

AN INVESTIGATION INTO THE EFFECTIVENESS OF AN ENTERPRISE RESOURCE PLANNING SYSTEM: A CASE STUDY OF THE TROPIC PLASTIC AND PACKAGING INDUSTRY (PTY) LTD, DURBAN

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Abstract

Enterprise resource planning (ERP) systems have revolutionised the way organisations do business. It has integrated the different business functions into a single common database providing important information for top management to make effective business decisions. Although ERP systems can be extremely costly to implement and maintain the rewards that can be derived from the system are great and have benefited many organisations.

Key Words: Resource Planning, Revolutionized, Business Decisions, Implementation, Information

Introduction

According to Davenport (1998), there is general agreement amongst researchers and practitioners of information technology, that Enterprise Resource Planning or ERP systems was the most important development in terms of the corporate use of information technology (IT) during the 1990s. According to Stevenson (2007), Enterprise Resource Planning (ERP), as it is now known in business, is the generic term used to refer to management software that includes modules such as production, finance, marketing and human resources which allows companies to plan their goods and services.

Background to the study

Tropic Plastic & Packaging Industry (Pty) Ltd is a Durban-based packaging company that has a national footprint. The company has invested in the Syspro ERP system. The system is a South African designed system that is configured to meet the specific needs of businesses in the manufacturing sector. The system integrates manufacturing, financial and distribution processes thereby enabling it to capture and process large amounts of information on a day to day basis. The management of the company has expressed concerns as to whether this system is the most effective for the company and what, if anything, needs to be done in order to improve the efficiencies in the processing of data from their day

to day activities so that the business can make correct decisions from the real time information processed by the system.

Aim of the study

The primary aim of this study is to investigate those factors that influence the effective implementation of Enterprise Resource Planning (ERP) systems in businesses.

The findings of this study will help the researcher to make suitable recommendations to business managers and owners to enable them to address those factors that hinder the effective implementation of ERP systems thereby ensuring that businesses harness their full potential of utilising ERP systems.

Objectives of the study

- To evaluate factors that influences the effectiveness of ERP systems.
- To determine the value that ERP systems can add to businesses in terms of ROI.
- To determine the importance of skilled staff in achieving maximum effectiveness of the ERP system.
- To provide recommendations to management on how to successfully overcome challenges related the implementation and utilisation of ERP systems.

Literature Review

A literature review entails an evaluative survey of materials published in primary and secondary sources on a research topic. It helps to build and set a logical framework within a context of research for the purpose of performing a situation analysis to determine how knowledge in the field has progressed and what the leading trends are (De Vos, Strydom, Fouchè and Delport, 2005). It is therefore an orientation exercise that provides a platform of supporting evidence for the study. McMillan and Schumacher (2010) state that the relevance of the literature review is pervasive throughout the research process for two reasons, the first being that it establishes an important link between existing knowledge and the research problem and the second is that it provides helpful information about the methodology listed in the study.

Enterprise Resource Planning (ERP) systems

ERP solutions have advanced from applications that were predominantly fixated on material requirements, resource planning and computer integrated manufacturing. According to Gartner group (1990) the phrase Enterprise Resource Planning appeared when software developers were probing for a title that would appropriately define these wide-ranging systems, which delivered functionality that contained other applications in addition to manufacturing. As a consequence, in 1990 the Garter Group employed the abbreviation ERP as an addition of material requirement planning, which later transformed to manufacturing resource planning and computer integrated manufacturing. ERP came to symbolise a greater whole that reveals the advancement of application integration beyond manufacturing.

ERP systems are enterprise-wide information systems that simplify the movement of data and synchronise all resources and activities from different business units within the organisation. According to Loundon, cited in Nah et al (2003:10), an ERP system is a bundled business software system that allows an organisation to automate and integrate the majority of its business procedures,

share collective information and practices through the organisation while generating and retrieving information in a real-time atmosphere. This system usually supports various functions such as manufacturing, inventory, shipping, logistics, distribution, invoicing and accounting. Some solutions now incorporate customer relationship management functionality. A wide variety of business activities that include sales, marketing, billing, production, inventory management, human resource management and quality control depend on these systems.

The ERP is arguably the best system to assist in the management of connections to outside stakeholders and to enhance the performance of management internally through using a centralised database that normally relies on a common computing platform. In this way, it provides the end-user with a unified, consistent and uniform environment to work in. According to Burns, cited in Njihia and Mwirigi (2014:123), ERP systems enables companies to break down the traditional silos of an organisation into a tightly integrated horizontal structure in which strategy, organisational structure, process and technology are closely aligned.

Factors that influence the implementation of an ERP system

According to Summer, cited in Njihia and Mwirigi (2014:123), for most if not all companies, implementing an ERP system often demands substantial Information System (IS) investment and is, in many cases, the largest corporate project undertaken by a company. Since it focuses on strategic issues, ERP systems are viewed as a strategic implementation. This arguably justifies the enormous investments required for the implementation of ERP systems. In order to facilitate a successful implement of an ERP system a number of factors need to be taken into consideration. Nah, Zuckweiler and Lee-Shang Lau (2003:6), have identified 11 factors that are considered as being critical for successful ERP implementation. These factors are listed and discussed below.

Appropriate Business and IT Legacy Systems

Holland, Light, and Gibson, cited in Adam and Summon (2004:140), have found that the success of ERP implementation was greatly determined by IT legacy systems. These IT legacy systems played a major role in determining the amount of IT and organisational transformation necessary to implement a successful ERP. Legacy systems that have a greater complexity will require further changes within the organisation and IT so that the Implementation of the ERP system is more meaningful and correct. According to Roberts and Barrar, cited in Thomas (2007:50), businesses must be steady, effective and successful in all regions of their business for ERP implementation to be fruitful. In a research conducted on SAP R/3 implementation, Slooten and Yap cited in Nah et al.(2003:10), concurred with Roberts and Barrar when they stated, "one of the critical success factors of a smooth and rapid ERP implementation is a stable, mature, and capable organization". Thus if a business is performing well, is successful, steady and has IT legacy systems that are not too complex, then this business is more likely to have a successful implementation of the ERP system.

ERP Teamwork and Composition

The composition of the ERP project team and the ability and willingness of the team members to work together, play a major role in the success of the implementation. The team should comprise of both expert ERP consultants and the organisations staff drawn from different areas of the business. By working together they will be able to address key areas to make suitable decisions so that the ERP implementation can be successful. Having an incorrect fit of individuals can lead to undesirable results because expert knowledge on business processes and what the system has to offer will not be

addressed. Hunter (2009:282), states that “the use of cross-functional teams that comprise people with the best business and technical knowledge increases the level of success of ERP implementation”.

Monitoring and Evaluation of Performance

An important part of the implementation process is the regularly monitoring and evaluating of the performance of the project. By setting time frames and having meetings regularly with the project team, performance and progress is able to be tracked and evaluated against project goals. Project teams can also address critical issues within the project and steer the project in the right direction by noting the concerns expressed by team members and by drawing up action plans to address and fix the problems encountered. Kuang et al cited in Fang and Patrecia (2005:28) stated that it was significant to keep a close track of milestones and targets as well as measure achievements against goals set out within the project. Barrar and Roberts cited in Fang and Patrecia (2005:28), brought about the development of project management criteria that measures the completion dates of each stage, the realisation costs and quality. They also introduced a second development that measures operational criteria against the production system.

Top Management Support

Top management support is one of the most significant and critical factors necessary for the success of ERP implementation. This has been confirmed by many researchers including (Bingi et al., 1999; Buckhout et al., 1999; Murray and Coffin, 2001; Sumner, 1999; Shanks et al., 2000; Wee, 2000; Holland et al., 1999 and Roberts and Barrar, 1992). Top management needs to allocate the necessary resources like costs; people etc. within the business and regard the ERP implementation project as top priority. According to Roberts & Barrar (1992), it is the responsibility of top management to allocate a suitable amount of time and resources, both human and financial in order to get the ERP project done.

According to Gargeya and Brady (2005), the six factors listed below are considered to be the key responsibilities of top management.

- Top management support – forecasting and planning for intense instabilities is necessary from top management. They are required to be devoted to the system when implementing the ERP system. Capable project teams must be elected and suitable time frames has to be provided by top management so that the ERP implementation can be completed. They are also required to be part of the implementation process as active participants.
- Make realistic expectations and communicate effectively – the organisation has to take into consideration the extent of resources, time, and outside support required to implement and run the new ERP system successfully. Communication at every level is required. User input should be acquired by management and managed so that their requirements and approval is taken into account. The scope, objectives, activities and updates should be communicated to employees of the organisation well in advance so that they can accept that the change will take place. When implementing the new system productivity decline should be expected and as the users start to get more use to the system improvements will start to appear.
- Project management – a detailed level of project management, planning and control is essential so that managers are not taken aback by the size, scope and complexity of the

implementation. A project manager must be elected by top management and given clear responsibilities so that the project can be implemented successfully.

- Adequate education and training –Training is essential when implementing a new ERP system. Top management as well as all users are required to undergo training as this is essential to ensure efficient use of the ERP system.
- Data accuracy – it is imperative to guarantee that the necessary information is captured correctly into an ERP system because the information will be used at all levels in the organisation. Data accuracy is imperative and if it is captured into a common database that is accessed by all employees in the organisation, because the system is integrated it will have positive effects throughout the organisation. A company with accurate data will be able to enjoy a competitive advantage in the market.
- Business Plan and Vision – throughout the project life cycle of the ERP system a clear and well defined business plan must exist. The business plan is required to shape proposed strategic and tangible benefits, resource, costs, threats and timeline. This will aid management and project teams to be able to direct the project accurately towards achieving these goals.

Phases of the ERP Life Cycle

According to Kambarami, Mhlana and Chikowore (2012:240-244), because of the extensive effects that ERP implementation has on almost all individuals within the business and the numerous modifications that have to take place, the most significant characteristic that the organisation should have when ERP implementation occurs is to take ownership of the project. The organisation must take ownership of the project and constantly manage all changes throughout the implementation of the ERP project so that all the individuals directly and indirectly involved with using the system will be able to cope with this change. A change management program therefore needs to be implemented to assist the users of the system to successfully make the transition from the old system to the new ERP system that is being implemented.

Kambarami et al. (2012: 240-245), have identified four phases in the ERP life cycle. The phases are listed and explained below:

- The Chartering Phase

During this phase factors such as funding of the ERP project implementation and meetings with consultants, vendors, IT specialists and company executives take place. During this phase, ideas on how to adopt ERP are discussed, a business plan and vision for ERP implementation is developed, and decisions on whether to adopt ERP or not, selection of a project leader, selection of the Software and an implementation partner and decisions regarding project planning and scheduling are taken.

- The Project phase

During this phase the rolling out of the ERP system and system configuration is done. Personnel that play a significant role during this phase are project manager's and team members, internal IT specialists, vendors and consultants. Software configuration, system integration, testing, data conversion training and rolling out of the system are some of the activities carried out during this phase.

- The Shakedown phase

This phase occurs between “going live” and establishing the normal operation of the ERP system. Here bugs on the system are fixed and rework of the system occurs. System users are retrained. There

is a lot of business disruption that occurs resulting in reduced productivity of the business and therefore it is imperative to monitor and frequently make amendments until all bugs have been sorted out and the system becomes stable.

- The onward and upward phase

The upkeep and improvement of the ERP system and applicable business processes to suit the ever changing need of the business are applied during this phase. The onward and upward phase becomes part of the day to day operations and continues up until the system is upgraded or replaced with a different system. The key personnel involved at this stage include internal and external IT people and vendors. Key activities such as continuous business improvement, additional user training and skill building and post benefit assessment occur during this phase.

Disadvantages of ERP systems

Although there are numerous rewards that organisations can gain from ERP implementation there are also many challenges and disadvantages. According to Oz, (2002:105), software packages are complex because they often require adjustments and need to be customised in order to meet specific requirements of different organisations.

Another disadvantage was that ERP costs are very expensive and it takes a lot of time to implement the system. The actual time required for full implementation usually going over the projected time.

(Magalhães, 2010:164) has outlined the following disadvantages of ERP systems:

- ERP system software customisation is restricted.
- To reengineer business process to be aligned with the industry standard recommended by the ERP system can start to cause a loss in competitive advantage that the company had.
- Data accuracy is required to be high in other applications in order for the system to work successfully. Over a period of time inaccurate data can cause the system to become unreliable.
- One of the main causes of ERP failure is due to the rigidity of the system and the system being too complex to adapt to the business flow of certain organisations.
- Substitution costs are very great for the partners once the system is established.
- Resistance from different departments when it comes to sharing delicate internal information can cause the effectiveness of the system to be reduced.
- The clouding of company restrictions can cause complications in accountability, lines of responsibility and employee morale.
- Some multi-national organisations have various departments with separate independent resources, chains of command, etc. and consolidation into a single enterprise may yield restrictions.

The literature revealed that ERP projects often result in substantial tangible and intangible improvements in a variety of areas for the organisations. However, there are a number of instances where organisations were not successful in reaping the potential benefits that motivated them to invest huge amounts of capital in ERP systems.

Implementation of ERP projects invites a number of challenges, mainly related to cost, customisation and integration with existing systems as evidenced by the large number of failed projects, especially in organisations that are structurally complex and geographically dispersed. Implementation of ERP systems is one of the most difficult investment projects because of the associated complexity, high cost and adaptation risks. However, successful implementation holds numerous benefits for business.

RESEARCH METHODOLOGY

In this study, information was collected through the use of a questionnaire that was distributed to all respondents through the use of the internet. Questions were designed in accordance with the Likert scale method. The questions were designed to collate information from the respondent that was related to the research objectives identified in Chapter one of this study. The questions were compiled using data gathered via the literature review and from the personal observation of the researcher who is employed as an IT specialist servicing the manufacturing sector. Thus the researcher's personal observations and experiences were employed in designing the questionnaire so as to collate specific and nuanced information in respect of the use of ERP systems within the manufacturing sector and at Tropic Plastic and Packaging Industry (Pty) Ltd, in particular.

The Target population

According to Burns and Grove (1993: 779), a population is defined as all elements (individuals, objects and events) that meet the sample criteria for inclusion in a study. A population is thus the full group of potential participants to whom the researcher wants to generalize the findings of the study. The target population for this research was all the users of the ERP system employed at Tropic Plastic and Packaging Industry (Pty) Ltd. As there were only twenty users of the system from across all the different departments in the company, all twenty users comprised the target population. As the target population was relatively small and confined to a single company, the researcher sought to collate information from all elements within the target population.

Limitations of this study

This research was a case study that occurred at a single company namely Tropic Plastic and Packaging Industry (Pty) Ltd. Another limitation of this study was that data was collected from only twenty users of this system from across all the different departments in the company. This study is further limited to the use of the Syspro ERP system only as this was the system used by the company. This study therefore does not purport to be exhaustive as it only focuses on a single company and the users of the system within this company. Other factors and areas in the field of ERP systems such as vendor partnership, the use of consultants and architecture choices were consciously left out in order for the researcher so as to focus on the specific objectives of this study.

RESULTS, DISCUSSION AND INTERPRETATION OF FINDINGS

Response Rate

Twenty users of the ERP system, employed across all the different departments at Tropic Plastic and Packaging Industry (Pty) Ltd, were invited to participate in this study. As all twenty users completed the questionnaire and returned it timeously, the response rate of the respondents in this study was a perfect 100%.

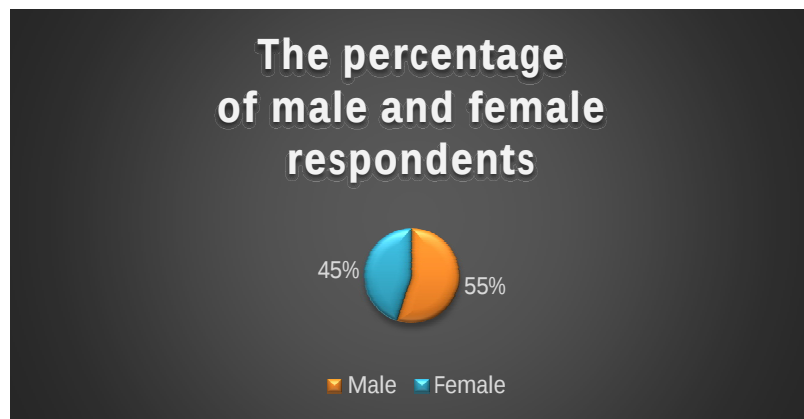
Data Analysis

The findings of this research have been categorised into seven groups namely:

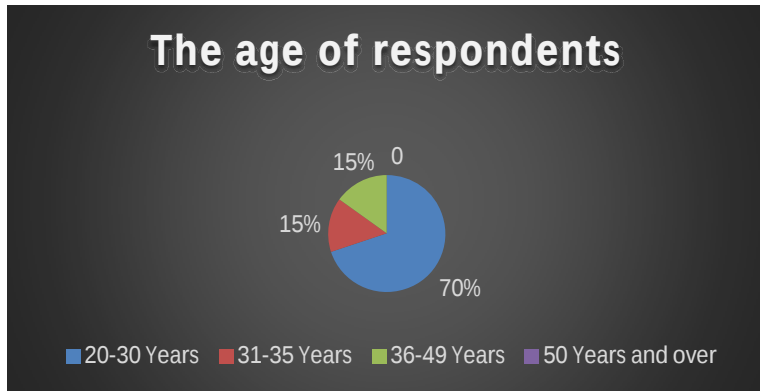
- demographic information
- experience
- qualifications
- skills and education
- implementation success factors
- ERP system benefits and
- ERP system challenges.

Demographic Information

Figure 4.1- The percentage of male and female respondents

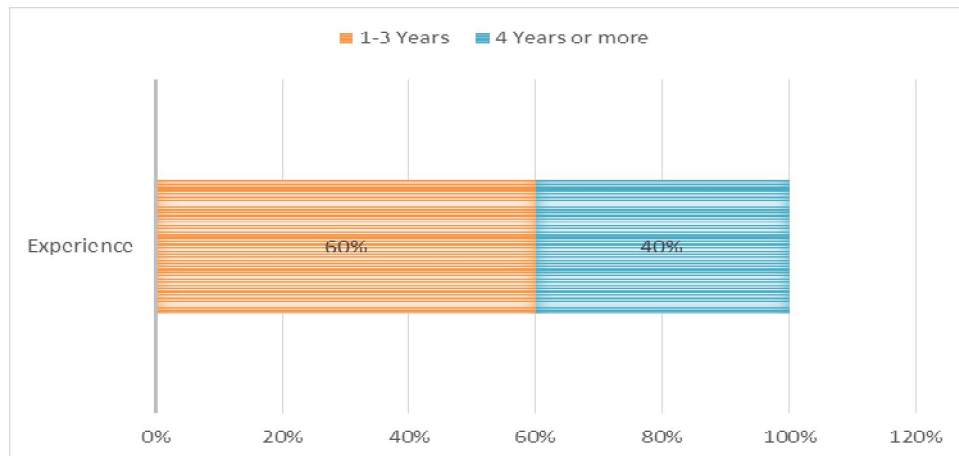


Fifty five percent (%) of respondents that participated in the survey were male employees and 45 % were female employees.

Figure 4.2- The age of respondents

Seventy percent of the respondents that participated in the study were between the ages of 20-30 years of age while 15% of respondents were between the ages of 31-35 years and the balance, 15% of respondents were between the ages of 36-49 years of age. This shows that the majority of respondents were still young which is encouraging for a growing business. Younger employees can bring new ideas to organisations and are more accepting of technological changes within an organisation. Young employees are also more easily re-trainable.

Experience

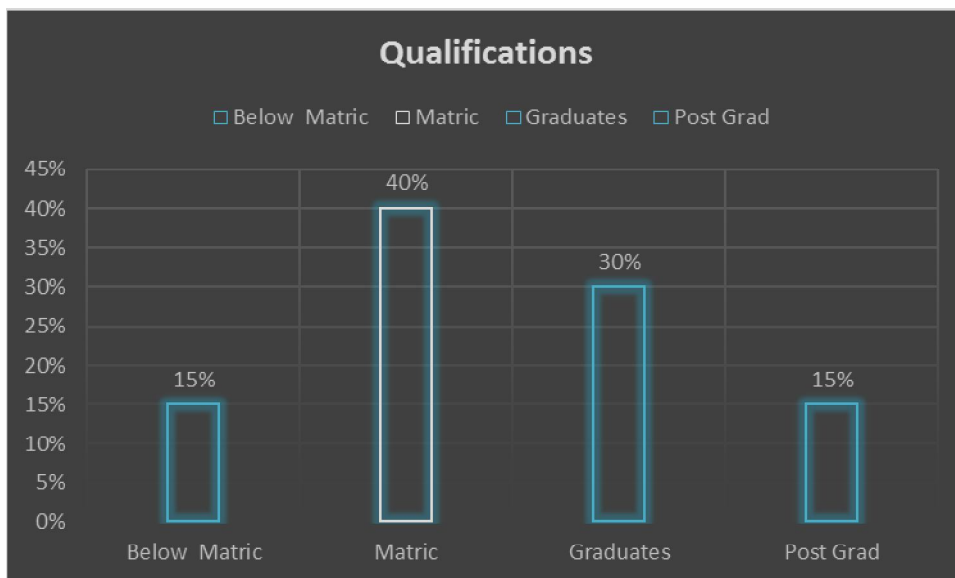
Figure 4.3 -The experience of respondents in the packaging and manufacturing industry.

Sixty percent of respondents had 1- 3 years' experience in the packaging and manufacturing industry while only 40% had more than 4 years' experience. The respondent with the most experience has been working in the industry for 13 years. The average experience of the respondents was 3 years. This indicates that the respondents were relatively inexperienced with the workings and the nuances of the packaging and manufacturing industry.

Figure 4.4 -The experience of respondents at Tropic Plastic & Packaging Industry (Pty) Ltd

Fifteen % of respondents had less than a years' experience at Tropic Plastic & Packaging Industry (Pty) Ltd while 45% had 1-3 years' experience and 40% of respondents had more than 4 years' experience. The respondent with the most experience has been working at Tropic Plastic for 13 years. The average experience of respondents working at Tropic Plastic was 3 years. This indicates that the respondents are fairly inexperienced in the organisation.

Qualifications

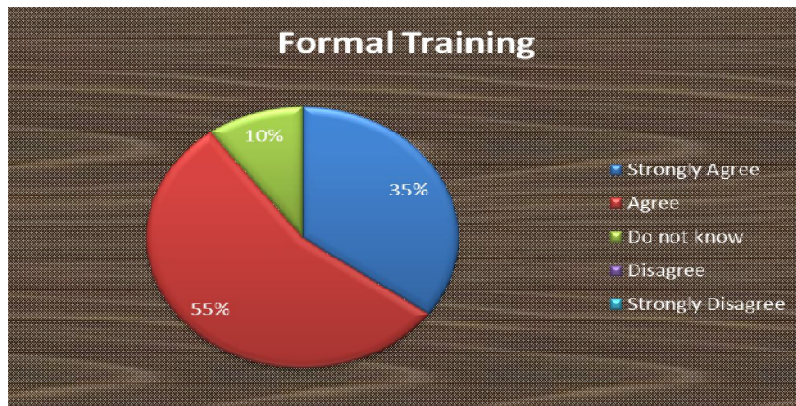
Figure 4.5 – The qualification levels of respondents

The research findings revealed that 40 % of respondents had attained at least a matric level of education, while 15 % had not attained a matric. A further 30 % of respondents were graduates and 15 % had attained a post graduate qualification. Collectively 85% of respondents had attained at least a matric qualification. A matric qualification was seen as being important as it marks the end of a formal

school education and paves the way for a tertiary education. Theoretically, respondents who had completed their formal school education should find it easier to understand and apply knowledge learnt from training and would be more easily re-trainable as compared to those individuals who did not complete their formal school education. This is in keeping with the views of Gargeya and Brady (2005), which highlights the need for training as being an essential aspect of ERP system implementation.

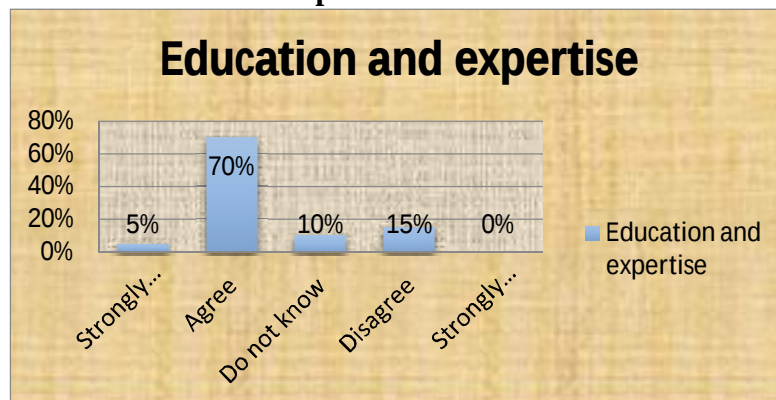
Skills and Education

Figure 4.6 –The need for formal training.



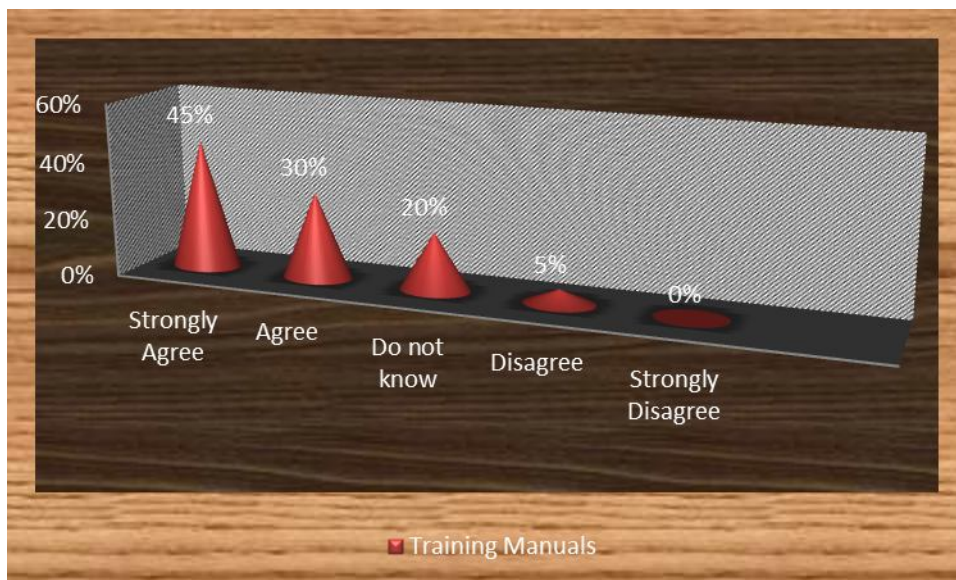
Thirty five % of respondents strongly agreed and 55% agreed that formal syspro training will improve their understanding of the ERP system. Thus a combined 90% of respondents expressed their desire for formal training to take place. The balance 10% of respondents answered that they did not know. The need for training is great in any company that has adopted an ERP system. The data obtained also illustrates that many of the respondents were new employees at Tropic Plastic & Packaging Industry (Pty) Ltd. These employees did not receive any formal training in the use of the Syspro ERP system. Their training took the form of informal mentoring, learning from others and learning through trial and error. Crowley (Cited in Chung, 2007:48) highlighted the importance of training to have a successful ERP implementation. The Aberdeen group reports that on average, 69% of industry do not have a training program, to efficiently bring on board new ERP users. Hence the employees will not be able to harness the full potential and functionality of the system and maximum benefits of using the ERP system will not be realised (Castilian, 2012:20).

Figure 4.7- Education and expertise

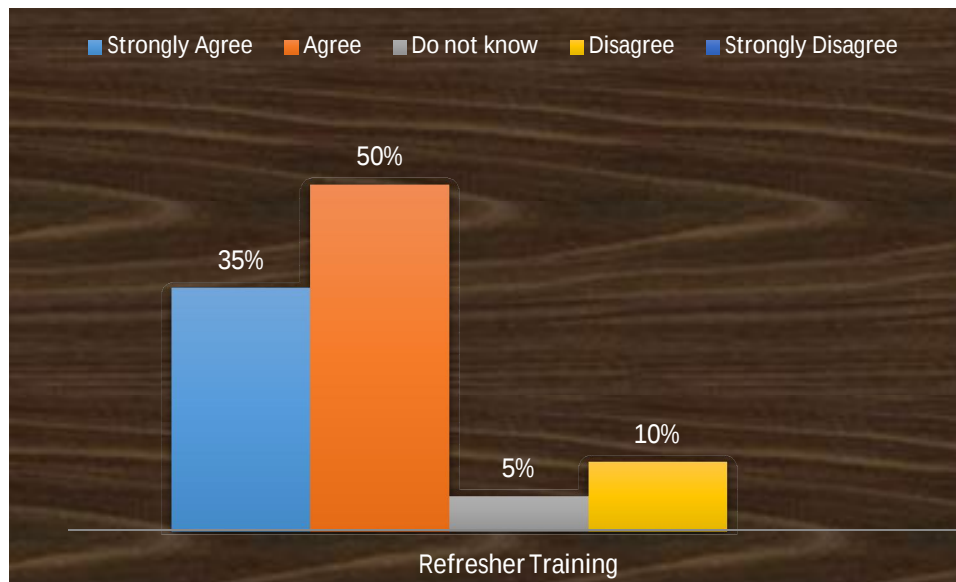


Five % of respondents strongly agreed and a further 70% of respondents agreed that their current level of education and expertise was sufficient to allow them to analyse and understand information presented by and sourced from the ERP system. Ten % of respondents answered that they did not know and the balance 15 % responded that they disagreed with the statement. Individuals who have not been trained and who do not have adequate systems knowledge and expertise would find it difficult to interpret the information presented by the ERP system in order to make decisions. According to Nejati, Nejati and Pasaoglu, (2011: 159) education level and expertise of employees is an important element for the acceptance of technology into an organisation. Thus those individuals who do not possess the requisite knowledge and expertise will not readily embrace the increased dependence on technology. Also of concern is the 15 percent of employees who are working with the system but feel inadequate in terms of their usage of the system. Incorrect analysis of information extracted from the system could have negative repercussions for the company and the mistakes made by the users of the system could be incorrectly attributed to the failure of the system.

Figure 4.8- The need for training manuals

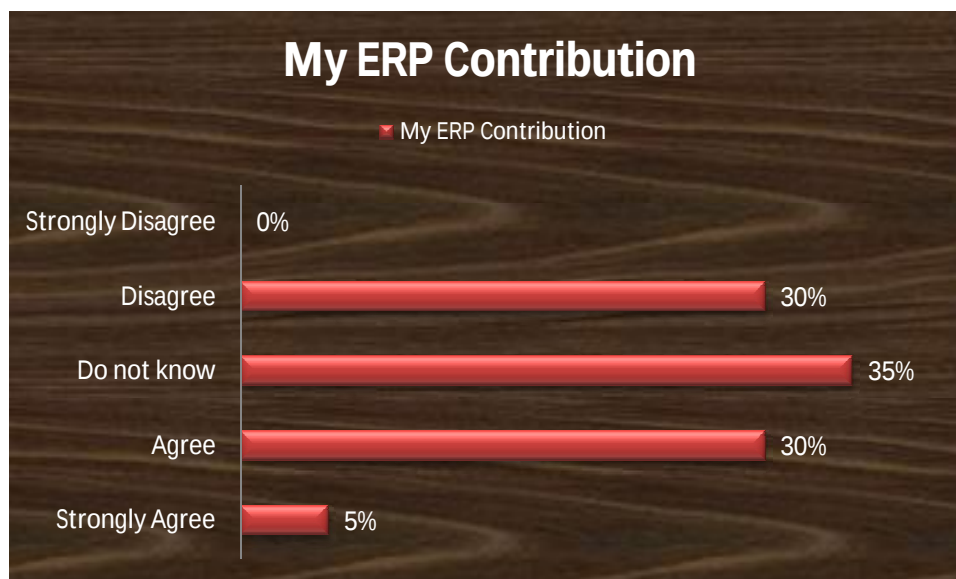


Forty Five % of respondents strongly agreed and 30% of respondents agreed that well developed training manuals were a necessity and that it would lead to better utilisation of the ERP system at Tropic Plastic and Packaging Industry (Pty) Ltd. Twenty % of respondents answered that they did not know and 5% disagreed with the statement. Training manuals are very important as they help system users to follow a step by step guide on how to carry out their work functions on the system. This will facilitate independent learning on the part of the employees and will help to assist those employees who have not been trained and who do not possess the necessary knowledge and expertise to work with the system. The majority of respondents acknowledged that developing better manuals will facilitate a more effective utilisation of the system thereby allowing the company to benefit and to gain an advantage over its competitors. Macris Lytras et al. (2009:366) state that users need to be supplied with suitable training materials so that they can effectively exploit the business processes.

Figure 4.9- The need for Refresher Training

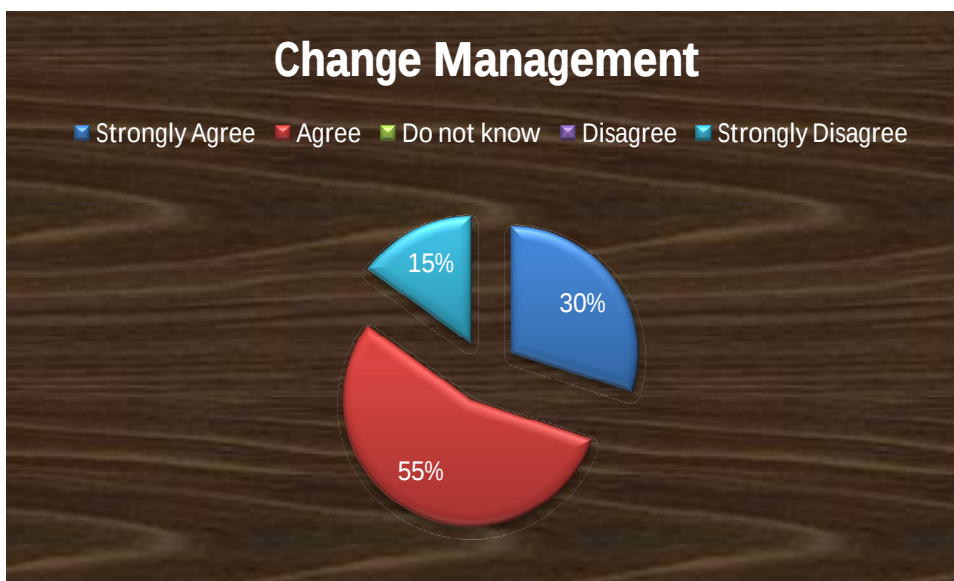
Thirty five % of respondents strongly agreed and 50% agreed that refresher training should be conducted regularly at Tropic Plastic and Packaging Industry (Pty) Ltd in order to increase their knowledge, skills and expertise in the use of the system. Five % of respondents answered that they did not know and 10% disagreed with the statement. Refresher training helps to keep employees knowledge current and up to date with the changing face of the market. This highlights the importance and need for refresher training to be conducted regularly and on an ongoing basis within the organisation. Users of the system are required to be trained on an ongoing basis so as to be able to cope with all aspects of the system and with any updates made to the system. Refresher training is therefore critical in facilitating effective decision making within the company. (Murray and Coffin, 2001).

Implementation Success Factors

Figure 4.10- My contribution to improving the use of the ERP system

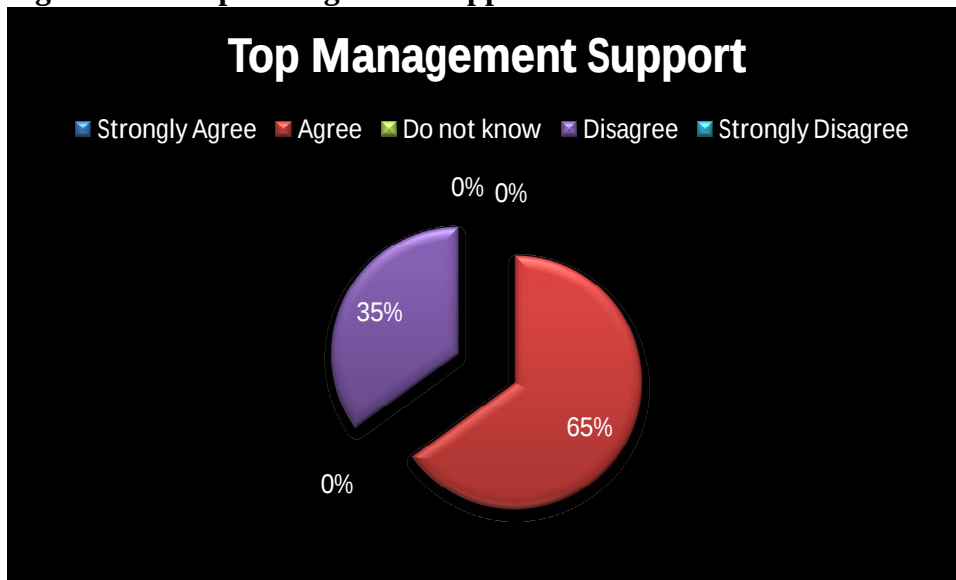
Five % of respondents strongly agreed and 30 % agreed that they had made a valuable contribution to ERP effectiveness. Thirty five % of respondents answered that they did not know and a further 30 % disagreed with the statement in the questionnaire as they felt that they had not made a valuable contribution in improving the ERPs effectiveness. This could be attributed to the fact that many of the respondents were newly employed at the company and as such they did not play a role in the implementation of the ERP system. R  thlin (2010:110), states that through better internal information and IT supported process in ERP settings, users can become more involved in the organisation by becoming noticeable parts in usage and implementation of the system. This would highlight their contribution to the success of the system.

Figure 4.11- Change management from Legacy to Syspro Systems



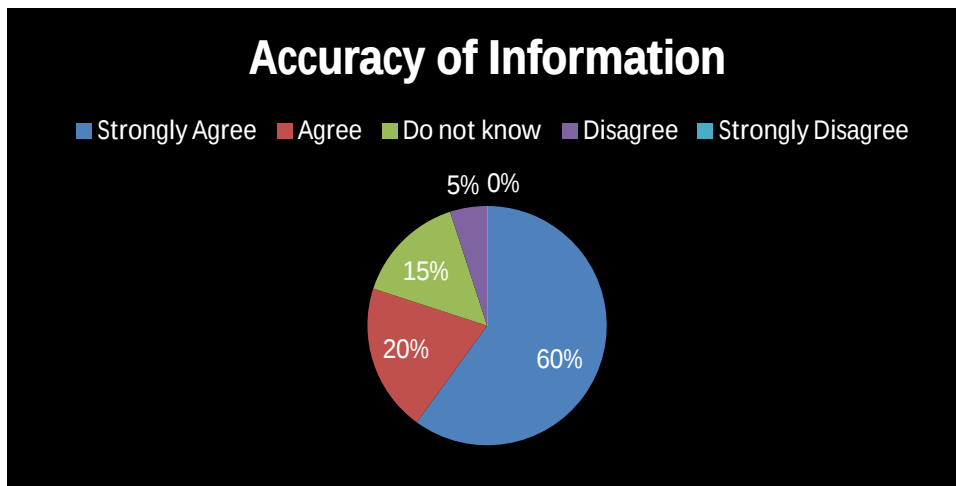
Thirty % of respondents strongly agreed and 55% agreed that managing the change from the legacy system to the Syspro system was an easy transition. Fifteen % of respondents strongly disagreed with the statement. Change management is a very significant and critical factor to the success of ERP implementation. The results illustrate that the implementation of the Syspro system was carefully planned and the degree of complexity was well managed during the transition from the old to the new system.

According to Thomas (2007:48) organisations must continue to adjust their business processes so that it aligns with the ERP system. According to Fang and Patrecia (2005:24), businesses must relook at their current IT systems when the implementation project starts and re-engineer their business processes and structures to be in line with the ERP system. According to Fui-Hoon Nah, Lee-Shang Lau and Kuang (2001:293), people, organisation and culture change, form part of the Enterprise-wide culture and structural change that needs to be well managed.

Figure 4.12- Top Management Support

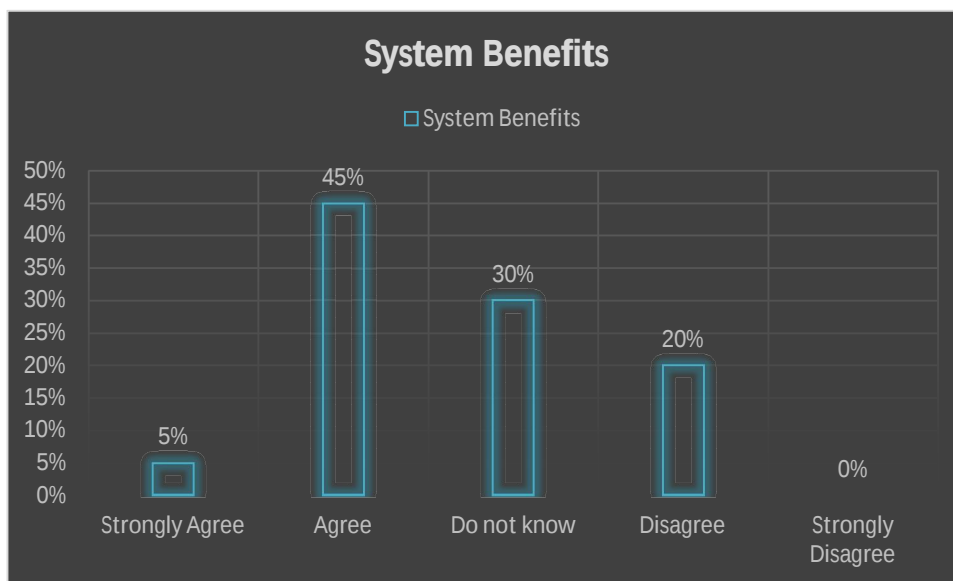
The results revealed that 65% of respondents agreed that Top management was knowledgeable about the use of the Syspro system and had facilitated its effective implementation. However 35 % of respondents did not agree with the statement. Top management support is a critical factor necessary for the successful implementation of an ERP system. The respondent's responses were indicative of the major role that was played by management in gaining knowledge of the system and providing their support so that the system was effectively implemented. According to Roberts and Barrar (1992), it is the responsibility of top management to allocate a suitable amount of time and resources, both human and financial in order to get the ERP project up and running effectively. The findings of this study confirm that Top management had allocated the necessary time and resources to ensure that the ERP implementation was successful. This finding is further confirmed by the findings of the previous question, which indicated that a supportive management facilitated the easy transition from the Legacy to the Syspro System.

ERP System Benefits

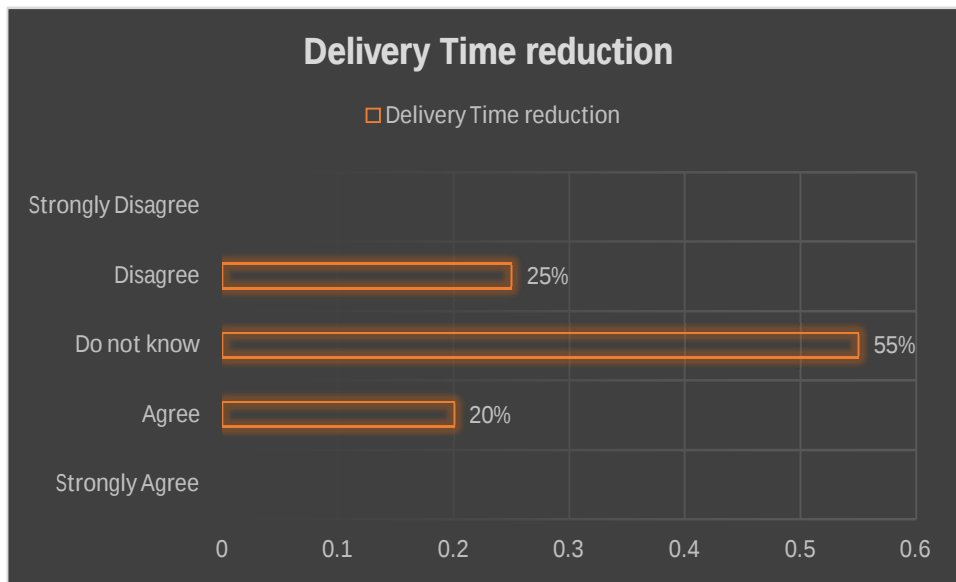
Figure 4.13- Accuracy of Information

Sixty % of respondents strongly agreed and 20% agreed that the information on the Syspro system is meaningful and accurate. Fifteen % of respondents did not know and 5% disagreed with the statement. Accurate and meaningful information is imperative for the benefits of the ERP system to be realised as it will provide managers and supervisors with correct information on the performance of the business which will aid in making more calculated decisions. The high percentage of respondents, who view the system as being accurate, points to the success and accuracy of the system. This further indicates the trust and belief that the respondents have in the use of the system. The above findings support the views of Shang and Seddon (2003:79), which highlights the accuracy of information provided by the use of ERP systems.

Figure 4.14- System Benefits

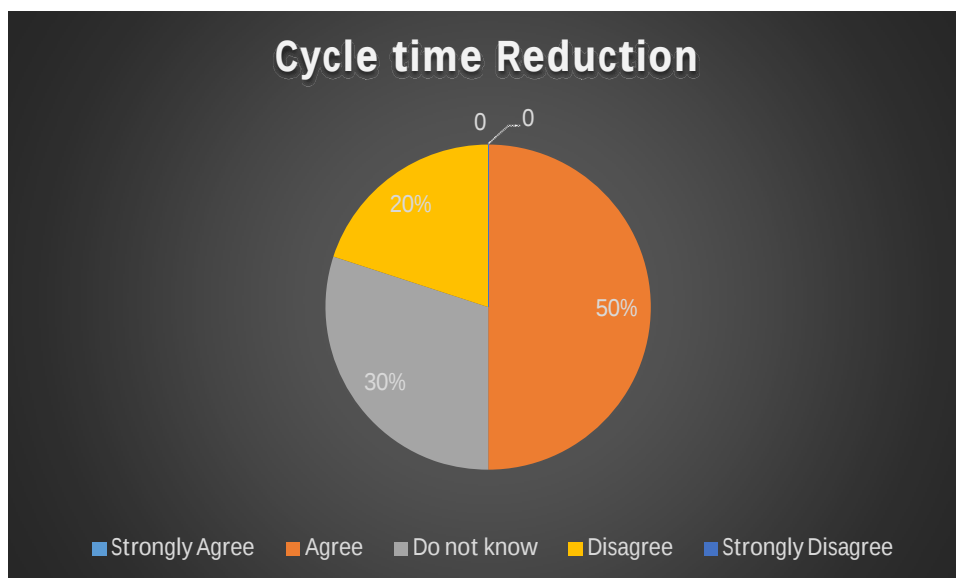


Five % of respondents strongly agreed and 45% agreed that the Syspro system is being used effectively and the company is benefiting from its use. However 30% of respondents did not know and the remaining 20% disagreed with the statement. Thus only half of all respondents agreed that the ERP system is being used effectively and is benefitting the company. It is concerning that 50 % of respondents were not convinced that the system was benefitting the company. An earlier question confirmed that the majority of respondents felt that the system provided accurate information. Grossman and Walsh (2004: 39), Njihia and Mwirigi, (2014:123) and Shang and Seddon (2003:79), have all highlighted the significant benefits that the system offers to organisations. The possibility therefore exists that there may be reasons that this study did not investigate and which may be unique to the company, that was causing 50 % of respondents to remain unconvinced of the effectiveness and benefits of the system.

Figure4.15- Delivery Time Reduction

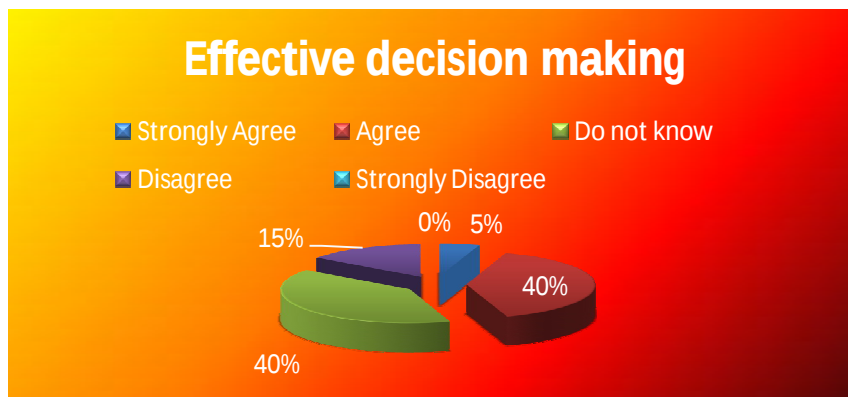
The findings reveal that 55% of respondents did not know whether the usage of the Syspro ERP system had reduced the delivery time to customers or not. Whilst 25 % of the respondents felt that it did not reduce the delivery time to customers, a minority of respondents, that is, 20 % felt that the system did reduce the delivery time. There is no clear indication from the above responses as to whether the use of the Syspro ERP system at Tropic Plastic and Packaging Industry (Pty) Ltd. has reduced the delivery time or not.

These findings are contrary to the findings of the Aberdeen group which reported a 19% improvements in the delivery time, when ERP systems are used.

Figure4.16- Cycle Time Reduction

Fifty % of the respondents had agreed that the use of the Syspro ERP system has speeded up transactions across the different department within the organisation i.e.) it reduces the cycle time. Twenty % of respondents did not know and 30% disagreed with the statement that the system reduces the cycle time. According to Leon (2008:62) ERP systems help to reduce the cycle time. The finding of this research therefore supports the view expressed by Leon. A reduction in the cycle time would afford the company a competitive advantage through reduced turnaround times thereby reducing cost and maximizing profits.

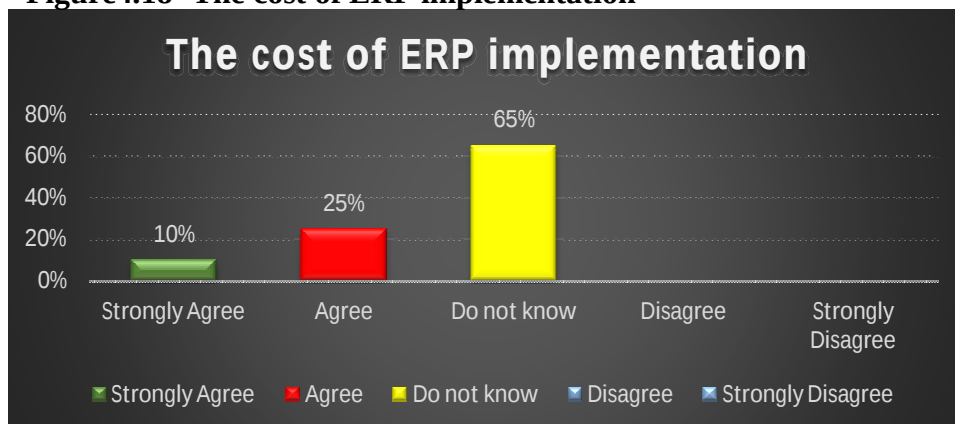
Figure4.17- Effective decision making



The feedback received to the statement that the ERP system had assisted management in making effective decisions was not clear as 40 % of respondents did not know whether the Syspro system had assisted management in making effective decisions or not, whilst another 40% of respondents agreed that it did. Fifteen % of respondents disagreed and 5% strongly disagreed with the statement. Dyerson and Harindranath, (2008:256) are of the opinion that ERP systems benefit decision making and management. As 40% of respondents in this research agreed that the use of the ERP system assisted management in making effective decisions, the results obtained from these respondents corresponds with the opinion of Dyerson and Harindranath. On hindsight, the researcher realizes that this question should have been directed to management only, as only management would be able to comment definitively on how the system assists them in decision making.

ERP System Challenges

Figure4.18- The cost of ERP implementation

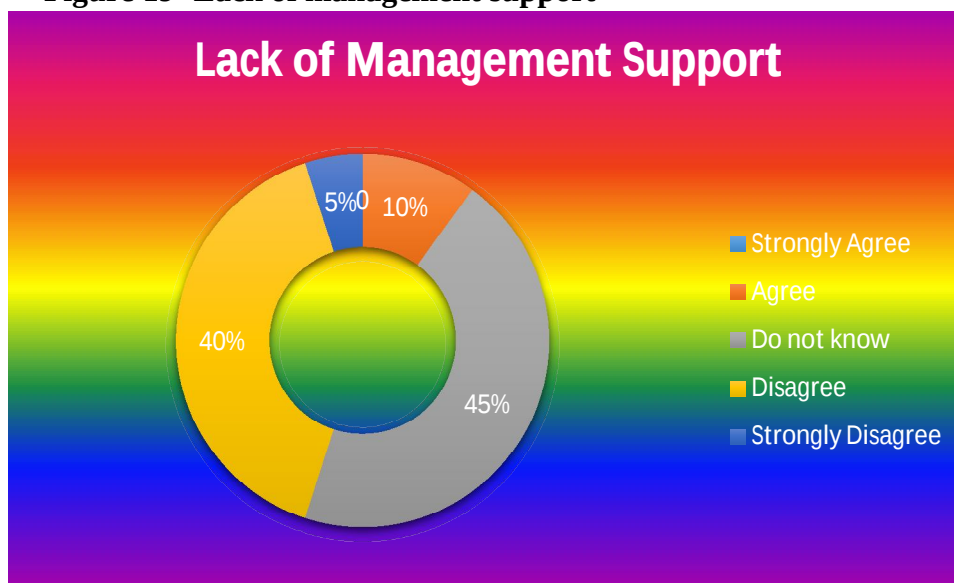


Sixty five % of respondents were not aware of the costs associated with ERP implementation. Ten % of respondents strongly agreed and 25 % agreed with the statement that the cost of ERP implementation is exorbitant. The researcher has deduced that the 35 % of respondents that felt that ERP implementation is exorbitant must have had an idea of the cost of implementation to the company. Therefore they were most probably part of the company management. This 35% of respondents confirm the view of Pathak (2005:77) that ERP packages come at an exorbitant price.

The cost of ERP implementation cannot be taken at face value. The cost must be compared to the benefits derived from using the system.

On hindsight, the researcher again realizes that this question should have been directed to management only, as only management would be aware of the exact costs associated with ERP implementation.

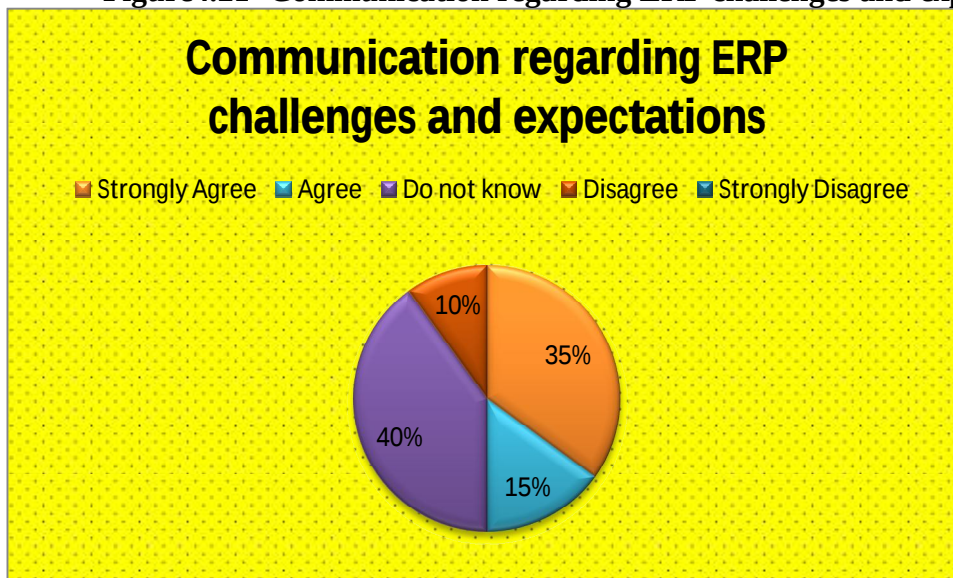
Figure 19- Lack of management support



Forty Five % of respondents did not know whether a lack of management support had caused inefficient processing of transactions and unreliable information on the ERP system. Forty % of respondents disagreed whilst 5% strongly agreed and 10% agreed with the statement that a lack of management support had caused inefficient processing of transactions and unreliable information from the ERP system. According to many researchers like Bingi et al., (1999); Buckhout et al., (1999); Murray and Coffin(2001); Shanks et al. (2000); Sumner (1999); Shanks et al (2000); Wee (2000); Holland et al. (1999) and Roberts and Barrar (1992), management support is one of the most significant and critical factors necessary for the success of the ERP system. The fact that this 45% of respondents were not aware of any problems illustrates that they were probably not in need of management support. The researcher can conclude that management does support the system users as was confirmed by a further 45% of the respondents who disagreed with the statement in the questionnaire.

Figure4.20- Effective Communication

Thirty Five % of respondents strongly agreed and a further 35 % agreed that effective communication plays an important role in ensuring the success of the ERP system. The balance 30 % of respondents answered that they do not know, to the statement that effective communication is important in ensuring success of the ERP system. The results of this research are in agreement with the views of Loh, cited in Gunasekaran and Shea (2010:146) who states that effective communication is critical to the success of ERP systems.

Figure4.21- Communication regarding ERP challenges and expectations

Thirty Five % of respondents strongly agreed and 15% agreed that there is constant communication between management and staff regarding expectation of the ERP system and the challenges encountered. 40 % did not know and the balance 10% disagreed with the statement that there is

constant communication between management and staff relating to the challenges and expectations of using the Syspro ERP system. The results of the last two questions clearly illustrate that it is necessary for any organisation to put in place an effective communication network so that management and staff can effectively support each other and deal effectively with the challenges and expectations of using an ERP system.

Nah, Zuckweiler and Lee-Shang Lau (2003), are of the opinion that when there is complete and open communication between management and staff, success will be achieved. The greater the level of communication, the more easily will it be to identify problems encountered so that they could be dealt with and fixed to avoid these issues in the future.

Steps that should be taken to improve the effectiveness of an ERP system

The last question of the questionnaire sought the opinions of the respondents in respect of what could be done to improve the effectiveness of an ERP system. Respondents indicated that Training on the system would improve their effectiveness in using the ERP system. Regular updates and refresher training will improve their use of the system and allow the system to function more efficiently. Respondents indicated that more ongoing support in terms of system resources from top management would increase the effectiveness of the system. Respondents indicated that effective and clear communication was critical in improving the effectiveness of the system.

CONCLUSIONS AND RECOMMENDATIONS

Findings from the literature review.

A detailed literature review was undertaken and reported on in chapter 2. The findings of the literature review can be summarized as follows:

- ERP systems are packaged business software systems that allow an organisation to automate and integrate its business processes.
- ERP systems are enterprise-wide information systems that facilitate the flow of information within an organisation.
- ERP systems coordinate all resources and activities from different business units within the organisation.
- ERP systems share common data and practices across the organisation.
- ERP systems facilitate the access to information in a real-time environment.
- ERP systems support various functions such as manufacturing, inventory, shipping, logistics, distribution, invoicing and accounting.
- Various business activities including sales, marketing, billing, production, inventory management, human resource management and quality control depend on ERP systems.
- Implementing an ERP system demands a substantial financial investment by the company.
- ERP systems are viewed as a strategic implementation thereby justifying the enormous financial investments required.
- The success of ERP implementation is determined by IT legacy systems.
- A detailed business plan and vision are necessary for the successful implementation of ERP systems.
- Repetitive business process re-engineering is necessary for the successful implementation of

ERP systems.

- An organisation wide culture and structural change is required. Thus there must be a willingness on the part of management and the employees to embrace change.
- Users of the system must be appropriately trained to handle all aspects the system.
- A change management program needs to be implemented to assist the users of the system to successfully make the transition from the old system to the new ERP system that is being implemented
- Effective, complete and open communication across the entire organisation is a necessity for the successful implementation of ERP systems.
- The ERP project team must comprise of both expert ERP consultants and the organisations staff drawn from different areas of the business.
- The willingness and the ability of the project team to work together are necessary for the successful implementation of the ERP system.
- There must be regularly monitoring and evaluating of the performance of the project team.
- A project champion should be drawn from the ranks of the top management and must lead the ERP implementation project from start to finish.
- A skilled project manager is essential for the successful implementation of ERP systems.
- Top management support and their willingness to regard the ERP implementation project as top priority through allocating suitable amounts of time and resources is necessary for the success of ERP implementation.
- ERP systems provides comprehensive information that integrates functions, departments, and hierarchical levels into a composite, action-response chain of events
- ERP systems provides a single, comprehensive database in which all business transactions are entered, recorded, processed, monitored, and reported.
- ERP systems increase the speed of information transactions across various business units.
- ERP systems increase structural connectivity across units and activities.
- ERP systems improve the operational structure resulting in cost reductions, cycle time reductions, quality improvements and improved customer services and retention
- ERP systems improve the managerial structure resulting in better resource management, improved decision making and planning, and an improved performance of the organisation.
- ERP systems improve the strategic structure of the organisation which supports business growth, the development of business alliances, business innovations; generate product differentiation and builds external linkages.
- ERP systems develop an IT infrastructure that increases business flexibility, reduces IT spending and increases IT infrastructural capability and adaptability for new implementations.
- ERP systems develop and improve the organisational structure by supporting organisational change, facilitating business learning and broadening employee skills through empowering employees and building a common vision.

Findings from the primary research

The primary research took the form of a case study at Tropic Packaging and Plastics (Pty) Ltd. Data was collated through the use of a questionnaire. Respondent's responses were analysed qualitatively and reported on descriptively with the aid of graphs. The findings of the primary research can be summarized as follows:-

Demographic information

- The majority of respondents, 55%, were males.
- The majority of employees, 70%, were in the age group of 20-30 years.

Experience

- The majority of respondents, 60%, had less than 3 years' experience in the packaging and manufacturing industry.
- The majority of employees, 45%, had less than 3 years' experience at the company.

Qualifications

- The majority of respondents, 85%, had a minimum qualification of a matric or higher.

Skills and education

- The majority of respondents, 90%, highlighted the need for formal training in order to improve their understanding of the ERP system.
- The majority of respondents, 75%, felt that their current level of education and expertise was sufficient to allow them to work with the ERP system.
- The majority of respondents, 75%, felt that there was a need for well-developed training manuals in order to better capacitate them in the use of the ERP system.
- The majority of respondent, 85% felt that refresher training should be conducted regularly in order to increase their knowledge, skills and expertise in the use of the ERP system.

Implementation success factors

- The respondents were largely divided and uncertain of their contribution to the effectiveness of the ERP system.
- The majority of respondents, 85%, agreed that the change from the Legacy to the Syspro system was a smooth and easy transition.
- The majority of respondents, 65%, agreed that Top management was knowledgeable about the use of the Syspro system and had facilitated its effective implementation.

ERP system benefits

- The majority of respondents, 80%, agreed that the information on the Syspro system is meaningful and accurate.
- Half of all respondents were definitive in their view that the Syspro system is being used effectively and the company is benefiting from its use.
- The respondents were uncertain and divided on whether the use of the ERP system reduced the delivery time to customers. The majority of respondents, 55%, answered that they did not know.
- Half of the respondents were definitive in their view that the use of the ERP system reduces the cycle time.
- The respondents were uncertain and divided on whether the use of the ERP system assists management in effective decision making.

ERP challenges

- The majority of respondents, 65%, were not aware of the costs associated with ERP implementation. The 35% respondents who were aware of the costs agreed that ERP implementation is exorbitant.
- Whilst respondents were divided on the level of management support, the researcher was able to conclude that management does support the system users, as the majority of respondents, 45%, disagreed with the statement.
- The majority of respondents, 70%, agreed that effective communication plays an important role in ensuring the success of the ERP system
- Half of the respondents agreed that there is constant communication between management and staff regarding expectation of the ERP system and the challenges encountered.

Research Conclusions

The following conclusions that are supported by both the primary and the secondary research are made:-

- A skilled and educated workforce is necessary for the successful implementation of an ERP system.
- Users of the system must be appropriately trained to handle all aspects the system.
- Training could take the form of well-developed training manuals and refresher training.
- Training of staff must be regular and ongoing in order to better capacitate staff in the use of the ERP system so that the maximum effectiveness of the system can be derived.
- A knowledgeable and supportive management is necessary for the successful implementation of an ERP system
- Management must ensure that there is effective communication among all role players involved in the ERP system implementation and its use.
- ERP implementation demands a willingness on the part of management and staff to embrace change.
- ERP systems are expensive to implement.
- ERP implementation is a strategic investment capable of delivering meaningful and accurate information across various departments within an organization.
- ERP systems reduce the cycle time.
- ERP systems are effective and benefit the company.

Recommendations

The following recommendations are made:-

The management of the company must develop a detailed business plan and vision for the successful implementation of ERP systems.

- An organisation wide culture and structural change must be initiated to accommodate and facilitate the ERP implementation.
- There must be a willingness on the part of management and the employees to embrace technological change.
- Management must adopt a “hands on” approach to ERP implementation.
- The cost of ERP implementation must be carefully investigated.
- The system being implemented must be industry specific.

- Management must apprise staff of all steps to be taken in the implementation process.
- Staff must also be apprised of the potential benefits of the system.
- Staff must be consulted and their concerns must be addressed.
- There must be free and open communication amongst all role players that are to implement and use the ERP system
- Training and capacitating staff must accompany any implementation and must be ongoing.
- The cost of training must be factored into the initial cost of ERP implementation.
- There must be regular monitoring and evaluation of the ERP system so as to assess and maximize the benefits of implementing the system.
- The above conclusions and recommendations satisfy the research aim and objectives of this study.

Areas of future research

As this research was a case study that focused on a single company, it is suggested that the future research be expanded to a larger sample of companies across the different sectors of our economy. This is necessary in order to generalize the findings and recommendations in respect of ERP systems. This research focused on the Syspro ERP system only. Future research must be conducted to cover other systems that are being used so that a holistic picture of the challenges and values of ERP systems can be established. Further research needs to be conducted with managers and accountants in order to quantify the financial benefits of ERP systems and to determine whether the substantial initial outlays required to set up the system are justified by the financial benefits derived from using the system

Conclusion

This study set out to assess the feasibility of adopting an ERP system by investigating those factors that influence its effective implementation ,determining the potential value of an ERP system, determining the need for a skilled and well trained staff for the successful implementation of an ERP system and to make recommendations to the management of a company to successfully overcome any potential challenges to ERP implementation.

A case study of Tropic Plastic and Packaging Industry (Pty) Ltd was undertaken. The findings of the primary and secondary research were listed and the commonality between these findings served as the basis for formulating the research conclusions and for making recommendations.

The findings, conclusions and recommendations of this study serve to improve our understanding of the issues relating to ERP implementation and its usage, and are applicable to businesses operating in the manufacturing sector within the South African business landscape. Thus this study would assist in the development of an Information and Communication Technology policy framework that would serve as a guide for ERP adoption and implementation in businesses across South Africa, thereby promoting the country's economic growth. In addition the study creates a forum for further discussions of best practices in implementing an ERP system. This will help organisations to view ERP systems as not merely another technological innovation, but rather as a strategic tool that will assist organisation to improve its performance and to gain a competitive advantage in an ever changing and challenging market.

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