research related to SO through two perspectives, namely: EO, TO, and Information Technology Demand Management; IT-DM objective to be used to examine the relationship between strategy and ITDM that affect business efficiency.

3.2 Research Model and Hypotheses

In this research, the new conceptual model is presented on the ITDM model conceptual framework, which can be divided into 3 parts including Input – Strategy Orientation Variables, Process – Innovation Production Variables and Outcome – Innovation Organization Variables, which can determine research hypothesis as follows:

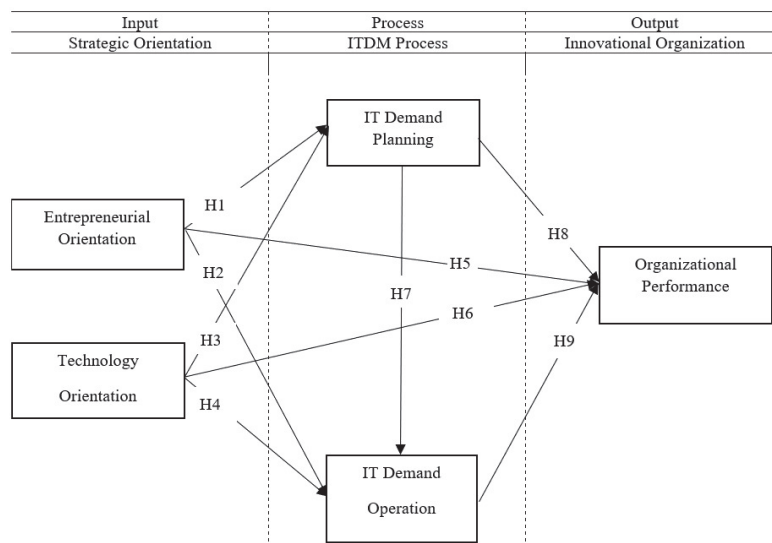


Figure 2 Proposed research model.

3.3 EO, TO, and ITDM Planning

EO and TO are one aspect of organizational strategy, which can influence how ITDM Planning can be determined to be most effective on the constraints of available resources [12]. The researchers have concluded that the EO strategy is the idea of executives who formulate strategies with innovative approaches

that can be leveraged in doing business that cannot be seen or valued by other organizations through processes and practices in a decision-making model as if they were an entrepreneur or the owner of that organization [20]. The TO strategy in which is characteristic of companies or organizations that apply technical knowledge to create technology solutions as a tool to support their customers' needs [33]. The relationship between the innovative product/service creation process and the ITDM Planning strategy can be considered as the foundation for the operation of the IT business [32] where demand is driven from various sources whether it is inside or outside the organization. Therefore, the IT department needs to be able to meet that demand to be in line with the business sector effectively, so the following hypotheses have been made as follows:

H1 Entrepreneurial Orientation influencer positively influences the ITDM Planning

H3 Technology Orientation influencer positively influences the ITDM Planning

3.4 EO, TO, and ITDM Operation

The organization's EO and TO strategy alignment have a profound effect on the formulation of an ITDM Operation methodology in the limited resource allocation process [1]. ITDM Operation's relationship and strategy of developing an operational capability plan in various tasks between business and IT, whether it is the resource of technology, human resources, infrastructure, finance and Marketing Planning [9], then the scope of responsibility is therefore important to be able to ensure that they will work under the procedural and methodological factors affecting the creation of a product or service to meet the needs of customers and organizations appropriately [25], therefore the following assumptions are made:

H2 Entrepreneurial Orientation influencer positively influences the ITDM Operation

H4 Technology Orientation influencer positively influences the ITDM Operation

3.5 EO, TO, and OP

The academicians say that the capability to plan strategies regarding ET and TO of the organizations, plays an important role in shaping the direction of organizations, including Organization Performance in various fields.

Academicians also show that corporate strategic planning influences Organization Performance [34]. Likewise, organizations strategy planning can also be a complete mediator of the influence of organizational culture on organizational effectiveness [18], while partially mediating in the influence of strategy and organizational structure on the effectiveness of the organization [9], therefore the following assumptions are made:

H5 Entrepreneurial Orientation influencer positively influences the Organization Performance

H5 Technology Orientation influencer positively influences the Organization Performance

3.6 ITDM Planning and ITDM Operation

ITDM plans are defined as the activities of senior executives such in C-levels who become part of the ITDM process [35] but IT-DM are either overlooked or ignored by the board of directors and executives [10, 12]. Before embarking on an IT project and business process situation, it should be modeled and simulated to determine operational capability adaptation [36], continuously establish critical processes, and ensure that activities and deadlines are performed, taking into account the relationship with the IT's infrastructure, Key Work Team Roles, Work Plan Components, Financing Plan, Deployment Plan Actions, Monitoring and Maintenance Actions, Final Report [3].

Relationships from both of these groups are vital for every organization with limited resources whether they are human resources, technologies, or customers who are the target audience of the business that enable organizations to holistically allocate business needs on the basis of proper supervision in order to reduce investment risks [20]. It is also able to predict future business needs and trends more efficiently [2], therefore the following assumptions are made:

H7 ITDM Planning influencer positively influences the ITDM Operation

3.7 ITDM Planning, ITDM Operation, and Operation Performance

ITDM Planning is a practice within the information technology and information technology domain and it involves making the planning process for information technology investments and decision-making a faster, more flexible, and consistent process but there is a disagreement that the preparation of a plan that does not really reflect that IT would be able to support the product [37]. Service or in the event that ITDM Planning does not start

planning with a clear picture of which needs are real strategies or what actions will have the greatest impact on the basis of information about the sequence of business needs, costs, benefits, and risks [7]. Ultimately, businesses don't understand how IT can help them run their strategy and ITDM [32].

Operational is a process that helps support and manage an organization's IT service infrastructure. It is generally focused on system and platform management as well as processes to ensure that these systems perform as expected and make operational operations efficient [3]. ITDM processes related to ITDM Planning and TDM Operation are therefore critical to IT governance processes to succeed in IT business [20]. If it is not properly managed from a strategic point of view, it can affect organizational objectives and goals. [12]. OP is the results of the verification processing to make sure that whether any performance or activity can be made to meet the goals of the organization effectively and efficiently or not. This includes the value results achieved by the organization, regardless of Tangible and Intangible's points of view [33]. Therefore, there is hypotheses as follows:

H8 ITM Planning influencer positively influences the Operation Performance

H9 ITM Operation influencer positively influences the Operation Performance

4 Methodology

4.1 Sampling and Data Collection

In order to evaluate the constructed research model and its hypotheses regarding the quantitative approach, the survey was conducted using an online platform (Google form). The questionnaire consists of 21 questions and is divided into four parts. The first part is the personal information of the respondents and includes 8 questions. The second part is Organizational Competitive Strategy and contains 1 question. The third part is the questionnaire for Factors affecting Strategy Orientation (EO & TO) in the application of IT Demand Management (ITDM Planning & ITDM Operations) and contains 6 questions. The fourth part is the questionnaire for factors affecting between ITDM planning and ITDM operations and includes 8 questions. For the second to the fourth part, there are five levels of the Likert Scale Questionnaire, which are popular measurement methods (selecting only one answer) Level 5 = agree most, equal to 5, Level 4 = agree very much, equal to 4, Level 3 = agree moderately equal to 3, Level 2 = agree less, equal to 2, and Level 1 = agree least equal to 1.

The experiment consists of two phases, the pre-test, and the main test phase. For the pre-test or try-out is conducted with the subjects. They were indifferent position levels and work in IT, to perfect the Data Cleaning and coding. It is statistically analyzed using a program of PASW Statistics v.18.0.0 and SmartPLS v.3.2.8 [37] using descriptive and inferential statistics through the Measurement Model and the Structural Model for the purpose of the test and for the main test phase, the data were collected from Dec 2020 – March 2021, the sample populations were the management level such as top management level, C-level, Senior Management, Junior Management, Team Leader and Project Manager. A total of 50 companies in several business areas Banking/Financial, Petroleum, Car Industry, Telecommunication, and Mobile Industry. There were completed and included in the analysis of this study. The questionnaire was approved by the IRB (the Institutional Review Board of Mahidol University) with approval number CIRB 2020/386.1811.

The main testing phase thus had 65 respondents. According to the statistics, the respondents had the demographic data given in Table 1.

The main testing phase thus several business sectors. According to the statistics, the respondents had the demographic data given in Table 2.

Table 1 The demographic data of main testing respondents

Demographics		Total (N = 65)	
		Frequency	Percent (%)
Gender	Male	28	43
	Female	37	57
Age (Years)	Less than 18	0	0
	18–30	0	0
	31–40	25	38
	41–50	37	60
	51–60	3	2
	More than 60	0	0

Table 2 The career data of main testing respondents

Career	Total (N = 65)	
	Frequency	Percent (%)
Private employee	44	68
Government/State enterprise employee	10	15
Business Owner	11	17
Others	0	0

Table 3 The department data of main testing respondents

Department	Total (N = 65)	
	Frequency	Percent (%)
Information Technology	37	57
Strategy	15	23
Human Resource	2	3
Sale	3	4.5
Marketing	5	8
Accounting & Finance	3	4.5
Others	0	0

Table 4 The position level data of main testing respondents

	Total (N = 65)	
	Frequency	Percent (%)
MD or C-level above	13	20
AVP, VP, SVP	26	40
Manager or Project Manager or Team Lead	26	40

Table 5 The business area data of main testing respondents

Business Area	Total (N = 65)	
	Frequency	Percent (%)
Banking/Financial	16	24
Petroleum	24	40
Car Industry	8	12
Telecommunication	5	7
Others	12	17

The main testing phase thus several departments. According to the statistics, the respondents had the demographic data given in Table 3.

The main testing phase thus several position level from bottom up. According to the statistics, the respondents had the demographic data given in Table 4.

The main testing phase thus several business areas. According to the statistics, the respondents had the demographic data given in Table 5.

The main testing phase thus several type of organization character to run their business. According to the statistics, the respondents had the demographic data given in Table 6.

Table 6 The organizational competitive strategy respondents

Organizational Competitive	Total (N = 65)	
	Frequency	Percent (%)
Defenders	14	22
Prospectors	42	65
Analysers	7	10
Reactors	2	3

5 Data Analysis And Results

Partial least squares (PLS) was used for data analysis with the application of SmartPLS v.3.2.8 in this research. PLS has recently become a quasi-standard in commercial research to investigate the cause-effect relationship between latent constructs [25]. As a structural equation modeling technique, PLS analyzes measurement models and structural models simultaneously in a single process. We chose PLS because it has a less stringent sample size and indicator distribution requirements compared to covariance-based SEM methods such as LISREL [38]. Following a two-step data analysis procedure, the measurement model is first examined to assess the reliability and validity of the measurement. Then, the structural model is tested for the approximation of a hypothesized relationship.

5.1 The Measurement Model

There are 21 questions in the questionnaire. The questions are split into four parts as questions for the general information of respondents and questions related to the proposed model. The former consists of 8 questions while the latter is the remaining 13 questions. The answers to the questions were processed via PASW statistic version 18.0.0 to evaluate for internal consistency of data. And, the acceptable threshold of the score refers to Cronbach's Alpha value as over 0.7 [39]. The result of Cronbach's Alpha value was 0.893; thus, we conclude that the answers have internal consistency. In terms of reliability and validity of the questionnaire, we obtained results as follows. The mean scores were between 4.000 and 4.760, and the SD scores were 0.472–0.970. For factor loading, the data obtained scores of 0.773–0.946 which is over the acceptable threshold of 0.70 [39]. The outer VIF scores that should be under 5.00 for acceptable threshold were 1.230–4.426 [40–42]. The results of each question are given in Table 7. It can be seen from Table 7. That the Median score is also close to the Mean and most of the raw scores are numbers 4 and 5.

Table 7 The reliability and validity of the results

Index	Question Items	Median	Mean	S.D	Outer Loading (>0.70)	VIF (<5.00)	Source
EO.IO1	The company's management consider ITDM Planning (IP) a top priority	5.000	4.610	0.546	0.934	1.495	[5]
EO.IO3	The company's management considers ITDM Planning (IP) a useful strategy to increase the company's bottom line	5.000	4.660	0.552	0.829	1.495	[5]
IO1	Top management has provided the necessary resources for ITDM Planning (IP)	5.000	4.480	0.624	0.878	2.502	[5]
IO2	The company's senior management considers ITDM Operation (IO) to be of utmost importance.	5.000	4.480	0.685	0.912	3.073	[5]
IO3	Top management considers ITDM Operation (IO) to be a useful strategy to increase company profits	4.000	4.360	0.625	0.946	4.426	[5]
IP1	Top management has provided the necessary resources for ITDM Operation (IO).	4.000	4.290	0.711	0.863	1.546	[5]
IP3	The Company's senior management considers ITDM Planning (IP) to be of utmost importance.	5.000	4.570	0.587	0.919	1.546	[5]
OP1	Top management has provided the necessary resources for ITDM Planning (IP).	4.000	4.000	0.970	0.859	1.934	[5]
OP2	Assessing the situation and planning your IT needs with your business is always critical to Organization Performance (OP).	4.000	4.390	0.615	0.905	3.110	[5]

(Continued)

Table 7 Continued

Index	Question Items	Median	Mean	S.D	Outer	VIF	Source
					Loading (>0.70)	(<5.00)	
OP3	Analysis of portfolio investments in business projects critical to Organization Performance (OP)	4.000	4.240	0.618	0.930	3.201	[5]
TO.IO1	Prioritizing business goals and IT projects is critical to Organization Performance (OP).	5.000	4.660	0.552	0.860	2.841	[5]
TO.IO2	The company's senior management considers ITDM Operation (IO) to be of utmost importance.	5.000	4.760	0.472	0.773	2.512	[5]
TO.IO3	Top management consider ITDM Operation (IO) a useful strategy to increase the company's bottom line.	5.000	4.520	0.591	0.780	1.230	[5]

Table 8 Construct reliability and validity

Constructs	Item Code	Cronbach's	Composite	Average Variance
		Alpha (>0.70)	Reliability (CR) (>0.70)	Extracted (AVE) (>0.50)
Entrepreneurial Orientation	EO	0.701	0.789	0.562
ITDM Operation	IO	0.899	0.937	0.833
ITDM Planning	IP	0.892	0.933	0.796
Organizational Performance	OP	0.880	0.926	0.807
Technology Orientation	TO	0.715	0.845	0.647

In the evaluation of the proposed research model, we obtained Cronbach's Alpha scores between 0.701–0.899 which were higher than the acceptable threshold as 0.7 [39]. The internal consistency testing results of the model considered Composite Reliability (CR), and the model yielded the score of 0.789–0.937 which were acceptable since they surpassed the criterion of 0.70 [39]. The convergent validity from Average Variance Extracted (AVE) should be over 0.50 score and the model returned the AVE results between 0.562–0.833. The details are given in Table 8.

Furthermore, we assessed for Discriminant Validity of the model using the criterion of Fornell-Larcker, 1981). Based on the criterion, the

Table 9 Discriminant validity

Constructs	EO	IO	IP	OP	TO
Entrepreneurial Orientation (EO)	0.750				
ITDM Operation (IO)	0.670	0.931			
ITDM Planning (IP)	0.768	0.803	0.892		
Organizational Performance (OP)	0.370	0.508	0.403	0.898	
Technology Orientation (TO)	0.891	0.722	0.609	0.290	0.804

square-rooted AVE has to be higher than the correlation of other constructs. Thus, the research model is an eligible model. The Fornell-Larcker criterion results are shown in Table 9.

5.2 Structural Model

Through the acceptable results from the earlier assessment, we completed hypothesis testing and Goodness of Fit (GoF) using SmartPLS 3.3.0. In this section, the hypotheses of the proposed research model mentioned in Section 3 are tested. A Bootstrapping algorithm (Hair et al. (2017)) is used for resampling of 5,000 samples with a significance level at 0.05 for Path coefficient (β), t-value and p-value. The criteria for accepting Path coefficient (β), t-value and p-value are >0.10 , >1.96 and <0.01 , respectively. We found that H1, H2, H3, H4, H5, H6, H7, H8 and H9 were supported. The detailed results are given in Table 10. The results of the model with an indication of hypothesis testing from SmartPLS program are illustrated in Figure 2. Regarding the model fit assessment, we obtained the Goodness of Fits (GOF) result of 0.661.

As shown in Table 10 and Section 5.2, the summarized results can be explained in the context of the case study as follows:

1. Entrepreneurial Orientation (EO) : EO \rightarrow IP
H1 is correlated with ITDM Planning (IP)
2. Entrepreneurial Orientation (EO) : EO \rightarrow IO
H2 is correlated with ITDM Operation (IO)
3. Technology Orientation (TO) : TO \rightarrow IP
H3 is correlated with ITDM Planning (IP)
4. Technology Orientation (TO) : TO \rightarrow IO
H4 is correlated with ITDM Operation (IO)
5. Entrepreneurial Orientation (EO) : EO \rightarrow OP
H5 is correlated with Organizational Performance (OP)
6. Technology Orientation (TO) : TO \rightarrow OP
H6 is correlated with Organizational Performance (OP)

Table 10 A summary of hypothesis testing results

Hypothesis	Path	Path Coefficient (β) (>0.10)	t-value (>1.96)	p-value (<0.01)	Supported
H1	EO \rightarrow IP	1.085	7.161	0.000	Yes
H2	EO \rightarrow IO	-0.812	3.063	0.002	Yes
H3	TO \rightarrow IP	-0.357	2.089	0.037	Yes
H4	TO \rightarrow IO	0.921	5.303	0.000	Yes
H5	EO \rightarrow OP	1.140	3.054	0.002	Yes
H6	TO \rightarrow OP	-1.103	2.484	0.013	Yes
H7	IP \rightarrow IO	0.862	4.823	0.000	Yes
H8	IP \rightarrow OP	-0.627	2.432	0.015	Yes
H9	IO \rightarrow OP	1.036	4.182	0.000	Yes

7. ITDM Planning (IP) : IP \rightarrow IO
H7 is correlated with ITDM Operation (IO)
8. ITDM Planning (IP) : IP \rightarrow OP
H8 is correlated with Organizational Performance (OP)
9. Technology Orientation (TO) : IO \rightarrow OP
H9 is correlated with Organizational Performance (OP)

Note that: If the significance (P-value) of Path Coefficient is less than 0.05, then it will be supported or correlated (Yes). However, if the P-value is more than 0.05, then it will not be supported or correlated (No).

According to the results of the experiments in Table 10 and Figure 2, the ITDM process shows the relationship of each factor.

5.3 Model Fit

Model Fit follows Figure 3, To summarize the results of 2 inputs based on SO viewpoint with sub-viewpoint as follows. EO positively influenced IP with the path coefficient of 1.085. EO positively influenced IO with the path coefficient of -0.812. TO positively influenced IP with the path coefficient of -0.357. TO positively influenced IO with the path coefficient of 0.921. EO positively influenced OP with the path coefficient of 1.140. TO positively influenced Organizational Performance (OP) with the path coefficient of -1.103. IP positively influenced IO with the path coefficient of 0.862. IP positively influenced OP with the path coefficient of -0.627. IO positively influenced OP with the path coefficient of 1.036.

Calculating the goodness of fit (GoF) using the formula of the square root of the multiplied results between the coefficient of determination (R²)

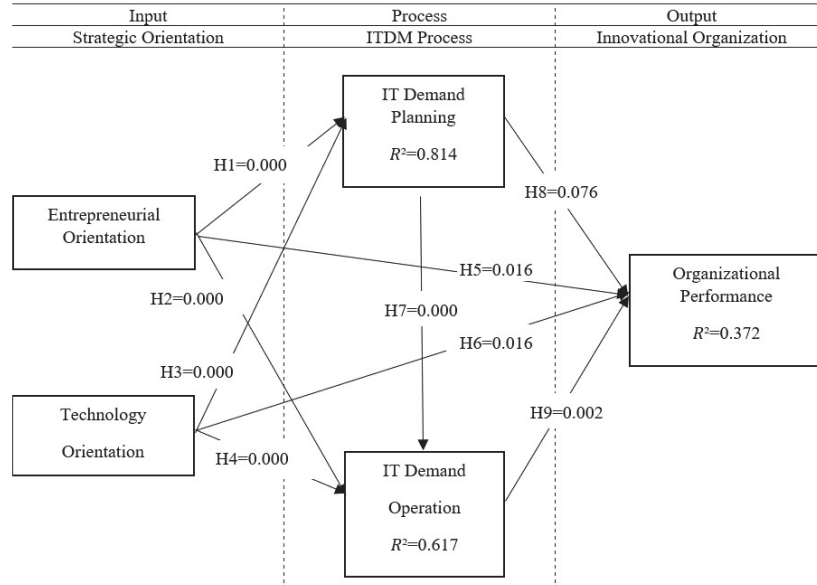


Figure 3 SmartPLS results of the structural model.

and the Average Variance Extracted (AVE), where the no fit criteria were less than 0.10, the small criteria were between 0.10 and 0.25, the moderate criteria were between 0.25 and 0.36, and the high criteria were higher than 0.36. Thus, The GoF is derived from [43–46].

$$\begin{aligned}
 GoF &= \sqrt[2]{R^2 * AVE} \\
 &= \sqrt[2]{0.726 \times 0.601} \\
 &= \sqrt[2]{0.4363} \\
 &= 0.661
 \end{aligned}$$

The calculation results had high criteria at 0.661. Therefore, the research model earned GoF at good criteria.

6 Discussion

The management level’s today’s challenge is facing crucial challenges from the changing business in the Era of Transformation. Appropriate innovation modeling and operational processes are therefore an option to meet IT needs.

This research study aims to study the relationship of organizational strategic planning leading to the organization of innovation in information technology through a survey of management and experts at various levels in order to create a process of understanding in IT-Demand Management Processes as strategic functions that can better manage an organization. Table 4 and our survey report, the 65 respondents who respond to relational questionnaires can be categorized as Top management level, C-level, Senior management, Junior management, Team leader, and Project manager. In accordance with the survey, Group of AVP, VP, SVP and Manager, Team leader and Project manager are the largest proportion with 40% each, followed by Top management level, C-level, Senior management is the least number due to the management level in the organization or department can have 1 or 2 people only, proportion 20%.

From the perspective of today's changing business vision, the impact of IT on business operations can facilitate growth, reduce costs, increase efficiency. IT Demand Management will be successful if top management understands and applies it to the benefit of planning strategies that are consistent with what its organization is available and the real market needs. In this paper, we try to clearly reflect the role of the management level, which is that the organization's management plays a very important role in the success of the organization through defining visions, perspectives and finding new business opportunities based on limited resources. So, the IT Demand management process is an important tool that can help management in making strategic decisions and clearly and accurately allocate the existing resources of its organization. The primary role of senior management as a business unit leader is either from the perspective of Entrepreneurial or Technical Orientating, requires the capability to present ideas, strategic plans that create corporate value for the board and management in various departments to build confidence in stakeholders in which decisions are made through transparent, verifiable processes that can really meet the needs of customers and the organization, as well as results, will be reflected in the form of sustainable business success to comply with various industries such as Banking/ Financial, Petroleum, Car Industry, Telecommunication, and Mobile Industry, etc.

7 Conclusions and Future Research

Respondents believe that the company's investment in improving IT requirements management processes and proper use of a proposed conceptual model

or other standards can increase the use of standards and methods for IT management. Such a thing should improve the governance of IT best practices and business processes as well as increase the business profit of the organization, ITDM is one of the important processes for business success. Therefore, it is important to ensure that the right needs are identified, funded, and implemented. Fully regulated demand management provides senior management and IT experts with the information and resources they need to understand IT costs, possible investment evaluation. In the event that demand isn't managed properly, organizations can sometimes end up offering a product that isn't what customers really need or conflicting, products that customers need but not getting the results they expect. Future work will continue on other case studies to gather feedback and improve the framework. We also intend to conduct further research to create other conceptual model and other methods of ITDM's other types.

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