

Parameters Guiding E-Transformation in Developed and Developing Countries

Ana Hol^{*1}, Mahesha Kapurubandara²

¹School of Computing Engineering and Mathematics, University of Western Sydney, Australia

²Faculty of Computing, Sri Lanka Institute Of Information Technology, Sri Lanka

^{*1}a.hol@uws.edu.au; ²mahesha.k@slit.lk

Abstract-Business life today is very dynamic. To excel and meet changing environmental needs, businesses are required to implement new technologies. Research indicates that both developing and developed countries need to adapt to changing environments. In-depth investigations were conducted with Small to Medium Businesses (SMEs) in Australia and Sri Lanka to address this research gap, identify the parameters essential for the technology implementation. Findings show that E-T (E-Transformation) Guide parameters can identify company's current technology implementation state and also help guide future implementations, based on the already defined E-Transformation Dimension in both Developed and Developing countries. Furthermore, the study also identifies the progression from Strategy dimension to Structure for smooth increment, and then to Tasks and Processes for successful transformation. Companies would need to review the E-T Dimensions' Categories, as well as the newly proposed additional parameters. This paper concludes by providing a detailed insight into the additional parameters, namely: Knowledge, Marketing, Certification and Regulatory Agency Policies, and the available Funds and Support, which influence successful technology implementation.

Keywords- *Technology Implementation; E-Transformation; Developing Countries; Developed Countries; SMEs; Sri Lanka; Australia*

I. TECHNOLOGY IMPLEMENTATION

Throughout the centuries, businesses have been changing and adopting new innovations and technologies. In some cases, it was to survive and move from the old; in other cases, it was to excel in competition and gain competitive advantages. Such trends have been noticed in both developing and developed countries. In early 2000s, Australian researchers conducted in depth studies with SMEs to identify the extent to which they used technology. At that time, it was identified that almost 88% of SMEs used productivity tools like office packages; however, only about 40% of studied SMEs had basic brochure websites, and only about 18% of them had the interactive websites [1]. Based on the collected findings, Ginige et al. have made the classification of company's technology implementation that includes both company's internal technology support, as well as the external and environmental demands. Consequently based on the conducted investigation, they have proposed the Roadmap. The Roadmap depicts a staged process of technology implementation, and identifies that when organisations implement new technologies or tools, changes happen within both internal and external organisational processes. Within the External processes at the first stage of change, businesses are seen to have the minimal online presence such as a basic, static website; at the second stage, businesses have an interactive site; and at the third stage, a fully enabled E-Commerce site. Within the internal processes at the first stage, businesses are composed of effective individuals who use productivity tools; at the second stage, businesses have effective teams where employees are exchanging and managing documents, using storage devices and having small networks; while at the third stage, there is an effective organisation that is fully networked and interconnected. Fourth stage is known as the stage of convergence. It unites internal and external processes, and identifies full system integrations and uniformity. Not many companies are seen to have fully reached this stage.

In 2000s [2] identified that technology implementation in developing countries like Sri-Lanka, is relatively slow and that companies may need to be further assisted and supported in order to gain full benefits. To identify how best to streamline the transformation process and assist the organisations, Kapurubandara [2] took the research further conducted in Australia, and applied the Roadmap developed by Ginige et al. to the SMEs in Sri Lanka. The study pointed out that in developing countries, there is prior stage, within the external processes which identify there is a stage before the basic site, the no website no online presence stage. Furthermore, within the internal processes, Kapurubandara [2] identified that manual tasks form a major activity required for the products to be developed.

In addition, Kapurubandara [2] also identified that there were multiple sub-stages within each developmental stage. Figure 1 depicts the staged journey and also highlights that within each stage, it is expected that there are multiple parameters that guide the technology implementation process. The parameters seem to take into account the important characteristics each company should have at various developmental stages. The parameters also take care not only of the technology but also other factors that may be important determinants. They also take into account how companies may undertake the transformation – select, implement and utilise the chosen technology.

Therefore, studies conducted in Australia have also indicated that technology implementation does not depend on the technology alone, and that the reviews to pinpoint the crucial properties of the transformation parameters have been undertaken.

Numerous authors over the years have pointed out that multiple factors affect the organisational change and technological implementation. Arunatileka and Ginige [3], for example identify in their studies that the 7Es model is one of the most comprehensive models that can be applied when analysing organisational change and transformation [3]. Furthermore, the authors named the process during which companies are selecting, implementing and utilising new tools and systems E-Transformation. They have also identified that each technology implementation requires careful understanding of the environment (the business environment and surrounding), E-Business goals and strategies, E-Readiness, E-Transformation Roadmap [1], E-Transformation Methodology (highlighting that E-Transformation is staged and incremental), E-Systems (tools, technologies and maintenance), and finally evolution change management (which highlights that E-Transformation is not just a journey but a continuous process).

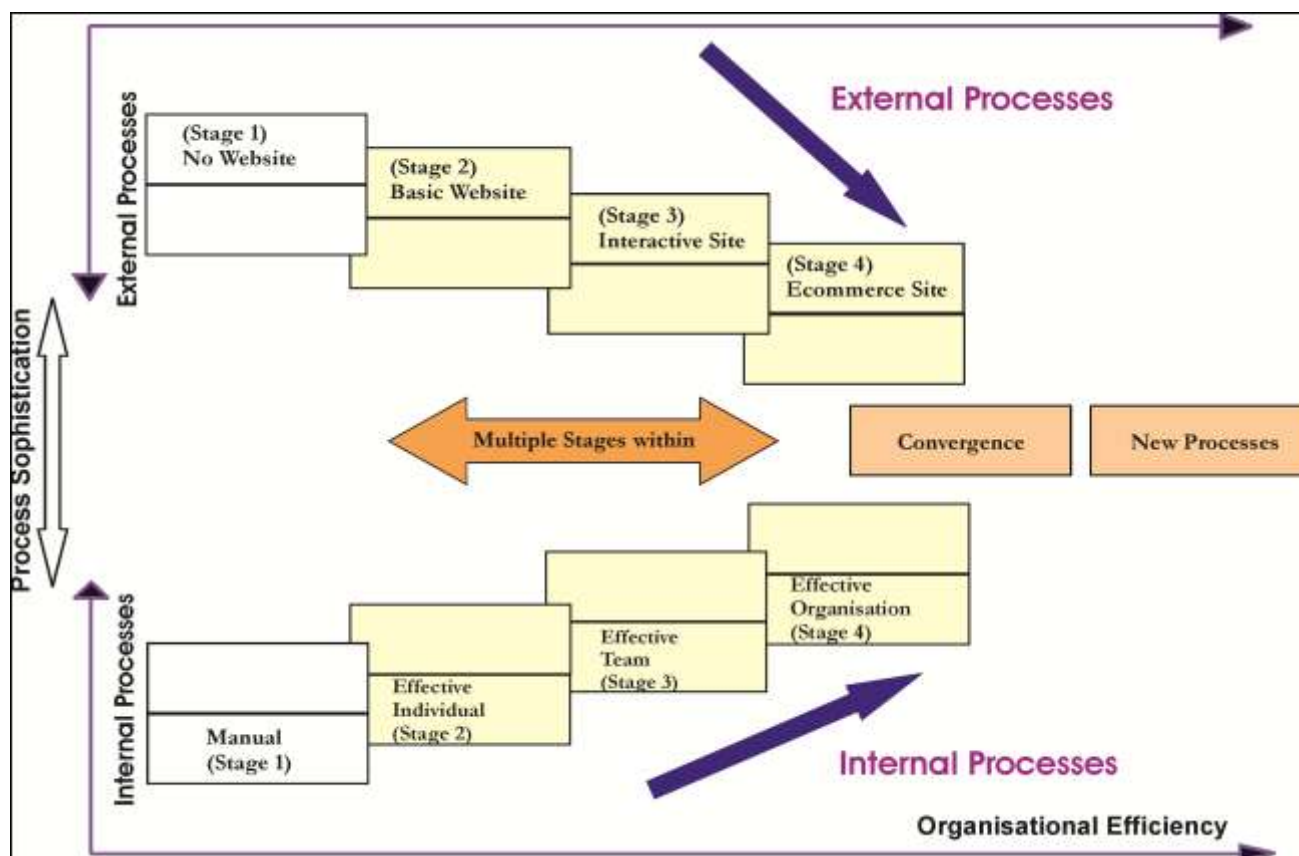


Fig. 1 E-SME road map [2]

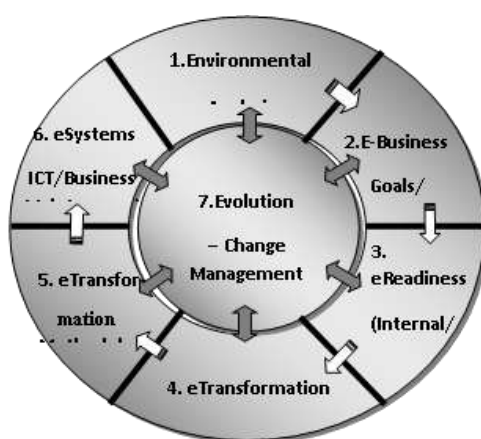


Fig. 2 7E-Model [3]

II. E-TRANSFORMATION

In 2008, Australian researchers have identified that a successful E-Transformation is a process that needs to be studied in detail. They have identified that for the E-Transformation to be effective, it is essential to take into the account not just the properties defended by 7Es and their effect on technology, but also series of the dimensions and their categories which play a

role in a successful E-Transformation [4].

From Figure 2 it can be seen that in order for the E-Transformation to be successful, it is essential to first review a dimension of Strategy. Strategy defines business goals, visions and objectives. Following this, it is crucial to review business Structure, the way a business is organised, how it is managed and how it operates. Once this is reviewed, it is important to identify primary business Tasks and Processes. They represent main activities essential for the business operations. Such operations may define a production of a particular product or a delivery of a certain service.

After operations required to produce or sell a particular product or deliver a particular service have been identified, the business is then in a position to address the Information Technology Tools and Systems dimension. For more details, please see the appendix listing the E-Transformation Dimensions and their characteristics [4]. Also note that each Dimension has been labelled by its unique colour, so that it can be easily identified. Furthermore, each Dimension spans across stages as E-Transformation is incremental and iterative, which implies that ie. organisation should invest into business Strategy before investing into Structure, followed by Business Tasks and Processes, and only after the above has successfully been completed organisation can then invest into IT Tools and Systems.

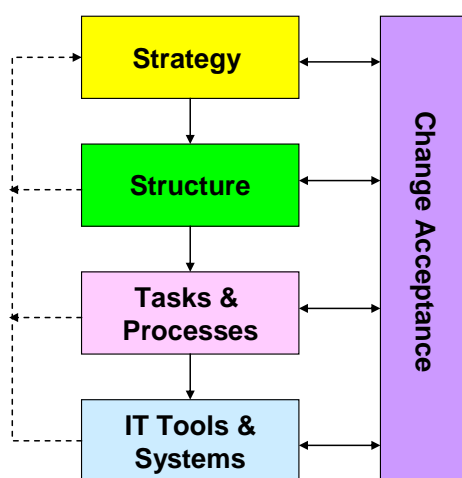


Fig. 3 Iterative model of E-Transformation [4]

It is worth noting that more recent studies by Sri Lankan researchers have also identified that awareness of the business strategy, processes and technology applications, could help SMEs plan their technology implementation in more strategic manner [5].

Taking into the account the fact that technology today plays a valuable role and businesses across the world are attempting to utilise its benefits, with the aim to get the better perspective of the technology implementation scope and organisational transformation in 2010 Sri Lankan and Australian, researchers studied whether in fact SMEs within developed and developing countries have different E-Transformation strategies when implementing IT Tools and Systems [6]. These studies identified that even though SMEs in Australia more often than not have at least a basic stage one website, their primary business often comes via a word of mouth rather than the online interaction. In Sri Lanka, not many SMEs have a website. A primary mode of contact is always a word of mouth. Furthermore, in Sri Lanka electronic communication is not often utilised while in Australia it is often the preferred method of contact. For both countries within SMEs sector manual tasks tend to be more prevalent. However, in Australia it has been noticed that in recent times, emphasis has been placed on E-Transformation and technology implementation much more than it has been in Sri Lanka. In addition, in both developing and developed countries, SME often struggle to get adequate ICT help and support. In some instances, companies may identify that there is a need for change and improvement within the IT Tools and Systems dimension; however, due to a lack of IT skills and necessary support resources, such change may not always be easily executed. At present, this is more common in developed countries than the developing as they are more often focused on simple survival rather than the change and improvement. In some cases, this may also be seen in the developed countries. Regarding the web development, it has been found that most SMEs in developed countries have effective teams and utilise interactive websites; however, in developing countries, SMEs tend to be effective individuals and rarely have websites.

To identify the effect to which Australian and Sri Lankan past studies are comparable and whether there is a wider scope of parameters influencing organisational transformation, researchers conducted a comprehensive review of technology implementation by SMEs across the globe.

III. TECHNOLOGY IMPLEMENTATION BY SMES AROUND THE GLOBE

Based on the studies done by Andrade and Urquhart (2009), it can be seen that when implementing ICT, SMEs in Kenya must be able to overcome resource and scale economy challenges as depending on the local laws, regulations and requirements, it may not always be easy to obtain the needed and required resources.

Kuteyi [7] in another study identified that lack of funding and non-utilisation of ICT is a factor that affects the development of SMEs in Nigeria. He also observed that in Nigeria there is a lack of centralised agencies to which Small and Medium Enterprise can belong to which consequently results in a lack of centrally coordinated information, which is essential to SMEs and the sector development. In developed countries on the other hand, agencies like these are often established, and they often closely observe concerns and issues of SMEs' are facing. Furthermore, Apulu and Latham [8] have noticed that cultural barriers often present challenges when it comes to technology use and implementation. For example, cultures that do not nurture openness and knowledge sharing can hardly provide inputs needed for the successful technology implementation. Malik and Malik [9] state that lack of supportive organisational culture and structure can often hamper new technology initiatives.

Moreover, according to surveys conducted in Southeast Asian countries [10], unfavourable economic environment, the high cost of ICT, and security concerns often seem to be main hindrances that at times can completely prevent successful technology implementations. In addition, poor organisational communications, inadequate technology infrastructure, lack of ICT awareness have at times also been seen as hindrances.

Based on the above findings, it can be seen that many factors play a role in technology implementation by SMEs. Currently, there is very little research that compares ICT adoption and implementation in developed and developing countries, therefore, this study aims to identify parameters that influence technology implementation and E-Transformation of SMEs in both developing and developed countries. The study also aims to point out the extent, if so, to which such parameters differ in developed and developing worlds.

IV. METHODOLOGY AND BUSINESS SELECTION

Considering that this research looks into technology implementation by SMEs in developed and developing countries, this research first aimed to assure that the definition of SMEs used for this research is consistent, as in some countries and regions researcher use the number of persons employed, amount of capital invested while others use the amount of the yearly business turnover or the nature of business [11].

In Sri Lanka, there is no clear definition of a SME as government agencies use various criteria to define SMEs [11, 12]. The main criteria used are the number of employees, the size of fixed investment, and the nature of the business and the sector [12]. In Sri Lanka, The National Development Bank (NDB), the Export Development Board (EDB), and Industrial Development Board (IDB) use value of fixed assets as the criterion for definition, whereas the Department of Census and Statistics (DCS), Small and Medium Enterprise Development (SMED), and the Federation of Chambers of Commerce and Industry (FDCCI) use the number of employees as the criteria.

For statistical purposes, most countries seem to use the number of employees to define SMEs, but this number varies from country to country. For instance in Sweden and New Zealand, SMEs are referred to as having 50 or fewer employees, while it is 100 in Netherlands, 150 in Turkey and 100 in both United States and United Kingdom [13]. In Australian context, the Australian Bureau of Statistics (ABS) defines small organisations as having fewer than 20 employees and medium organisation having fewer than 200 employees [14].

The World Bank defines enterprise size in Sri Lanka based on the number of employees: those with fewer than 49 employees are small; and those with 50-99 employees are medium-sized; and those with more than 100 employees are large [11].

For this research, the authors consider SMEs to have up to 100 employees. The largest assessed Australian SME had 70 employees and the largest Sri Lankan SME 50.

Companies selected for this study were from two very distinctive areas, developed world Australia; companies studied were from within and around Sydney region and the developing world, Sri Lanka where companies studies were based in and around the Colombo region.

The two countries were chosen, as this is a part of the longitudinal studies that initially commenced in 2008 and was carried out by the researchers over the last six years. Initially, the two countries selected were seen as the two samples that represent two distinctive angles. One, depicting the development and the other representing a developing region. The subjects of this study were three SMEs from a developing country – Sri Lanka's – Colombo region and another three from a developed country – Australia's Sydney region. The sample for Sri Lanka was chosen from a list maintained by the Export Development Board of Sri Lanka who is a representative of SMEs from various industry sectors, engaged in different businesses in the Colombo District of Sri Lanka. The Colombo district was selected, as this province boasts the highest density of companies using ICT. The sample for Australia was chosen from a list of previously studied sample of 30 companies belonging to a range of industry sectors. The three selected companies were those that were at the time of the investigation most developed within

the studied sample, and consequently a company representing Manufacturing, Service and Transport industry sectors were chosen. In the duration of this study, a detailed case investigation of each selected company was conducted in detail. Data was collected via semi-structured interviews that were held at the company premises. The CEOs /owners/managers of SMEs were interviewed as they seem to be the primary decision makers of the SME. The main reason why they were interviewed was to get the first-hand information about the business tasks and processes, their use of ICT, and their perceptions and reasons for adopting it. Each interview lasted nearly one hour. Interviews were recorded, subsequently transcribed and subjected to qualitative content analysis. This involved categorisation of responses into certain themes, some of which were inherent in the interview questions, and some of which emerged through the interviewees' responses to questions posed. Respondents, while providing descriptions of their daily activities or tasks and processes, contributed opinions regarding reasons for current usage levels along with perceptions of issues or factors acting as barriers in carrying out the tasks efficiently.

Table 1 and Table 2 provide more information about the selected companies.

TABLE 1 SRI LANKAN SMES

SME	Sector / Years in service/ Web	No of Employees	Process/ Task using ICT	Process/ Task Needing Change	Future Vision
S1	Service – Bakery and catering service In business for 3 years Has one computer No Website Dial up internet facility	12	-Fax, phone: used for basic communication with customers -Manual process : financial record keeping -Manual entries :used for customer data keeping - Manual entries used for maintaining order details -Spreadsheets: used for planning of daily production and storing recipes -Word: used for typing documents - recipes are stored in the computer	-Financial record keeping -Customer record keeping -Order details maintenance -Recipe file to used when planning for daily production	-To have online system for maintaining recipes, raw materials control system, production planning Invoicing -To have a Management Information system -To have the ability to contact individual groups of customers
S2	Services - Engineering contractors In business fro 10 years 2networked computers ADSL facility	12	-e-mail, fax, phone, scanner: used for basic communication with customers -manual : financial record keeping -Outlook:used for customer data keeping -Spreadsheets: used for invoicing job costing, project management -AutoCAD used for drawings	-Ability to keep project data in a more manageable form -Ability to track jobs -Ability to prepare BOQ with pricing	-To have a website displaying services and attract new customers -To have the ability to track job costing -To have a proper job costing system -To have the ability to monitor cash flow and the progress of the project
S3	Service – Car Rental Company 8 years old. 2 stand alone computers No Internet facility	6	-Fax, phone: used for basic communication with customers -Manual : financial record keeping -manual :customer data keeping - All processes are done manually	-Ability to store customer data in data base -Ability to keep track of the rentals -Ability to keep track of the vehicles in a more manageable form with the use of images etc.	-To have the MIS system -To have reliable up to-date information -To streamline the office procedures

TABLE 2 AUSTRALIAN SMES

SME	Sector / Years in service/ Web	No of Employees	Process/ Task using ICT	Process/ Task Needing Change	Future Vision
A1	Service – boat cruises In business for	20	-e-mail, fax, phone: used for basic communication with customers	-Customer record keeping -Mass e-mailing and informing	-To have online system for bookings -To have a CRM to track data about customers -To have the ability to contact

	34years. -Networked. Has interactive website.		-MYOB application: financial record keeping -Outlook:used for customer data keeping -Spreadsheets: used for roistering and planning of cruises Word: used for typing documents	-Synchronization of forms and data sources -Ability to have multiple spreadsheet users	individual groups of customers -To have the ability to contact individual groups of customers -To have the package that will allow for easy rostering and cruise planning
A2	Manufacturing – production of staircases In business for 22years. -Networked. Has interactive website.	54	-e-mail, fax, phone: used for basic communication with customers -MYOB application: financial record keeping -Outlook:used for customer data keeping -PDF- user for records keeping Spreadsheets: used for production and order tracking Specialised staircase package: used for drawings	-Ability to store, keep and record designs in PDF format -Ability to keep customer data in a more manageable form -Ability to track production	-To have the ability to easily manipulate finished drawings -To have the ability to track production and ordering using a tracking system -To have a CRM to track data about customers - Would like to allow customers to sample staircases online based on their requirements
A3	Service – accounting In business for 7years. -Networked. Has interactive website.	3	-e-mail, fax, phone: used for basic communication with customers -MYOB application: financial record keeping -Outlook:used for customer data keeping Specialised bank forms: used to enter data for individual customers PDF: used for data keeping	-Ability to store customer data in a more manageable format -Ability to keep track of the processes required for each customer -ability to keep records in a form that is easily transferable to specialized bank forms	-To have a CRM to track data about customers -To have the ability to contact individual groups of customers -To have the package that will allow easy storage of customer data and allow smooth input into specialized bank forms

The questions asked followed E-T Guide methodology framework. Questions were iterative. They commenced by addressing the dimension of Strategy. Each dimension questions were progressed across stages that corresponded the fit of the company. Once the fit was no longer seen, the question corresponding to the next category or if no longer available next dimension were asked. Therefore, as it can be seen from the Appendix, the first question for the dimension of Strategy addressed the Category of The Environment. The first question addressed the company's awareness of their competitors. If the company answered that they were aware of their competitors, the next question asked was the stage two question. The second question in that instance addressed the knowledge about the Competitors, and in particular knowledge about their products and services. In the case where the answer was positive stage, three question of the Environment category was asked. If the answer was negative, the first question of the second category was asked – Plans and Visions. For question details, please refer to the appendix.

Therefore, collated data was applied to the E-T Guide method. Positive points were awarded to each positive answer (the answer that depicted the ability of the company), and no points were awarded to negative answers (answers seem to require further implementations to complete tasks successfully). For example, this would mean that knowing the competitors would give a company a point while not knowing would not award any points. Following this, collected scores were calculated for each E-T Dimension across each stage, and based on it, E-T Figures for developed and developing SMEs were produced and also E-T Recommendations for each company identified.

V. RESULTS AND DISCUSSION

A comprehensive investigation of both Sri Lankan and Australian SMEs has been conducted. E-T Guide data for each E-T Dimension have been assessed, converted into percentages and mapped on the graphs. See Figure 3. The percentages for each

dimension demonstrate the development achieved by the companies so far for each E-T Dimension. Note that 100%, for example for stage one, for a particular Dimension means that the company had successfully completed all categories within that particular stage for that Dimension. In the cases where companies have not met all requirements, data was aggregated and percentage data derived. Therefore presented data is an E-T snapshot in time showing the exact current stage of development for each company.

Overall, it can be seen that the development within Dimensions of Structure and Strategy predominate both in Australia and Sri Lanka. Based on the E-T Guide, companies should first invest into Strategy, followed by Structure, Tasks and Processes and finally IT Tools and systems. In the cases where this happens progressively across stages, it can be noted that other dimensions have continued to grow. Once however any of the dimensions is found constant or its growth has been impaired or even accelerated, it can be seen that inevitably environment in which the company operates becomes unstable which immediately starts reflecting on the company's progress.

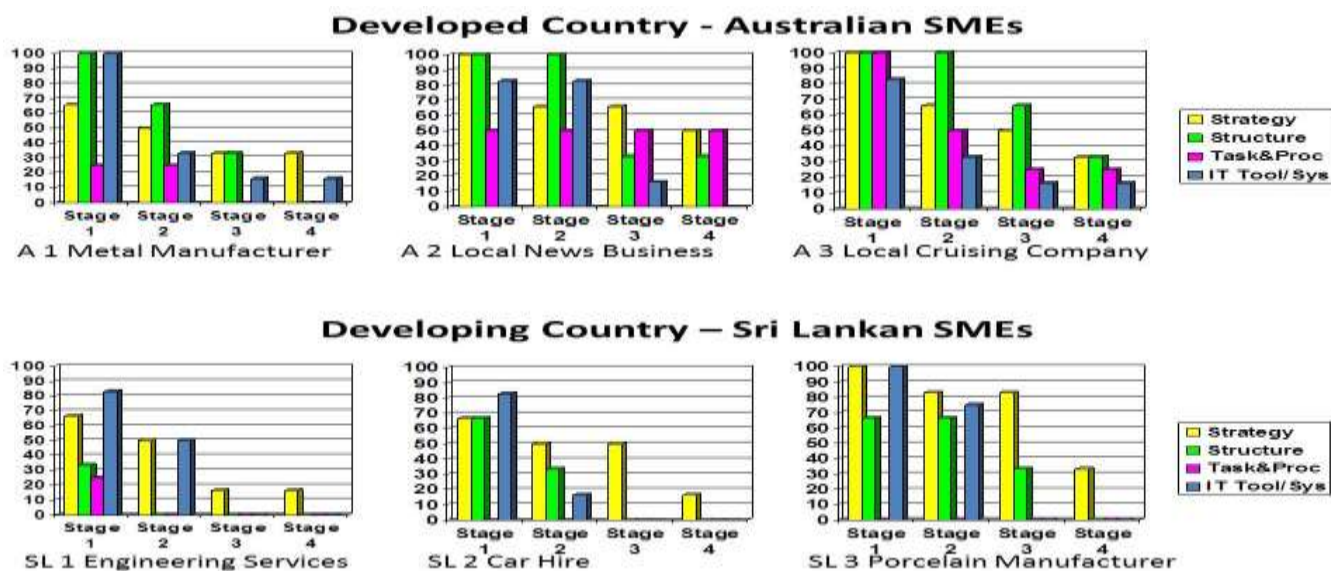


Fig. 4 E-T development

TABLE 3 PARAMETERS OF E-TRANSFORMATION

Dimension	Category	Australia	Sri Lanka
Strategy	The Environment	Aware of the competition and industry sector. Rarely ready to innovate. Government regulations are clear and visible.	Awareness of Industry sector requirements is required. Government regulations need to be more transparent.
	Plans & Visions	Usually focused on current operations	Not very clear, work structured towards product or service.
	Customers	Often have returning customers.	Do not often meet expected quality.
	Products & Services	All products and services are certified	Need to add strict standards and certifications
	Employees	Employees only work in one shift.	Employees are not very reliable. Often work in more than one shift.
	Goals	Varied can range from survival to competitive advantage Goals often do not align with the reality	Focus on survival, do not focus on goals
Employees	Knowledge	Lack of time to learn new knowledge and gain new skills Lack of time for innovation Hard to store and retain knowledge	Hard to identify where to get required knowledge Innovation is not encouraged
Products	Marketing	Varied word of mouth and online, but no clear plan Some targeting niche markets	Word by mouth, no plan
Environment	Certification and Reg. Agency	Present and required	Often not followed
Environment	Funds and Support	Grants, tenders, industry support networks	Lack of support
Structure	Centralisation / Decentralisation	Companies are often in survival mode.	Companies are often in survival mode.
	Functions / Divisions	Job ownership is important	No job ownership which causes lack of motivation
	Formalisation	Strict regulations in place	Flexible structure prevails
Tasks and Processes	Nature of Tasks	Daily tasks are strictly set	Tasks may change on a daily basis due to other non business requirements
	From Tasks to Processes	There is a need to review Strategy and Structure before Tasks and Processes can be fully addressed.	
	Task & Process Streamlining		
	Task & Process Integrations		
IT Tools and Systems	IT Tools	Slower Progress in Sri Lanka, however companies on similar paths. Implementations are slow though steady and progressive.	
	Tool Users		
	Internet		
	Website		
	IT Support		
	IT Systems		
	Security		

Tasks and Processes in a majority of cases seem to reach a certain development, and then hit the constant and stay unchanged across stages. This indicates that Strategy and Structure need to be re-assessed so that smooth development within Tasks and Processes can continue. Furthermore, in cases where Strategy and Structure continue to grow and Tasks and Processes stop, this indicates that production is not suitably aligned with the company's aims and objectives, and that current organisational vision does not align with the resources or capabilities the company currently has. Regarding the IT Tools and Systems dimension, it is apparent that in cases where Strategy and Structure have been well developed, development of IT Tools and Systems is relatively smooth; however, in cases where Tasks and Processes have overtaken, the development of Strategy and Structure development of IT Tools and Systems has stagnated.

Consequently, it can be seen that investment into IT Tools and Systems in both Sri Lanka and Australia seem to follow similar paths. In developed countries such as Australia, developmental progress is much quicker than in the developing countries such as Sri Lanka. However, the nature of the technology investment is very similar. This can also be identified by the application of the E-T Guide parameters that signify similar properties guide technology implementation.

To further understand the nature of technology investment, interview data collected has been further assessed and mapped directly to the E-T Guide Categories. See Table 3.

From Table 1, it can be seen that IT Tools and Systems application is on a similar path for the SMEs within both countries; however in Sri Lanka, technology implementation is much slower than that of in Australia. Furthermore, it has also been noticed that Task and Process implementation should be reviewed only after smooth development of Strategy and Structure is implemented. To achieve this detailed analysis has been undertaken and differences between Sri Lanka and Australia noted.

Based on the data presented above, it can be seen that the Environment in which companies within two countries operate are quite different. The main reason why this is the case is that the business environment is very often affected by various governmental laws, regulations, countries culture and politics. It seems that in developed countries like Australia, government and industry regulations are transparent, clearly defined and easily identifiable while in countries like Sri Lanka, such definitions may not always be clearly established.

The other important issue which has been noticed is that in Australia, employees have set tasks and strict working ethics.

Work is also often done just in one shift. In countries like Sri Lanka, family duties may overshadow work requirements, and therefore strict work ethics may not always be present. However, if at times work needs to be completed, companies in countries like Sri Lanka at times may even operate in three shifts if so is required.

This research builds further on E-T Guide dimensions and categories, and identifies that in order for a successful technology implementation to be carried, it is crucial to review all parameters crucial to this change. Most of these parameters have to an extent up to now been noted, and are therefore often seen as embedded into the existing E-T dimensions. In particular, this study identifies that dimension of Strategy and its existing categories are essential for the successful technology implementation, and consequently further define parameters of Knowledge, Marketing, Certification and Regulatory Agencies and Funds and Support which are seen as essential to successful technology implementation.

A newly defined parameter of Knowledge, originally within E-T Guide, resides within the dimension of Strategy and the category of Employees. As per the original E-T Guide proposal, Knowledge gives strength to the employees to do the work successfully. Based on this research however, it can be seen that Knowledge is a very powerful parameter that can give strength not only to the individuals but groups as well. This notion has also been identified by Ansari, [16] who stated that Knowledge parameter takes even presidency above parameters, such as financial assets and large markets [16].

Furthermore, it can be seen that even employees in Australia, a developed country, do not always get a sufficient Knowledge exposure. Very often due to the other work commitments, new knowledge applications, innovations and experiments are often overshadowed, and their power not always displayed. Many employees do not even get the opportunity to attend trainings and learn how to utilise and implement new skills, tools and technologies. This is seen as one of the crucial barriers that is preventing technology implementation. In countries like Sri Lanka, employees state that it is not even easy at times to identify where to seek required skills and knowledge. Furthermore, it can be noted that in both developed and developing countries, there is a need to have a mechanism to store and retain the existing knowledge and also have systems where employees would be encouraged and allowed to learn, experiment and innovate. With right knowledge in the right time, many new changes and implementations can be successfully achieved. Therefore, it can be noted that Knowledge is a very comprehensive parameter that has the power to unite for a common shared purpose employees, organisations, industry sectors and even countries.

Next parameter which is seen as crucial for the successful company operations and technology implementations is Marketing. Current marketing resides within Strategy dimension and its category of Products and Services. It is noted that these days, Marketing needs to be done much beyond the word of mouth which is still extensively utilised by SMEs in both developed and developing countries. In particular, it is proposed that companies could explore other strategies such as produce/service differentiation, niche markets or even completely new operations.

This parameter also closely links to Structure dimension and the ability to convert plans and visions into action, namely Tasks and Processes.

Certification and Regulatory Agencies is another important parameter that governs operations. This parameter within the E-T Guide resides within the dimension of Strategy and its category of the Environment. In particular, this parameter is highly important for Developing countries like Sri Lanka. In Developed countries, Certifications and Regulations are usually very strictly followed and implemented. In countries like Sri Lanka for example, regulations like these are often non-existent which creates issues in terms of safety, reliability and therefore often prevents companies of retaining the customers. However, to successfully change, become digital and implement technology successfully even in the countries like Australia, new initiatives are being proposed in terms of the proposal of the new policy and digital initiatives [16].

Finally, the other parameter which has been seen to play a big role in technology implementation is a parameter of Funds and Support. This parameter within E-T Guide resides within the dimension of Strategy and its category of Environment. Environment surrounds the business and represents the environment where businesses work and operate. For companies to be able to effectively implement technologies, they need to be aware of the funds and the support that at times is available for them, particularly in Developed countries like Australia where such support networks are often present; however, companies are not always aware of their existence. In Developing countries like Sri Lanka, such support is more often than not, not present.

In both Developed and Developing countries for a change to happen, innovation needs to be encouraged and supported. Furthermore, knowledge and skills need to be shared. New organisational structures need to be formed to allow the new processes to be implemented. Such structures cannot be fully strict but cannot be fully lenient either. There needs to be a sense of urgency for the tasks to be completed, but there should not be only one way in which such tasks are to be completed. In both developing and developed countries, it is important to give employees job ownership, and to encourage them to explore do better and be proud of the work they have done.

Only once new processes have been established and companies are clear as to what their goals are, SMEs can implement new technologies. It is worth noting that new technologies alone will not make a difference. It is the employees and the company as a whole that will make a difference and will assure employees gain new skills by being open to learning and innovation. It can also be seen that both SMEs in developed and developing countries need to be encouraged to work with

current government regulations as they will take the time to change; however, within the companies internally, they need to be open to new business models, to search for new niche markets and different ways of meeting deadlines through collaborating, and sometimes even by breaking past barriers and even pooling resources together with those who once they saw as their competitors.

VI. CONCLUSION AND FURTHER STUDIES

In conclusion, it can be identified that business in both Developed and Developing countries seem to be following similar paths in terms of technology implementation. In Australia, technology uptake seems to be faster than in Sri Lanka; however nature of the steps undertaken by the SMEs' seems to be quite similar. It can also be noted that all E-T Guide parameters can be well applied to both SMEs in Sri Lanka and Australia. By E-T Guide application to both Developing and Developed SMEs, the study also helps identify that in addition to the already defined E-T Guide Dimension and Categories, there are specific parameters that should be defined in more detail individually. Therefore, in addition to the already known E-T Guide parameters, it was found that Knowledge as a parameter has a significant impact on the way it can help assist technology implementation and also in later time guide technology usability and application. Furthermore, it was noted that marketing plays a crucial role in the way businesses advertise their products and services, and that marketing also plays a significant role in the way technology is applied to assure marketing is done successfully. Each Technology implementation needs strong financial support, therefore awareness of support available for technology innovation can often give companies a great start. Finally, to assure company production is well planned and managed and products manufactured to the required standard and safety, it is crucial to take into the account products safety, standards and accreditations. Only once all above parameters have been taken into the account, companies will be able to plan and implement required technologies.

It is anticipated that future studies will look into developing systems that would allow SMEs based on their current transformational parameters and the E-T Guide stage automatically identify technologies most suited to their needs. It is expected that in the future, this will be possible in both developed and developing countries as studies like this will help assist researchers and identify parameters specific to a the companies' developmental stages.

REFERENCES

- [1] Ginige A., Murugesan S., and Kazanis P, "A Road Map for Successfully Transforming SMEs into eBusiness," *Cutter IT Journal*, vol. 15, iss. 5, p. 13, 2001.
- [2] Kapurubandara, M., E-Transformation of SMEs: A Framework for Developing Countries, VDM Verlag, Germany, 2009.
- [3] Arunatileka, S., Ginige A., "Development of eBusiness Strategies for Competitive Advantage," paper presented at the ICE-B - Third International Conference on Electronic Business, Singapore, 2003.
- [4] Hol, A., Ginige A., "Dimensions of eTransformation 4th International Conference on Information and Automation for Sustainability," paper presented at the ICIAfS - IEEE, 12-14 Dec. 2008 Colombo, Sri Lanka.
- [5] Kapurubandara, M., "A Framework to e-Transform SMEs in Developing countries," *The Electronic Journal of Information Systems in Developing Countries*, vol 39, 2009.
- [6] Kapurubandara, M., Hol, A., and Ginige A., "SMEs in Developed and Developing Countries Treading Similar Paths Towards eTransformation," paper presented at the ICE-B - International Conference on e-Business, Athens, Greece, 2010.
- [7] Kuteyi D., "Poor funding, bane of SMEs," *Nigerian Punch Newspaper*, 8th April 2009.
- [8] Apulu I. and Latham A., "Information and communication technology adoption: Challenges for Nigerian SMEs," *TMC Academic Journal*, vol. 4, iss. 2, pp. 64-80, 2009.
- [9] Malik K. P., and Malik S., "Value Creation Role of Knowledge Management: a Developing Country Perspective," *The Electronic Journal of Knowledge Management*, vol. 6, iss. 1, pp. 41 - 48, 2008.
- [10] Soliman K. S. and Janz, B. D., "An Exploratory Study to Identify the Critical Factors Affecting the Decision to Establish Internet-based Interorganizational Information Systems," *Information and Management*, vol. 41, iss. 6, pp. 697-706, 2004.
- [11] Gamage A. S., "Small and Medium Enterprise Development in Sri Lanka: A Review," 2006 [Electronic Version], Retrieved 26 November 2006, http://www.biz.meijo-u.ac.jp/SEBM/ronso/no3_4/aruna.pdf
- [12] Cooray M. N. R., "Walk through Cleaner Production Assessment in SME's - A Case Study from Sri Lanka," *Small to Medium Enterprise Developers*, Sri Lanka, 2003.
- [13] OECD, "SMEs and Electronic Commerce," 1998, DSTI/IND/PME(98)18/FINAL. Retrieved from [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND/PME\(98\)18/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/IND/PME(98)18/FINAL&docLanguage=En)
- [14] Ansari M., Youshanlouei H. R., Mood M. M., "A Conceptual Model for Success in Implementing Knowledge Management: A Case Study in Tehran Municipality," *Journal of Service Science and Management*, vol. 5, p. 212, 2012.
- [15] Pounder K., "Ready or Not? Technology Investment and Productivity in Australian Business," National CEO Survey, Australian Industry Group, New South Wales, North Sydney, Australia, 2013.
- [16] Australian Bureau of Statistics Retrieved, 14 June 2006, <http://www.abs.gov.au/Ausstats/abs@.nsf/0/28BC6E291F658B59CA256CAE0016342E>.